Final Staff Report

Including the Substitute Environmental Documentation

Amendment to the Water Quality Control Plan for the Ocean Waters of California to Control Trash and Part 1 Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California

DIVISION OF WATER QUALITY

STATE WATER RESOURCES CONTROL BOARD

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

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LIST OF ABBREVIATIONS

AB	Assembly Bill
ASBS	Areas of Special Biological Significance
Basin Plans	Regional Water Quality Control Plan
BASMAA	Bay Area Stormwater Management Agencies Association
BMP	Best Management Practices
Caltrans	California Department of Transportation
CASQA	California Stormwater Quality Association
CCR	California Code of Regulations
CEQA	California Environment Quality Act
CGP	Construction General Permit
Colorado River Basin Water Board	Colorado River Basin Regional Water Resource Control Board
CWA	Clean Water Act
GIS	Geographic Information System
LID	Low-Impact Development Controls
Los Angeles Water Board	Los Angeles Regional Water Quality Control Board
IGP	Industrial Storm Water General Permit
ISWEBE Plan	Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California
MFAC	Minimum Frequency of Assessment and Collection
MRP	San Francisco Bay Municipal Regional Stormwater Permit
MS4	Municipal Separate Storm Sewer System
NOAA	National Oceanic and Atmospheric Administration
North Coast Water Board	North Coast Regional Water Quality Control Board
NPDES	National Pollutant Discharge Elimination System
Ocean Plan	Water Quality Control Plan for Ocean Waters of California
Porter-Cologne	Porter-Cologne Water Quality Control Act
Regional Water Board	Regional Water Quality Control Board
San Francisco Bay Water Board	San Francisco Bay Regional Water Quality Control Board
SB	Senate Bill
SED	Substitute Environmental Documentation
State Water Board	State Water Resources Control Board
TMDLs	Total Maximum Daily Loads
Trash Amendments	Amendment to the Water Quality Control Plan for Ocean Waters of California to Control Trash and Part 1 Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California
U.S. EPA	United States Environmental Protection Agency
Wat. Code	California Water Code
Water Boards	State and Regional Water Quality Control Boards
WDR	Waste Discharge Requirements

1 INTRODUCTION

Trash is junk or rubbish generated by human activity that frequently ends up in waterways. Trash is items such as cigarette butts, paper, fast food containers, plastic grocery bags, cans and bottles, used diapers, construction site debris, industrial preproduction plastic pellets, old tires, and appliances. Trash discarded on land frequently ends up in waterways and the ocean as rainstorms wash it into gutters and storm drains, and then into creeks and rivers. The presence of trash in waterways adversely affects beneficial uses, including but not limited to threats to aquatic life, wildlife, and public health.

The State Water Resources Control Board and Regional Water Quality Control Boards (collectively, the Water Boards) are controlling trash primarily through Total Maximum Daily Loads (TMDLs) and permits. The Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) led the way with effective trash management strategies with the Los Angeles River Watershed Trash TMDL. The San Francisco Bay Regional Water Quality Control Board (San Francisco Bay Water Board) is following this lead with trash components to their Municipal Regional Storm Water National Pollutant Discharge Elimination System (NPDES) Permit. These approaches are not entirely consistent, and there are still ongoing trash problems across the state waterways. There is a strong need for a statewide consistency within the Water Boards regarding trash control.

The State Water Resources Control Board (State Water Board) is proposing an Amendment to the Water Quality Control Plan for Ocean Waters of California to Control Trash and Part 1 Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California. This Staff Report shall collectively refer to the amendment to control trash and Part 1 Trash Provisions as "Trash Amendments".[1] The provisions proposed in the Trash Amendments include six elements: (1) water quality objective, (2) applicability, (3) prohibition of discharge, (4) implementation provisions, (5) time schedule, and (6) monitoring and reporting requirements. The proposed provisions would apply to all surface waters of the state, with the exception of those waters within the jurisdiction of the Los Angeles Water Board with trash or debris TMDLs that are in effect prior to the effective date of the Trash Amendments.

This Final Staff Report analyzes the need for the final Trash Amendments and alternative options to the Trash Amendments considered by the State Water Board. This document also serves as the State Water Board's Substitute Environmental Documentation (SED) required to meet the requirements of the California

[1] The State Water Board intends to amend the Water Quality Control Plan for Enclosed Bays and Estuaries of California to create the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California Plan (ISWEBE Plan). The State Water Board intends that the Part 1 Trash Provisions will be incorporated into the ISWEBE Plan, once it is adopted.

Environmental Quality Act (CEQA)[2], pursuant to Public Resources Code sections 21080.5, 21159 and CEQA Guidelines sections 15250 – 15253; and the State Water Board's Regulations for Implementation of the Environmental Quality Act of 1970, 23 California Code of Regulations (CCR) sections 3720 – 3781.

1.1 Purpose of the Staff Report

The purpose of this Final Staff Report is to present the State Water Board's analysis of the need for and the effects of the final Trash Amendments and meet the State Water Board's requirement to comply with CEQA.

CEQA authorizes the Secretary for Natural Resources to certify that state regulatory programs meeting certain environmental standards are exempt from many of the procedural requirements of CEQA (CCR, Title 14, § 15251(g)). The Secretary for Natural Resources has certified the State Water Board regulations for adoption or approval of standards, rules, regulations, or plans to be used in the Basin/208 Planning program for the protection, maintenance, and enhancement of water quality in California (23 CCR § 3775 – 3781). Therefore, this Final Staff Report includes the documentation (i.e., draft SED) required for compliance with CEQA, and a separate CEQA document will not be prepared.

According to the State Water Board regulations for the implementation of CEQA (23 CCR § 3777), the SED shall consist of a written report prepared for the Board containing an environmental analysis of the project; a completed environmental checklist (where the issues identified in the checklist must be evaluated in the checklist or elsewhere in the SED); and other documentation as the board may include. The SED is required to include, at a minimum, the following information:

1) A brief description of the proposed project;
2) An identification of any significant or potentially significant adverse environmental impacts of the proposed project;
3) An analysis of reasonable alternatives to the project and mitigation measures to avoid or reduce any significant or potentially significant adverse environmental impacts; and
4) An environmental analysis of the reasonably foreseeable methods of compliance. The environmental analysis shall include, at a minimum, all of the following:
    a) An identification of the reasonably foreseeable methods of compliance with the project;

[2] CEQA provides that certain regulatory programs of state agencies may be certified by the Secretary for Natural Resources as being exempt from the requirements for preparing Environmental Impact Reports (EIR), Negative Declarations, and Initial Studies if the Secretary finds that the program meets certain criteria. A certified program remains subject to other provisions in CEQA such as the policy of avoiding significant adverse effects on the environment where feasible. The Secretary has certified the State Water Resource Control Board regulatory program for adoption or approval of standards, rules, regulations, or plans to be used in the Basin/208 Planning program for the protection, maintenance, and enhancement of water quality in California as an exempt certified state regulatory program (Pub. Res. Code § 21080.5; Cal. Code Regs., tit.14, § 15251, subd. (g)).

b) An analysis of any reasonably foreseeable significant adverse environmental impacts associated with those methods of compliance;
c) An analysis of reasonably foreseeable alternative methods of compliance that would have less significant adverse environmental impacts; and,
d) An analysis of reasonably foreseeable mitigation measures that would minimize any unavoidable significant adverse environmental impacts of the reasonably foreseeable methods of compliance.

In the preparation of this Final Staff Report, the State Water Board utilizes numerical ranges or averages to assess the potential environmental impacts over a broad range of geographic areas within the state covering all nine regional water board jurisdictions. Per the direction of CEQA and the State Water Board regulations, however, the analysis contained in this Final Staff Report does not engage in speculation or conjecture and the environmental analysis does not attempt to provide a site-specific project level analysis of the methods of compliance (which CEQA may otherwise require of those agencies who are responsible for complying with the plan or policy when they determine the manner in which they comply). The analysis does take into account a reasonable range of environmental, economic, and technical factors, population and geographic areas, and specific sites. (Pub Res Code § 21159; 14 CCR § 15144, 15145; 23 CCR § 3777(c)). Responses to comments and consequent revisions to the information in the Draft Staff Report will be subsequently presented in a Final Staff Report for consideration by the State Water Board. After the State Water Board has certified the document as adequate, the title of the document becomes the Final Staff Report.

1.2 Regulatory Framework

In 1969, the Porter-Cologne Water Quality Control Act (Porter-Cologne) (California Water Code (Wat. Code § 13000 et seq.) was adopted as the principal law governing water quality in California. Porter-Cologne institutes a comprehensive program to protect the quality and "beneficial uses" (or "designated uses" under federal parlance) of the state's water bodies. Beneficial uses include, but are not limited to, "domestic, municipal, agricultural, and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves" (Wat. Code § 13050, subd. (f)). Regulatory protection of beneficial uses is carried out, in part, through water quality objectives established in each regional water quality control plan (basin plan) (Wat. Code § 13241). Under Porter-Cologne, the regional water quality control boards (regional water boards) adopt basin plans in which they designate the beneficial uses of the waters of the region and establish water quality objectives to protect those beneficial uses. Basin plans are required to include a plan of implementation to ensure that waters achieve the water quality objectives.

As proposed, the Trash Amendments would apply to all surface waters of the state, including: ocean waters, enclosed bays and estuaries, and inland surface waters. "Waters of the state" are defined under Porter-Cologne as any surface water or groundwater, including saline waters, within the boundaries of the state (Wat. Code § 13050(e)). Under California state law, territorial boundaries extend three nautical miles

beyond the outermost islands, reefs, and rocks and include all waters between the islands and the coast (Cal. Gov. Code § 170).

In 1972, Congress enacted the federal Clean Water Act (CWA) with the goal to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (33 U.S. Code § 1251(a)). The CWA directs states, with oversight by the U.S. Environmental Protection Agency (U.S. EPA), to adopt water quality standards to protect the public health and welfare, enhance the quality of water, and serve the purposes of the CWA. Ultimately, states must provide comprehensive protection of their waters through the application of water quality standards. State standards must include: (1) designated uses for all water bodies within their jurisdictions, and (2) water quality criteria (referred to as objectives under California law) sufficient to protect the most sensitive of the uses. The CWA established the NPDES Permit Program to regulate point source discharges of pollutants to waters of the United States (33 U.S. Code § 1342). In California, the Water Boards issue and administer NPDES permits under a program approved by the U.S. EPA (Wat. Code § 13377), and in conjunction with the requirements of Porter-Cologne.

NPDES permits are required to contain effluent limitations reflecting pollution reduction achievable through technological means, as well as more stringent limitations necessary to ensure that receiving waters meet state water quality standards (33 U.S. Code § 1311(b)(1)(A)-(C)). Section 303, subdivision (c)(2)(B) of the CWA requires states to adopt water quality criteria for all priority pollutants established in section 307(a). As part of its efforts to comply with section 303, subdivision (c)(2)(B), the State Water Board adopted two statewide plans in accordance with Water Code section 13170: the Water Quality Control Plan for Ocean Waters of California (Ocean Plan) in 1972 and the Enclosed Bays and Estuaries Plan in 2008. These statewide plans supersede basin plans to the extent that any conflict exists (Wat. Code § 13170).

The CWA and Porter-Cologne direct the Water Boards to regulate the discharge of pollutants into waters of the United States and waters of the State. Trash is considered a pollutant and where runoff and storm water transport trash into these waters, it is considered discharge of waste subject to Water Board authority.

1.3 Effect on Existing Basin Plans, Trash-Related TMDLs and Permits

Antidegradation

Any relaxation of water quality standards that may occur as a result of the final Trash Amendments must comply with federal and state antidegradation policies, which require the protection of all existing beneficial uses (40 CFR § 131.12, State Water Board Resolution No. 68-16). If the initial water quality exceeds that which is necessary to protect every beneficial use, the water quality can be lowered, as long as certain criteria are met. Dischargers are not allowed to degrade water bodies to levels below that which is necessary to protect existing beneficial uses. The antidegradation analysis for the final Trash Amendments is found in Section 9.

Basin Plans

Following adoption by the State Water Board, the final Trash Amendments would supersede basin plans to the extent that any conflict exists (Wat. Code § 13170).

TMDLs

The final Trash Amendments would apply to all surface waters in the state, with the exception of those waters with the jurisdiction of the Los Angeles Water Board that have trash TMDLs in effect prior to the Trash Amendments. As the fifteen trash TMDLs in the Los Angeles Region have more stringent provisions than the final Trash Amendments, the final Trash Amendments would not result in a degradation of water quality standards in those waters. While the final Trash Amendments do not apply to existing trash TMDLs in the Los Angeles Region, the final Trash Amendments direct the Los Angeles Water Board to reconsider the scope of its trash TMDLs within one year of the Trash Amendments' effective date and focus its permittees' trash control efforts on high trash generation areas rather than all areas within each permittee's jurisdiction. The reconsideration would occur for all existing trash TMDLs, except for the Los Angeles River Watershed and Ballona Creek Trash TMDLs, because those two TMDLs are approaching final compliance deadlines of September 30, 2016 and September 30, 2015, respectively.

Permits

The final Trash Amendments would require permitting authorities to re-open, re-issue, or newly adopt NPDES permits for Municipal Separate Storm Sewer System (MS4) Phase I permittees, MS4 Phase II permittees, and California Department of Transportation (Caltrans) permittees, as well as Industrial Storm Water General Permit (IGP) and Construction General Permit (CGP) permittees, to incorporate the prohibition of discharge and implementation requirements of the final Trash Amendments within those permits. Until such permits are amended, the final Trash Amendments would not apply to dischargers covered under those permits.

A Water Board could, however, adopt storm water NPDES permits with stricter trash-discharge provisions, such as broadening the scope of regulated land uses.

1.4 Beneficial Uses Impacted by Trash

The final Trash Amendments are directed toward achieving the highest water quality consistent with maximum benefit to the people of the state. Beneficial uses, as defined by Porter-Cologne section 13050, are the uses of surface water and groundwater that may be protected against water quality degradation. The Water Boards are charged with protecting all beneficial uses from pollution and nuisance that may occur as a result of waste discharges in the region. Beneficial uses of surface waters, ground waters, marshes, and wetlands serve as a basis for establishing water quality objectives and discharge prohibitions to attain these goals and are defined in the basin plans for each regional water board and the Ocean Plan.

There are many beneficial uses in California that can be affected by trash. This section discusses the impacts of trash on beneficial uses associated with aquatic life and public health.

Trash is a threat to aquatic habitat and life as soon as it enters state waters. Mammals, turtles, birds, fish, and crustaceans are threatened following the ingestion of or entanglement by trash (Moore et al. 2001, U.S. EPA 2002). Ingestion and

entanglement can be fatal for freshwater, estuarine, and marine life. Similarly, habitat alteration and degradation due to trash can make natural habitats unsuitable for spawning, migration, and preservation of aquatic life. These negative effects of trash to aquatic life can impact twelve beneficial uses. A summary of specific impacts associated with each aquatic life beneficial use is presented in Table 13, Appendix A.

Trash in state waters can impact humans by means of jeopardizing public health and safety and posing harm and hindrance in recreational, navigational, and commercial activities. Trash can also affect the traditional and cultural rights of indigenous people or subsistence fishers to waters of the state. Specific impacts associated with each public health beneficial use is presented in Table 14, Appendix A.

1.5 Trash in the Environment

The presence of trash in surface waters, especially coastal and marine waters, is a serious issue in California. Trash discarded on land is frequently transported through storm drains and to waterways, shorelines, the seafloor, and the ocean. Statewide and local studies have documented the presence of trash in state waters and the accumulation of land-based trash in the ocean. Street and storm drain trash studies conducted in regions across California have provided insight into the composition and quantity of trash that flows from urban streets into the storm drain system and out to adjacent waters.

Trash in state waters is related to the direct and indirect activities of inhabitants inland, along coastal shorelines, and offshore (NOAA 2008a). A major source of trash is either intentionally or accidentally improperly discarded waste, thrown or deposited on land and in water bodies. If trash occurs on land, it is commonly transported to nearby water bodies by wind and/or rain or dry weather runoff. The five primary sources and transport mechanisms for trash to reach state waters are:

1) Littering by the public on or adjacent to waterways;
2) Storm events draining watersheds and carrying trash originating from littering, inadequate waste handling or illegal dumping via the storm drain system to receiving waters;
3) Wind-blown trash, also originating from littering, inadequate waste handling or illegal dumping;
4) Illegal dumping into or adjacent to water bodies, and;
5) Direct disposal (overboard disposal and/or dumping) of trash into water bodies from vessels involved in commercial, military, fishing or recreational activities.

Studies show that trash is predominantly generated on land and then transported to a receiving water body. The main transport pathway of trash to receiving water bodies is through storm water transport. Several studies have been conducted to determine the sources of land-based trash generation and the rates of trash generation areas. The land areas evaluated in these studies typically included the following: high density residential, low density residential, commercial services, industrial, public facilities, education institutions, military institution, transportation, utilities, mixed urban, open space, agriculture, water, and recreation land uses (City of Los Angeles 2002, County of

Los Angeles Department of Public Works 2004a; 2004b, City of Cupertino 2012, City of San Jose 2012, EOA, Inc. 2012a; 2012b).

Additional details about the composition of trash, the transport of transport of trash in the environmental, and trash assessment studies can be found in Appendix A.

1.6 Current Efforts to Address Concerns Related to Trash in California Waters

Regulations and policies are currently implemented in California to address trash in state waters. These efforts are discussed in the following sections and in greater detail in Appendix A.

State Laws and Local Ordinances

Numerous statewide laws and local ordinances have been adopted in California to address trash. For instance, California prohibits littering where such litter "creates a public health and safety hazard, a public nuisance, or a fire hazard" (Penal Code § 374.4). The California Vehicle Code provides that no one may throw or trash, including cigarettes onto highways and adjacent areas (§ 23111 and 23112).

California is the leader in implementing local ordinances with goals of reducing trash, specifically plastics. At least 65 jurisdictions have either banned expanded polystyrene foam food containers completely or have prohibited use by government agencies or at public events (Clean Water Action 2011b). In 2006, the City of San Francisco passed a ban on single-use carryout bags in grocery stores and pharmacies. Since then, at least 72 local jurisdictions have adopted city and county ordinances for single-use carryout bags (Environment California Research and Policy Center 2011). Statewide, several attempts have been made to pass single-use plastic bag ban bills over the past several years, including Assembly Bill (AB) 1998 in 2010 and Senate Bill (SB) 405 in 2013, although none have been passed in the State Legislature (West Coast Governors' Alliance on Ocean Health 2013).

On September 30, 2014, Governor Edmund G. Brown Jr. signed the nation's first statewide ban on single-use plastic bags—Senate Bill 270 (Sen. Padilla) (2014 Stat. Ch. 850) (adding Chapter 5.3 to Part 3 of Division 30 of the Public Resources Code). Senate Bill 270 aligns state law with the ordinances passed by local governments in California to reduce plastic waste. The new law prohibits grocery stores and pharmacies that have a specified amount of sales in dollars or retail floor space from providing single-use carry-out plastic bags as of July 1, 2015, and enacts the same ban for convenience stores and liquor stores on or after the following year. The legislation prohibits stores from selling or distributing a recycled paper bag or compostable bags at the point of sale for at a cost of less than $0.10.

No Existing Trash-Specific Water Quality Objectives

Each regional water board has adopted narrative objective(s) for pollutants in its basin plan. These narrative objectives refer to trash-related pollutants and other pollutants such as foam and sediment in general terms (i.e., floatable, suspended, and settleable material), but do not specifically refer to trash as a specific pollutant. The Ocean Plan also has similar floatable, suspended, and settleable material objectives, but no specific mention of trash as a pollutant.

Current NPDES Permits and Existing Trash TMDLs

The CWA establishes the NPDES permit as the primary mechanism for achieving water quality standards in navigable waters. NPDES permits are issued to point source dischargers and include effluent and receiving water limitations. Existing NPDES permits, such as Phase I, Phase II, and Caltrans, have some existing requirements for trash reduction in the form of institutional controls, such as street sweeping and educational programs (Gordon and Zamist 2003). These existing requirements can be applicable to multiple types of urban storm water pollutants, including trash.

For those waters that do not attain water quality standards even after NPDES permits are issued to point sources with the effluent limitations described above, the CWA requires states to adopt TMDLs for the pollutants causing the impairment in a water body. TMDLs are designed to restore water quality by controlling the pollutants that cause or contribute to such impairments.

The presence of trash in California waters has resulted in a number of waters listed as impaired on the CWA section 303(d) list of Water Quality Limited Segments over the past several listing cycles. According to California's 2008-2010 section 303(d) list of impaired waters, there are 73 listings due to trash in California waters. Although listings occur in four regions (San Francisco Bay, Los Angeles, Colorado River Basin, and San Diego), TMDLs have only been developed to date in the Los Angeles Region and the Colorado River Basin Region. In the Colorado River Basin, a TMDL for trash was adopted for the New River (at the international boundary) that included a numeric target of zero trash (Colorado River Basin Water Board 2006). In the Los Angeles Region, fifteen TMDLs were adopted for trash and debris by either the Los Angeles Water Board or U.S. EPA: San Gabriel River East Fork, Ballona Creek, Los Angeles River Watershed, Revolon Slough, and Beardsley Wash, Ventura River Estuary, Malibu Creek Watershed, Lake Elizabeth, Munz Lake, Lake Hughes, Legg Lake, Machado Lake, Santa Monica Bay Nearshore and Offshore, Peck Road Park Lake, Echo Park Lake, and Lincoln Park Lake (Table 16; Los Angeles Water Board 2000; 2004; 2007a; 2007b; 2007c; 2007d; 2007e; 2007f; 2008g; 2010, U.S. EPA 2012a).

The Los Angeles Water Board's trash and debris TMDLs set the numeric target for trash in the applicable water bodies to zero, as derived from the water quality objective in the basin plans. The TMDLs have all also defined trash to be "man-made litter," as defined by the California Government Code (§ 68055.1(g)). Implementation plans vary slightly but are mostly based on phased percent reduction goals that can be achieved through discharge permits, best management practices (BMPs), and structural controls.

The San Francisco Bay Water Board uses provisions in the San Francisco Bay Municipal Regional Stormwater Permit (MRP) to address trash in the 27 303(d) listed water bodies in the Region (Order No. R2-2009-0074). The San Francisco Bay MRP applies to 76 large, medium and small municipalities and flood control agencies in the San Francisco Bay Region. The San Francisco Bay MRP prohibits the discharge of "rubbish, refuse, bark, sawdust, or other solid wastes into surface waters or at any place where they would contact or where they would be eventually transported to surface waters, including flood plain areas." The trash-related receiving water limitations identified in the San Francisco Bay MRP do not place numeric targets on trash but uses

narrative language to prohibit trash discharges. The San Francisco Bay MRP requires that permittees reduce trash from their storm sewer systems by 40 percent by July 1, 2014. The San Francisco Bay MRP permittees are developing and implementing a Short-Term Trash Load Reduction Plan to attain the 40 percent (City of Cupertino 2012, City of San Jose 2012).

State Policy Efforts

In response to the increasing problem of trash within California, particularly plastic trash, policymakers have initiated efforts such as the California Ocean Protection Council's Resolution on Reducing and Preventing Marine Debris (2007) and subsequent Implementation Strategy for Reducing Marine Litter (2008). These policies respectively proposed targeted reductions of trash within a set timeline, and prioritize state efforts for source reduction of the "worst offenders" of trash, such as cigarette butts, plastic bottle caps, plastic bags, and polystyrene. In 2013, the West Coast Governor's Alliance on Ocean Health introduced a Marine Debris Strategy. The Strategy provides a toolbox of key actions that may be implemented collaboratively or individually by western states at its discretion and allows for the successful achievement of target milestones through various reduction methods.

1.7 Current Trash Cleanup Costs

A report, commissioned by U.S. EPA Region 9, estimated that West Coast communities (California, Oregon, and Washington) are spending approximately $13 per resident per year to combat and clean up trash that would otherwise end up as marine debris. The report conservatively suggested that West Coast coastal communities are spending more than $520 million to combat trash and marine debris. Cost information was sought for six different trash management activities: beach and waterway cleanup, street sweeping, installation of storm water capture devices, storm drain cleaning and maintenance, manual cleanup of trash, and public anti-trash campaigns. Data was collected from 90 different communities ranging in size from 200 to over four million residents (Stickel et al. 2012). A follow-up study conducted by the Natural Resources Defense Council and Kier Associates focused on the cost of current trash abatement activities for 95 California communities. The study found that California communities annually spend approximately $428 million ($10.5 per resident) to reduce trash and prevent trash from entering state waters. The study found that the average annual reported per capita cost ranged from $8.94 for large communities to $18.33 for small communities (fewer than 15,000 people) with the largest of communities (over 250,000 people) averaging $11.24 (Stickel et al. 2013).

2 PROJECT DESCRIPTION

The Water Board's regulations for implementation of CEQA require the SED to include a brief description of the project (23 CCR 3777(b)(1)). The following section: (1) describes the final Trash Amendments; (2) provides an overview of the objectives of the Plan; and (3) contains non-exclusive lists of: (a) the agencies that are expected to use this SED in their decision making and permits, (b) other approvals required to implement the project, and (c) related environmental review and consultation requirements required by federal, state, or local laws, regulations, or policies.

The complete texts of the final Trash Amendments are included in this Final Staff Report as Appendix D for the Ocean Plan and Appendix E for the ISWEBE Plan.

2.1 Trash Amendments' Description and Project Objective[3]

The State Water Board proposes to adopt the Trash Amendments into both the Ocean Plan and the ISWEBE Plan. The provisions proposed in the Trash Amendments include six elements: (1) water quality objective, (2) applicability, (3) prohibition of discharge, (4) implementation provisions, (5) time schedule, and (6) monitoring and reporting requirements. The proposed provisions would apply to all surface waters of the state, with the exception of those waters within the jurisdiction of the Los Angeles Water Board with trash or debris TMDLs that are in effect prior to the effective date of the Trash Amendments.

The State Water Board's project objective for the final Trash Amendments is to address the impacts of trash to the surface waters in California (with the exception of those waters within the jurisdiction of the Los Angeles Water Board with trash or debris TMDLs that are in effect prior to the effective date of the final Trash Amendments) through development of a statewide plan to control trash. The project objective for the final Trash Amendments is to provide statewide consistency for the Water Boards' regulatory approach to protect aquatic life and public health beneficial uses, and reduce environmental issues associated with trash in state waters, while focusing limited resources on high trash generating areas.

A central element of the final Trash Amendments is a land-use based compliance approach to focus trash controls to the areas with high trash generation rates. Within this land-use based approach, a dual alternative compliance Track approach is proposed for permitted storm water dischargers (i.e., MS4 Phase I, MS4 Phase II, Caltrans, IGP, and CGP) to implement a prohibition of discharge for trash. Table 1 outlines the proposed dual alternative compliance Tracks for permitted storm water dischargers.

[3] The State CEQA Guidelines state that a project description should include "a statement of the objectives sought by the proposed project....[And] should include the underlying purpose of the project" (14 CCR 15124(b)).

Table 1. Overview of Proposed Compliance Tracks for NPDES Storm Water Permits.

	Track 1	Track 2
NPDES Storm Water Permit	MS4 Phase I and II IGP/CGP*	MS4 Phase I and II Caltrans IGP/CGP*
Plan of Implementation	Install, operate and maintain full capture systems in storm drains that capture runoff from one or more of the priority land uses/facility/site.	Implement a plan with a combination of full capture systems, multi-benefit projects, institutional controls, and/or other treatment controls to achieve full capture system equivalency.
Time Schedule	10 years from first implementing permit but no later than 15 years from the effective date of the Trash Amendments.**	10 years from first implementing permit but no later than 15 years from the effective date of the Trash Amendments.**
Monitoring and Reporting	Demonstrate installation, operation, and maintenance of full capture systems and provide mapped location and drainage area served by full capture systems.***	Develop and implement set of monitoring objectives that demonstrate effectiveness of the selected combination of controls and compliance with full capture system equivalency.***

* IGP/CGP permittees would first demonstrate inability to comply with the outright prohibition of discharge of trash.

** Where a permitting authority makes a determination that a specific land use or location generates a substantial amount of trash, the permitting authority has the discretion to determine a time schedule with a maximum of ten years. IGP/CGP permittees would demonstrate full compliance with deadlines contained in the first implementing permit.

*** No trash monitoring requirements for IGP/CGP, however, IGP/CGP permittees would be required to report trash controls.

2.2 Water Quality Objective

To provide consistency statewide with a water quality objective, the final Trash Amendments would establish the following narrative water quality objectives for the Ocean Plan and the ISWEBE Plan.

The narrative water quality objective for the Ocean Plan would be: Trash shall not be present in ocean waters, along shorelines or adjacent areas in amounts that adversely affect beneficial uses or cause nuisance.

The narrative water quality objective for the ISWEBE Plan would be: Trash shall not be present in inland surface waters, enclosed bays, estuaries, and along shorelines or adjacent areas in amounts that adversely affect beneficial uses or cause nuisance.

2.3 Prohibition of Discharge

The Trash Amendments propose to implement the water quality objective for trash through a conditional prohibition of discharge of trash directly into waters of the state or where trash may ultimately be deposited into waters of the state. The prohibition of discharge applies to both permitted and non-permitted dischargers. Dischargers with NPDES permits would comply with the prohibition as outlined with the plan of implementation when such implementation plan is incorporated into the dischargers' NPDES permits. The final Trash Amendments clarify that dischargers with non-NPDES WDRs or waivers of WDRs that contain specific requirements for the control of trash shall be determined to be in compliance with the prohibition of discharge if the dischargers are in full compliance with such requirements. Under the original language, a discharger subject to an existing non-NPDES WDR or waiver of WDR could have been potentially in compliance with the requirements of the WDR, or Waiver of WDR, yet simultaneously out of compliance with prohibition of discharge included in the Draft Trash Amendments. Non-permitted dischargers must comply with the prohibition of discharge or be subject to direct enforcement action.

In addition, the prohibition of discharge specifically applies to the discharge to surface waters of the state of preproduction plastic by all manufacturers and transporters of preproduction plastics and manufacturers that use preproduction plastics in the manufacture of other products, or the deposition of preproduction plastic where it may be discharged into surface waters of the State. To ensure that the Trash Amendments do not interfere with existing permits requirements, the proposed Final Trash Amendments have been clarified to state that for dischargers subject to NPDES permits for discharges associated with industrial activity (e.g., IGP), those permittees would continue to comply with the "Preproduction Plastic Debris Program" under Water Code section 13367(a) and the requirements in the IGP (Order No. 2014-0057-DWQ) to comply with the prohibition concerning preproduction plastics.

2.4 Plan of Implementation

2.4.1 Permitted Storm Water Dischargers

One of the main transport mechanisms of trash to receiving waters is through the storm water system. The final Trash Amendments therefore focus on trash discharge reduction by requiring that NPDES storm water permits, specifically the MS4 Phase I and Phase II Permits, Caltrans Permit, the CGP, and the IGP, contain provisions that require permittees to comply with the prohibition of discharge. These provisions focus on trash control in the locations with high trash generation rates, in order to maximize the value of limited resources spent on addressing the discharge of trash into state waters.

MS4 Phase I and Phase II Permits

Municipalities are a source of trash generation, especially in areas with urban land uses and large population densities. MS4 Phase I and Phase II NPDES permits, which regulate discharges of storm water from MS4 systems throughout the state, have existing requirements for trash reduction in the form of institutional controls such as street sweeping and educational programs. Even with these existing provisions,

municipalities, however, continue to be significant dischargers of trash to waters of the state.

Under the final Trash Amendments, MS4 Phase I and Phase II NPDES permittees with regulatory authority over land uses can comply with the prohibition of discharge of trash under a dual alternative compliance approach or "Tracks". The Track requirements would be inserted into NPDES permits. Both Tracks have permittees focus their trash control efforts on priority land uses (i.e., those land uses that studies have shown generate significant sources of trash) (City of Los Angeles 2002, County of Los Angeles Department of Public Works 2004a; 2004b, City and County of San Francisco 2007, Moore et al. 2011, City of Cupertino 2012, City of San Jose 2012, EOA, Inc. 2012a). The final Trash Amendments define priority land uses as land uses that are actually developed (i.e., not simply zoned) as high density residential, industrial, commercial, mixed urban, and public transportation stations[4]. In addition, the final Trash Amendments provide that an MS4 may request that its permitting authority approve an equivalent alternative land use (i.e., an alternative to the land uses listed above) if that MS4 has land use(s) within its jurisdiction that generate trash at rates that are equivalent to or greater than one or more of the priority land uses listed This alternative option would help MS4s and their permitting authorities focus on controlling trash in each MS4's highest trash generating areas. The intent of this prioritization of land uses is to allow MS4s to allocate trash-control resources to the developed areas that generate the highest sources of trash.

Under Track 1, a permittee would install, operate and maintain full capture systems[5] for storm drains that capture runoff from priority land uses in their respective jurisdictions. Under Track 2, a permittee would develop and implement a plan that uses any combination of controls, such as full capture systems, other treatment controls (e.g., partial capture devices and green infrastructure and low impact development controls (LID)), institutional controls, and/or multi-benefit projects[6] to achieve the same performance results as Track 1 would achieve, referred to as, and defined as "full

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[4] The final Trash Amendments specifically define each of these five regulated land uses for purposes of implementation of the water quality objective and the prohibition of discharge; so, these definitions may differ substantially from an MS4's own local definition of those land uses in its ordinances, general plan, etc.

[5] Full capture systems for storm drains are defined in the final Trash Amendments as treatment controls (either a single device or a series of devices) that traps all particles that are 5 mm or greater, and has a design treatment capacity that is either: a) of not less than the peak flow rate, Q, resulting from a one-year, one-hour, storm in the subdrainage area, or b) appropriately sized to, and designed to carry at least the same flows as, the corresponding storm drain. Examples of full capture systems are described in greater detail in Section 5.2 of this document.

[6] Multi-benefit projects are treatment control projects that achieve any of the benefits set forth in Section 10562, subdivision (d) of Division 6 of the Water Code (the Watershed, Clean Beaches, and Water Quality Act). These projects could be designed to infiltrate, recharge or store storm water for beneficial reuse, to develop or enhance habitat and open space through storm water management, and/or reduce storm water runoff volume while removing the transport of trash. Multi-benefit projects can be implemented between contiguous permittees within a watershed for increased effectiveness and cost-sharing to reduce trash and improve storm water.

capture system equivalency".[7] Due to particular site conditions, types of trash, and the available resources for maintenance and operation within a municipality, the combination of full capture systems, multi-benefit projects, other treatment controls, and institutional controls used to comply with the prohibition of discharge will vary by permittee. However, it is the State Water Board's expectation that full capture systems should be preferentially selected by a permittee in executing the implementation plan to control the discharge of trash and achieve compliance with full capture system equivalency so long as such installation is not cost prohibitive.

MS4 storm water permittees that opt to comply under Track 2 would have to submit implementation plans to their permitting authority, which is the Water Board that issues the permit. The implementation plans must: (a) describe the combination of controls selected by each MS4, and the rationale for the selection, (b) describe how the combination of selected controls is designed to achieve full capture system equivalency, and (c) how the full capture system equivalency will be demonstrated. The implementation plans are subject to the approval by the permitting authority. The intention for the implementation plans is to assist in long term plan efforts and provide specifics on the trash controls effort to be incorporated into the implementing permit.

Non-Traditional Small MS4s or Other Land Uses or Areas within an MS4

The final Trash Amendments allow for the Water Boards to determine that at the local or regional level, areas outside of the scope of the priority land uses within an MS4 may generate substantial amounts of trash. Possible areas may include locations such parks, stadia, schools, campuses, and roads leading to landfills. Some Non-Traditional Small MS4s[8] maybe outside or lack jurisdictional authority over priority land uses. After reaching that determination in consultation with the applicable MS4, the appropriate Water Board may require the MS4 to adopt Track 1 or Track 2 control measures over such land uses or locations. The proposed final Trash Amendments have been modified to more accurately reflect this intent.

California Department of Transportation

Caltrans designs and operates California's state highway system. Caltrans' operation of this linear transportation system requires that it have its own MS4 permit distinct from the MS4 permits for Phase I and Phase II municipalities with regulatory authority over land uses. For example, the locations of high trash generating areas within Caltrans' jurisdiction are different than the priority land uses within municipalities' jurisdictions. Based on information from Caltrans' trash studies (Caltrans 2000, Caltrans 2004), coordination with Caltrans, Adopt-A-Highway program, and Keep California Beautiful program (Mid Atlantic Solid Waste Consultants 2009), the final Trash Amendments focus Caltrans' compliance efforts on the significant trash generating areas within the state's linear transportation system. Significant trash generating areas may include

[7] See section 2.4.1 for Full Capture System Equivalency discussion.

[8] Federal and State operated facilities that can include universities, prisons, hospitals, and military bases (e.g., State Army National Guard barracks, parks and office building complexes).

areas such as: (1) highway on- and off- ramps in high-density residential, commercial, mixed urban, and industrial land uses; (2) rest areas and park-and-rides; and (3) state highways in commercial and industrial land uses. Additionally, the final Trash Amendments give Caltrans the opportunity to identify other significant trash generating areas (i.e., mainline highway segments) by conducting pilot studies and/or surveys.

To comply with the prohibition of discharge of trash, Caltrans must comply with requirements in all significant trash generating areas, similar to Track 2 for MS4 Phase I and II permittees, by installing, operating, and maintaining any combination of full capture systems, multi-benefit projects, other treatment controls, and/or institutional controls. Caltrans must demonstrate that such combination of controls achieves full capture system equivalency. Furthermore, in areas where Caltrans' operations overlap with the jurisdiction of an MS4 Phase I or II permittee with regulatory authority over priority land uses, the final Trash Amendments direct the applicable parties to coordinate efforts to install, operate, and maintain treatment and institutional controls.

Similar to MS4 Phase I and Phase II permittees, the final Trash Amendments require Caltrans to submit an implementation plan that: (a) describes the specific locations of its significant trash generating areas, (b) the combination of controls selected and the rationale for the selection, and (c) how the combination of controls will achieve full capture system equivalency.

Industrial and Construction Permittees

Under the final Trash Amendments, dischargers with industrial or construction NPDES permits (e.g., IGP or CGP) would be required to eliminate trash from all storm water discharges and authorized non-storm water discharges. This outright prohibition includes discharges associated with the site or facility, as well as any additional space such as a parking lot. If the industrial or construction permittee, however, demonstrates to the Water Board that it is unable to comply with the outright prohibition, then the permittee, through the discretion of the Water Board, may require the discharger to comply with one of two options. Under the first option, the permittee would install, operate, and maintain full capture systems for storm drains that service the facility or site. As a second option, the permittee could develop and execute an implementation plan that committed to any combination of controls, such as full capture systems, other treatment controls (e.g. partial capture devices and green infrastructure and low impact development controls), institutional controls, and/or multi-benefit projects to achieve full capture system equivalency. As specified in Section 2.3, IGP permittees would continue to comply with the preproduction plastic provisions as specified by the "Preproduction Plastic Debris Program" under Water Code section 13367(a) and the requirements in the IGP (Order No. 2014-0057-DWQ).

Full Capture System Equivalency

The following entities must establish full capture system equivalency: (1) MS4 Phase I and Phase II permittees that elect Track 2, (2) Caltrans, and (3) IGP permittees that elect implementation provisions similar to Track 2. The final Trash Amendments define full capture system equivalency as:

> [T]he trash load that would be reduced if full capture systems were installed, operated, and maintained for all storm drains that capture runoff from the relevant areas of land (priority land uses, significant trash generating areas, facilities or sites regulated by NPDES permits for discharges of storm water associated with industrial activity, or specific land uses or areas that generate substantial amounts of trash, as applicable). The full capture system equivalency is a trash load reduction target that the permittee quantifies by using an approach, and technically acceptable and defensible assumptions and methods for applying the approach, subject to the approval of permitting authority.

During the public participation process for the Trash Amendments, many commenters requested clarification as to how Track 1 equivalency could be determined. While the permittee is responsible for determining the trash load reduction target, the proposed final Trash Amendments provide two examples of approaches that a permittee could use to determine full capture system equivalency: a trash capture rate approach and a reference approach. Other approaches may be more appropriate for any individual permittee's situation. The two methods identified in the amendment include:

1) Trash Capture Rate Approach. Directly measure or otherwise determine the amount of Trash captured by full capture systems for representative samples of all similar types of land uses, facilities, or areas within the relevant areas of land over time to identify specific trash capture rates. Apply each specific trash capture rate across all similar types of land uses, facilities, or areas to determine full capture system equivalency. Trash capture rates may be determined either through a pilot study or literature review. Full capture systems selected to evaluate trash capture rates may cover entire types of land uses, facilities, or areas, or a representative subset of types of land uses, facilities, or areas. With this approach, full capture system equivalency is the sum of the products of each type of land use, facility, or area multiplied by trash capture rates for that type of land use, facility, or area.

2) Reference Approach. Determine the amount of trash in a reference receiving water in a reference watershed where full capture systems have been installed for all storm drains that capture runoff from all relevant areas of land. The reference watershed must be comprised of similar types and extent of sources of trash and land uses (including priority land uses and all other land uses), facilities, or areas as the permittee's watershed. With this approach, full capture system equivalency would be demonstrated when the amount of trash in the receiving water is equivalent to the amount of trash in the reference receiving water.

As an example, an MS4 Phase I or Phase II permittee could determine trash capture rates for representative types of priority land uses where full capture devices had already been installed (e.g. for high density residential, commercial, industrial, mixed urban, and transportation station land uses). The trash capture rate should be

expressed as an amount of trash captured per time per area (e.g., pounds of trash per day per acre). The permittee could determine these trash capture rates by directly measuring the amount of trash collected by full capture systems over a defined period of time, such as 6 months, in each of the representative priority land use types. The representative land use types could be either the entire land use or a subset of a land use. The permittee could also utilize trash capture rates for similar land uses in other jurisdictions that have conducted trash capture rate studies, such as through a trash or debris TMDL.

Once the permittee has determined representative trash capture rates, those representative trash capture rates are applied to all similar priority land uses, where for instance the trash capture rate for high density residential is multiplied by the total area of all high density residential land uses in the permittee's jurisdiction. The full capture system equivalency would be determined by summing the trash capture loads for all priority land uses. The trash reduction target should be expressed as the amount of trash captured per time, e.g., pounds of trash per day or tons of trash per year.

The Trash Capture Rate Approach is focused on quantifying the amount of trash capture in particular land uses or location. Alternatively, the Reference Approach is focused on the condition of the receiving water by assessing and comparing the trash conditions of a reference receiving water with the receiving water from the permittee's jurisdiction. The permittee determines the amount of trash in a reference receiving water within a reference watershed where full capture systems have been installed for all storm drains that capture runoff from all relevant areas of land (e.g., priority land uses, significant trash generating areas, or facilities or sites). This means the reference watershed must be comprised of similar types and extent of land uses (including priority land uses and all other land uses), facilities, or areas as the permittee's watershed. The Reference Approach would be best executed using a reference receiving water that has a fully or nearly full implemented trash or debris TMDL.

Within the scope of the Trash Amendments, full capture system equivalency must be established after the permittee elects Track 2 or implementation provisions similar to Track 2 prior to implementation of trash controls. The details of how the selected controls are designed to achieve full capture system equivalency and how full capture system equivalency will be demonstrated are to be included in the permittee's implementation plan. The implementation plan is subject to the approval of the permitting authority. Therefore, the permitting authority has the discretion to require changes to the quantification of full capture system equivalency. As trash controls are implemented, the focus of monitoring program is to assess and monitor the progress towards achievement of the full capture system equivalency, and thus the prohibition of discharge.

2.4.2 Nonpoint Source Dischargers

Under the final Trash Amendments, nonpoint source dischargers subject to WDRs or waivers of WDRs, and not covered under an NPDES permit, required, at the discretion of the Water Board, to implement any appropriate trash controls in areas or facilities that generate substantial amounts of trash (e.g., high usage campgrounds, picnic areas, or

beach recreation areas). Trash control requirements for such nonpoint dischargers would be discharger specific, varying from treatment controls to institutional controls.

2.5 Time Schedule

Compliance with the water quality objective and plan for implementing the prohibition of discharge would be demonstrated by permittees in accordance with a time schedule set forth in the final Trash Amendments. The time schedule would be contingent on the effective date of the first implementing permit (whether such permit is modified, re-issued, or newly adopted). MS4 Phase I and II permittees with regulatory authority over land uses complying under Track 1 or Track 2 would have ten years from the effective date of the implementing permit to demonstrate full compliance with Track 1 or Track 2, as the case may be.

For MS4 Phase I and Phase II permittees that are newly designated as part of an existing MS4 it may not be feasible to expect compliance within ten years from the effective date of the first implementing permit (e.g., where designation occurs nine years after the first implementing permit). To address this, the final Trash Amendments have been clarified so that for MS4 Phase I and Phase II permittees that are designated after the effective date of the Trash Amendments, full compliance must be demonstrated within ten years of the effective date of the designation.

Several of the time schedule provisions in the proposed final Trash Amendments do not apply to MS4 permittees subject to the San Francisco Bay MRP or the East Contra Costa Municipal Storm Water Permit, because those permits already require control requirements substantially equivalent to Track 2. As a result, those MS4 permittees need not elect whether they will proceed with Track 1 or Track 2. Additionally, many of those MS4 permittees have already submitted a Short-Term Trash Load Reduction Plan and Long-Term Trash Load Reduction Plan that may be equivalent to the implementation plan required by the Trash Amendments. In order to reduce duplicative efforts, the Trash Amendments' requirement that MS4 permittees submit implementation plans does not apply to a San Francisco Bay MRP or the East Contra Costa Municipal Storm Water Permit, because those permits already require control requirements substantially equivalent to Track 2." "In order to reduce duplicative effort, the Trash Amendments' requirement that MS4 permittees submit implementation plans does not apply to a San Francisco Bay MRP or an East Contra Costa permittee if the San Francisco Bay Water Board or the Central Valley Water Board determines that the Short-Term Trash Load Reduction Plan and Long-Term Trash Load Reduction Plan for that permittee are equivalent to the implementation plan required by the Trash Amendments. Additionally, the pertinent permitting authority for the aforementioned permits may establish an earlier full compliance deadline than the ten-year compliance schedule specified for Track 2.

For Non-Traditional Small MS4s permittees or other land uses or areas within an MS4 that determined by the Water Boards to generate substantial amounts of trash and require trash controls, the Water Boards has the discretion to determine the time schedule for compliance with a maximum allotment of ten years from the determination. The determined time schedules for these areas should be relative to the size of the area and type of trash controls.

Caltrans, too, would have ten years from the effective date of its implementing permit to demonstrate compliance. For MS4 Phase I and II permittees with regulatory authority over land uses and Caltrans, in no case would their final compliance date be later than fifteen years from the effective date of the final Trash Amendments. Within the ten-year compliance periods discussed above, the Water Board can set interim compliance milestones within a specific permit. These interim milestones could be set, for example, as a percent reduction or percent installation per year.

Industrial and construction permittees would need to demonstrate full compliance within the deadlines specified in their respective implementing permits. Such deadlines may not exceed the terms of the first implementing permits (whether such permits are modified, re-issued or newly adopted).

Reaching full compliance with the prohibition of discharge would require planning efforts on the part of MS4 Phase I, MS4 Phase II, and Caltrans permittees. To assist in effective planning, within 18 months of the effective date of the final Trash Amendments the applicable Water Board would issue a Water Code section 13267 or 13383 order to its MS4 Phase I and MS4 Phase II permittees requesting notification within three months of each permittees' elected compliance track (i.e., either Track 1 or Track 2). If a permittee elects to comply under Track 2, then such a permittee needs to submit an implementation plan to the applicable Water Board within 18 months of receiving the 13267 or 13383 order.

To assist Caltrans with its planning efforts, the State Water Board would issue a Water Code section 13267 or 13383 order within 18 months of the effective date of the final Trash Amendments requesting an implementation plan.

~~2.6~~ Time Extension for Achieving Full Compliance

The proposed draft Trash Amendments provided a time extension to MS4 Phase I and II permittees with regulatory authority over land uses for each regulatory source control adopted by a MS4 Phase I or II permittee. Each regulatory source control adopted by a permittee could provide such permittee with a one-year time extension to achieve final compliance with either Track 1 or Track 2. The time extension option was proposed to receive public input on the potential advantages and disadvantages to this approach.

However, subsequent to the State Water Board's public workshop and the public hearing on the proposed Trash Amendments, Senate Bill 270 (2014 Stats. Ch. 850) was enacted. That new law enacts a state-wide plastic bag carry-out ban pertaining to grocery stores and pharmacies that have a specified amount of sales in dollars or retail floor space, which goes into effect July 1, 2015, and imposes the same ban on convenience stores and liquor stores a year later. The new law will implement a product ban, which was generally the type of regulatory source control contemplated by the State Water Board and discussed with the public with regard to consideration of the time extension option. Essentially, enactment of Senate Bill 270 removed the need for regulatory source controls, particularly product bans that would reduce trash, in the proposed Trash Amendments. As a result, the final Trash Amendments omit "regulatory source controls" from a method to comply with Track 2 and omit any corresponding allowance of time extensions.

2.7 Monitoring and Reporting Requirements

Under the final Trash Amendments, the Water Boards would require monitoring and reporting requirements (with monitoring objectives) in MS4 Phase I, MS4 Phase II, and Caltrans permits to ensure adequate trash control. The requirements in the final Trash Amendments represent the minimum requirements to be included in such permits.

The proposed monitoring requirements vary among NPDES storm water permits and tailored to the type of compliance option and permittee. For example, MS4 permittees complying under Track 1 (by installing, maintaining, and operating a network of full capture systems in the priority land uses) would not have minimum monitoring requirements. Instead, permittees would need to provide an annual report to the applicable Water Board demonstrating installation, operation, and maintenance of full capture systems. The annual report would include a Geographic Information System (GIS) based map depicting the locations of each installed full capture system and the drainage area that serves each full capture system. The reporting requirements could be included into annual reports requested by the Water Board.

MS4 permittees complying under Track 2, on the other hand, do have minimum monitoring requirements. They would develop and implement annual monitoring that demonstrates the effectiveness of the selected combination of treatment and institutional controls and compliance with full capture system equivalency. Such permittees would be required to submit a monitoring report to the applicable Water Board on an annual basis. The monitoring reports must include a GIS map depicting the locations and drainage area served by each treatment control, institutional control, and/or multi-benefit project. In addition to the GIS map, the annual monitoring report should consider a number of questions designed to demonstrate the effectiveness of the selected controls and compliance with full capture system equivalency. Using a questions-based approach provides flexibility to the permit writers to select the most relevant monitoring techniques and expectations for their respective permits.

The final Trash Amendments would require the Caltrans permit to contain monitoring requirements that Caltrans develop and implement annual monitoring plans that demonstrate the effectiveness of the selected combination of treatment and institutional controls and compliance with full capture system equivalency. The annual monitoring reports would be provided to the State Water Board and the reports must include a GIS map with the locations of each of the treatment controls and institutional controls. In addition to the GIS map, each annual monitoring report should consider a number of questions designed to demonstrate the effectiveness of the selected controls and compliance with full capture system equivalency.

The IGP and CGP are statewide permits that regulate discharges of storm water and authorized non-storm water discharges associated with very specific industrial activities. These permits apply to thousands of projects with diverse features and characteristics between facilities and sites. As such, prescribing appropriate and consistent trash monitoring and reporting requirements for all permittees poses significant challenges. While the final Trash Amendments do not contain trash monitoring requirements for IGP and CGP permits, permittees could, however, be required to report the measures used to either (1) achieve the outright prohibition or (2) achieve equivalent trash control

through alternative methods. The reporting would occur in reissuances or through regional water board actions aimed at adding monitoring and requirements to permittees. Additional trash monitoring and reporting can be required through existing authorities in the California Water Code, and in some cases directly through language in the IGP and CGP.

2.8 Full Capture System Certification

At present, the Los Angeles Water Board oversees a full capture system certification process (Bishop 2004, 2005, 2007, Dickerson 2004, Smith 2007, Unger 2011). In addition, the San Francisco Water Board evaluated effectiveness of full capture systems listed in Appendix I of the Bay Area-wide Trash Capture Demonstration Project (Demonstration Project), Final Project Report (San Francisco Estuary Partnership 2014). For statewide consistency, the State Water Board would take responsibility for the certification process for new full capture systems. The process for the certification would follow a similar process established by the Los Angeles Water Board (Yang 2004). Prior to installation, the full capture systems must be certified by the Executive Director, or designee, of the State Water Board. Uncertified systems will not satisfy the Trash Amendments. To request certification, the permittee would submit a certification request letter, including supporting documentation, to the State Water Board's Executive Director. The Executive Director or designee will issue a written response either approving or denying the proposed certification. However, to ensure efficient use of resources and prevent municipalities from having to remove properly functioning capture systems, full capture systems previously certified by the Los Angeles Water Board or identified by the Demonstration Project would be considered certified for use by permittees.

2.9 Reasonably Foreseeable Methods of Compliance

The State Water Board's SED for the proposed project is required to include an analysis of the reasonably foreseeable methods of compliance with the project (see 23 CCR 3777; Pub. Res Code § 21159). Although the State Water Board is not required to conduct a site-specific project level analysis of the methods of compliance (23 CCR 3777(c); Pub. Res Code § 21159(d)), a general description of the reasonably foreseeable methods of compliance is contained in Section 5 of the Final Staff Report.

2.10 Location and Boundaries of the Proposed Project

The State CEQA Guidelines require identification of "the precise location and boundaries of the proposed project [to be] shown on a detailed map" (14 CCR 15124(d)). The location of the State Water Board's proposed project to adopt the Trash Amendments is all surface waters of the State, with the exception of waters within the jurisdiction of the Los Angeles Water Board for which trash TMDLs are in effect prior to the effective date of the Trash Amendments. This necessarily includes the geographies of the nine regional water boards within California, as set forth in the Environmental Setting section and the maps located therein (Section 3) of the Final Staff Report.

2.11 Agencies Expected to use this Staff Report in their Decision Making and Permits

The State CEQA Guidelines require that the project description include, among other things, "a statement briefly describing the intended uses of the EIR" (14 CCR 15124(d)). The State Water Board will use this Final Staff Report in determining whether to adopt the final Trash Amendments. A Water Board may use the information contained within this Final Staff Report for future decision making and/or permitting. Furthermore, in order to achieve the water quality objective, all NPDES permits would contain provisions to implement the final Trash Amendments. Therefore, if the proposed project is approved, the following entities, where they are considered public agencies for purposes of CEQA, may be considered Responsible Agencies and may use the Final SED adopted by the State Water Board in their decision making actions to comply with the final Trash Amendments:

- NPDES permitted storm water dischargers
- Dischargers with WDRS or waivers of WDRs
- Water Boards

2.12 Other Approvals Required to Implement the Trash Amendments

Except as may be required by other environmental review and consultation requirements as described below, no other agency approvals are expected to be required to implement the final Trash Amendments. However, governing bodies of NPDES permittees may determine that separate approval actions are necessary to formally approve the approach they would take to comply with permits that implement the final Trash Amendments (e.g., whether to comply under Track 1 or Track 2). Beyond analyzing the reasonably foreseeable methods of compliance, the Final Staff Report is not required to, and therefore does not analyze the detail related to the project specific actions that might be implemented by any particular permittee as a result of the State Water Board's proposed project (see 23 CCR 3777(c); Pub. Res Code § 21159(d)).

After adoption by the State Water Board, the Trash Amendments must be submitted to the California Office of Administrative Law for review and approval. Because the Trash Amendments include the adoption of a new water quality standard, they must also be approved by U.S. EPA.

2.13 Environmental Review and Consultation Requirements

As described in other portions of the Final Staff Report, depending on the location, size, and particular compliance method, reasonably foreseeable methods of compliance could involve impacts to specific environmental resources that may trigger related environmental review and consultation requirements required by federal, state, or local laws, regulations, or policies. Since the Final Staff Report does not conduct a project-level analysis of the reasonably foreseeable methods of compliance, it is not possible to determine the specific environmental review and consultation requirements required by federal, state, or local laws, regulations, or policies (nor the particular magnitude of any specific environmental impact). Compliance with any specific environmental review and

consultations would need to be conducted by the MS4s or NPDES permittees complying with the provisions in their permits that incorporate the requirements of the final Trash Amendments.

2.14 Public Process

Initial Scoping Meetings

In July 2007, the first scoping meeting was held in San Francisco to provide opportunity for public comment on several proposed Ocean Plan projects, including trash in ocean waters. Oral and written comments were received, but development of a trash project was delayed due to shifting resources to other priority plans and policies.

A subsequent scoping meeting was conducted to provide an additional forum for public comment on the preparation of the Draft Staff Report for breadth of a Statewide Policy for Trash Control in Waters of the State. State Water Board staff held scoping meetings on October 7, 2010, at Central Valley Water Quality Control Board Headquarters in Rancho Cordova, California, and on October 14, 2010, at Inland Empire Utility Agency Headquarters in Chino, California. Comments were provided by stakeholders regarding the scope and content of the environmental information required by federal and state regulations. Additionally, information was submitted on the range of actions, alternatives, mitigation measures, and possible significant effects to be analyzed within this document. Since that time, the scope of the project has transition from a statewide policy to amendments to statewide water quality control plans.

On March 15, 2011, in Resolution 2011-0013, the State Water Board adopted the Ocean Plan Triennial Review Workplan for the period 2011-2013. In the Triennial Review Workplan, the State Water Board made the regulation of plastic debris and other trash a very high priority.

Public Advisory Group

As part of the scoping process and in response to the Scoping Meeting, State Water Board staff convened a Public Advisory Group to assist with the initial development of the Trash Amendments. The Public Advisory Group consisted of a diverse group of stakeholders representing municipalities, Caltrans, industry, and environmental groups. The Public Advisory Group included:

- Sean Bothwell, California Coastkeeper Alliance
- Geoff Brosseau, The California Stormwater Quality Association
- Miriam Gordon, Clean Water Action
- Gary Hildebrand, Los Angeles County
- Kirsten James, Heal the Bay
- Scott McGowen, Caltrans
- Charles Moore, Algalita Marine Research Institute
- Tom Reeves, City of Monterey
- Tim Shestek, American Chemistry Council
- Leslie Tamminen, Seventh Generation Advisors

The Public Advisory Group held six meetings closed to the public to discuss the proposed Trash Amendments (Table 2). At these meetings, the Public Advisory Group

provided comments and feedback to the development of the proposed Trash Amendments and the Draft Staff Report.

Table 2. Public Advisory Group.

Date	Location
March 6, 2013	CalEPA Bldg, Sacramento
August 13, 2012	CalEPA Bldg, Sacramento
May 22, 2012	CalEPA Bldg, Sacramento
October 12 & 13, 2011	Cabrillo Aquarium, San Pedro
August 30, 2011	CalEPA Bldg, Sacramento
July 26, 2011	CalEPA Bldg, Sacramento

Focused Stakeholder Outreach Meetings

In March, April, and May 2013, State Water Board staff held fourteen focused meetings with stakeholders from industry, municipal governments, environmental interest groups, and staff from the San Francisco Water Board, Los Angeles Water Board, Caltrans, and CalRecycle (Table 3). The objective of the meetings was to provide an overview of the development of the proposed Trash Amendments and to receive feedback on key issues before the public release of the Draft Staff Report for the proposed Trash Amendments from focused sets of stakeholders. Selected meeting participants were provided an issue paper that provided an overview of the fundamentals of the proposed Trash Amendments and five key unresolved options to discuss regarding the content of the proposed Trash Amendments. The five unresolved options included:

1) Options to address the existing trash TMDLs and the San Francisco Bay Region Municipal Regional Storm Water Permit.
2) Options regarding the level of specificity to include in the Track 2 monitoring plan requirements.
3) Options for full capture system definition.
4) Options for incentivizing regulatory source controls.
5) Considerations regarding preproduction plastics.

Table 3. Focused Stakeholder Meetings.

Stakeholder Group	Meeting Date and Location
Caltrans	3/13/13 Sacramento, CA
Industrial Permittees	4/3/13 Sacramento, CA
Environmental Groups	4/3/13 Sacramento, CA
Los Angeles Water Board	4/5/13 Los Angeles, CA
MS4 Permittees	4/8/13 Sacramento, CA
MS4 Permittees	4/10/13 Santa Rosa, CA
MS4 Permittees	4/15/13 San Jose, CA
MS4 Permittees	4/16/13 San Luis Obispo, CA
MS4 Permittees	4/19/13 Santa Clarita, CA
MS4 Permittees	4/22/13 Costa Mesa, CA
CalRecycle	5/15/13 Sacramento, CA
Industrial Permittees	5/17/13 Riverside, CA
San Francisco Bay & Los Angeles Water Board MS4 Permittees	5/24/13 Sacramento, CA
San Francisco Bay Water Board	5/24/13 Sacramento, CA

Public Workshop and Public Hearing

On June 10, 2014, the State Water Board provided the Draft Staff Report, including the Draft SED for the proposed Trash Amendments to the public and public with an accompanying notice of the dates the State Water Board would hold a public workshop and a public hearing.

On July 16, 2014, State Water Board held a public workshop at the CalEPA Headquarters Building in Sacramento. The purpose of the public workshop was to provide information and answer questions from the public on the proposed Trash Amendments; no action was taken by the State Water Board. At the public workshop, State Water Board staff presented an overview of the proposed Trash Amendments. The staff presentation was followed by three presentations from PAG members: 1) Algalita Marine Research Institute, California Coastkeeper Alliance, Heal the Bay, and Seventh Generation Advisors, 2) American Chemistry Council, and 3) CASQA. In addition to presentations, fourteen groups provided public comment.

The State Water Board held a public hearing on the proposed Trash Amendments on August 5, 2014 at the CalEPA Headquarters Building in Sacramento, the date of which coincided with the close of the written comment period. The purpose of the public hearing was to receive oral comments and testimony on the proposed Trash Amendments, Draft Staff Report, including the Draft SED. Participants were given an opportunity to supplement their written comments with oral statements. No action was taken by the State Water Board. At the public hearing, there was a staff presentation and twenty-three groups provided public comment. At the close of the comment period at noon on August 5th, a total of seventy-six written comment letters were received. The State Water Board shall develop complete written response to the written comments timely received within the August 5th deadline.

2.15 Project Contact

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3 ENVIRONMENTAL SETTING[9]

A variety of environmental conditions exist in California. For water quality management, section 13200 of Porter-Cologne divides the state into nine different hydrologic regions. Brief descriptions of the regions and the water bodies addressed by this Final Staff Report are presented below. The information provided in this section is extracted from the ten basin plans created by each of the nine regional water boards. In addition to a description of each region, the land coverage of each region is addressed. This analysis provides an estimate of the area across California where NPDES permittees, specifically land uses for MS4 Phase I and MS4 Phase II permittees, with the exception of waters with existing trash and debris TMDLs within the jurisdiction of the Los Angeles Water Board, would have to comply with the prohibition of discharge for trash and the implementation provisions.

3.1 Trash in California

Throughout California, trash is found in streams, rivers, lakes, estuaries, beaches, and the ocean. The continued presence of trash in state waters is shown through data from the California Coastal Commission and Ocean Conservancy organized Coastal Cleanup Day. Since 1986, volunteers have collected trash from beaches, inland waterways, coastal waters, and underwater. Volunteers have removed approximately 690,322 pieces of trash from up to 2,023 miles of Coastal Cleanup sites. The top ten items collected from 1989-2012, which represented nearly 90 percent of the items removed, were: (1) cigarette butts; (2) bags (paper and plastic); (3) food wrappers and containers; (4) caps and lids; (5) cups, plates, forks, knives, and spoons; (6) straws and stirrers; (7) glass beverage bottles; (8) plastic beverage bottles; (9) beverage cans; and (10) building materials. The snapshot of the trash collected from Coastal Cleanup Day provides a clear baseline of trash pollution throughout the surface waters in California.

To address trash pollution, municipalities across California spend about half a billion dollars each year to combat, clean up, and prevent trash from entering state waters (Stickel et. al 2013). There are six main trash-control strategies employed by a municipality: waterway and beach cleanup, street sweeping, installation of full capture devices, storm drain cleaning and maintenance, manual cleanup of trash, and public education.

While municipalities employ at least a minimal amount of trash management, there are several regions with comparatively more extensive management strategies. In the Los Angeles and San Francisco Bay regions, municipalities have extensive trash control measures in response to 303(d) listed water bodies for trash and debris. The Los Angeles Water Board has adopted fifteen TMDLs with a numeric target of zero trash.

[9] CEQA directs that the environmental setting normally be used as the baseline for determining significant impacts of a proposed project (Cal. Code Regs., tit.14, §15125, subd. (a)). This section presents a broad overview of the environmental setting for the state of California related to the proposed final Trash Amendments. The section presenting the impact analysis in this Final Staff Report, including SED will identify, where relevant, any specific setting information relevant to the detailed assessment of environmental impacts of the proposed action.

While the San Francisco Bay MRP applies trash provisions to 76 municipalities to address the 27 303(d) listed water bodies in the region. Caltrans has multiple trash management strategies such as installation of gross separation systems, street sweeping, manual collection of trash with the Adopt-A-Highway Program, and public education with Don't Trash California. The CGP (2009-0009-DWQ amended by 2010-0014-DWQ & 2012-0006-DWQ) prohibits the discharge of any debris from construction sites and encourages the uses of more environmentally safe, biodegradable materials on construction sites. Facilities enrolled under the IGP must comply with the "Preproduction Plastic Debris Program" (Wat. Code § 13367(a)) by following the BMPs in the manufacturing, handling, and transporting of preproduction plastics.

The presence of trash and efforts to address trash in California are described in further detail in Appendix A.

3.2 Developed Land by Land Cover and Regional Water Board

The final Trash Amendments focus on areas with high trash generation rates, i.e., priority land uses for MS4 Phase I and Phase II permittees and significant trash generating areas for Caltrans. There is no existing data on the location of priority land uses are. A GIS analysis was used to determine the possible geographic scope of the final Trash Amendments. Land cover data within census designated places and regional water board boundaries were used to provide an estimate the area covered under the final Trash Amendments. These estimates do not represent exact locations for trash controls, but provide an approximate area. The U.S. Census Bureau uses census designated places to delineate settled concentrations of population that are identifiable by name but are not legal designations incorporated under the laws of the state. Census designated places are delineated cooperatively by state and local officials and the Census Bureau before each Decennial Census. The 2012 Census Designated Places boundary (the legal boundary designation as of January 1, 2012) shapefile can be accessed at: http://www.census.gov/geo/maps-data/data/tiger-line.html. The 2012 California Census Designated Place category identified 1517 cities, with a total area of 9,621,423 acres (Figure 1).

Since counties do not have a uniform classification of land cover codes or divisions, urban land cover data was extracted from USGS Multi-Resolution Land Characteristics Consortium Land Cover Data 2006. The data can be accessed at: http://www.mrlc.gov/nlcd2006.php. To estimate the area covered under the final Trash Amendments, Land Use/Land Cover categories for developed low intensity, medium intensity, and high intensity were identified:

- Land Use (LU) 22 or "Developed, Low Intensity". This is defined as developed low intensity includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20-49 percent of total cover. These areas most commonly include single-family housing units.

- Land Use (LU) 23 or “Developed, Medium Intensity”. This is defined as developed medium intensity includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50-79 percent of the total cover. These areas most commonly include single-family housing units.

- Land Use (LU) 24 is “Developed, High Intensity”. This is defined as developed high intensity includes highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80-100 percent total cover.

Although there was a lack of statewide consistency in land use planning and GIS data from individual municipalities, “Developed, High Intensity” was assumed to be analogous proxy to the priority land uses of the final Trash Amendments: high density residential, industrial, commercial, mixed urban, and public transportation stations. A representative estimate for Caltrans’ significant trash generating areas was not included in the estimate. Additionally, the priority land uses does not include low density residential, as represented by “Developed, Low Intensity”.

The number of acres for the three developed land cover classes was calculated for each regional water board (Figure 2,

Table 4). Distribution of land cover classes varies by regional water board. The Central Valley Water Board has the most total acreage, but a very low percentage of Central Valley Region total area is highly developed

(2.38 percent). Higher coverage of developed land is generally seen in the southern coastal regions. The Los Angeles Water Board has the most acres of high intensity developed area (4.09 percent), while the Santa Ana Water Board has the highest number of total developed acres (28.74 percent) (

Table 5). The number of acres for the three classes was also calculated within census designated place boundaries (

Table 5). As with the total regional water board area, distribution of land cover classes with census designated places varies by a regional water board. When only considering areas with concentrated populations (i.e., within census designated places), Los Angeles Water Board has the most developed acres as well as the highest percentage of medium intensity, high intensity, and total developed land, followed closely by Santa Ana Water Board (Table 6). As previously noted, many of the priority land uses with the Los Angeles Water Board have waste load allocations for trash or debris TMDLs, and thus not applicable to the final Trash Amendments.

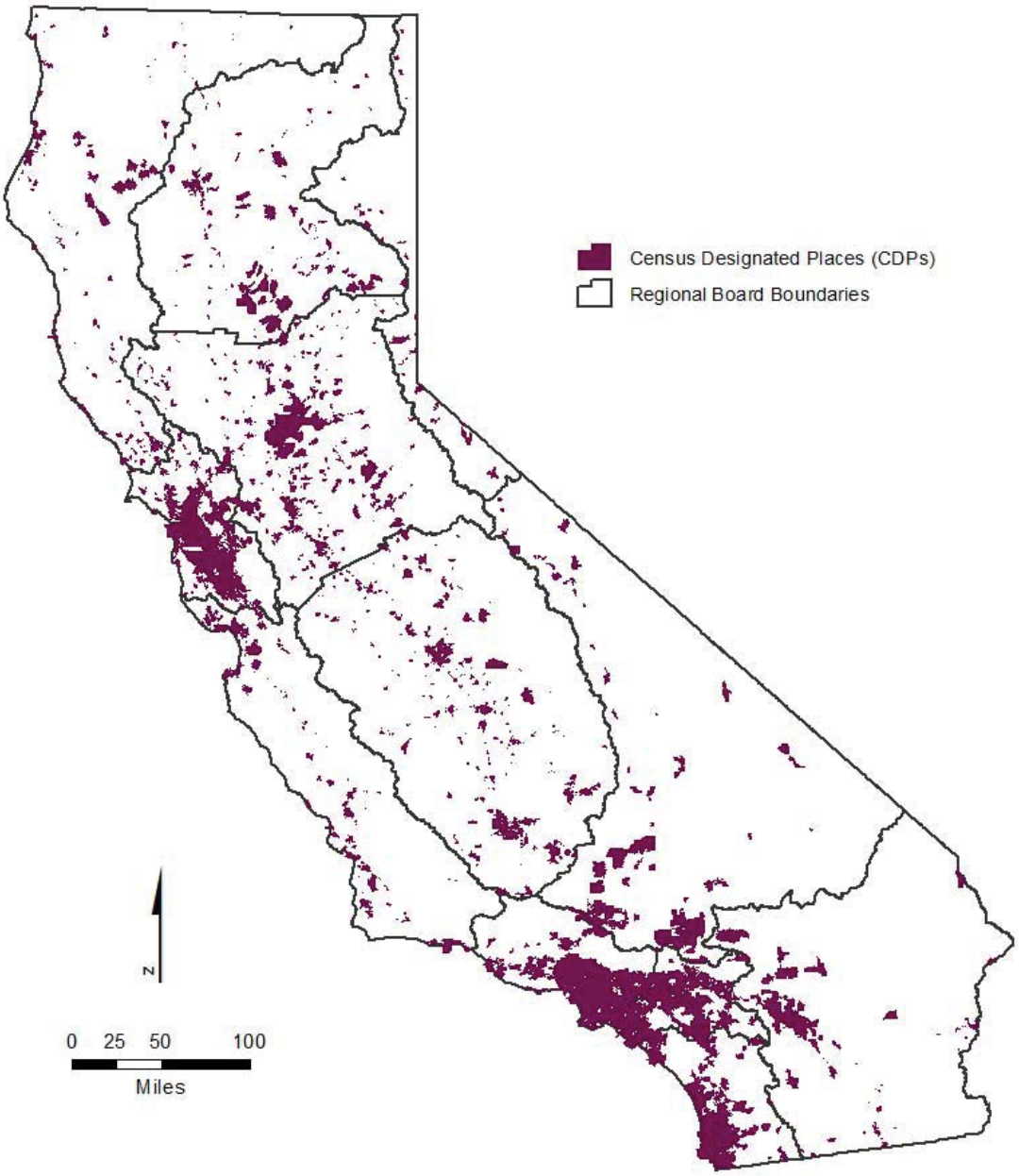


Figure 1. 2012 California Census Designated Places.

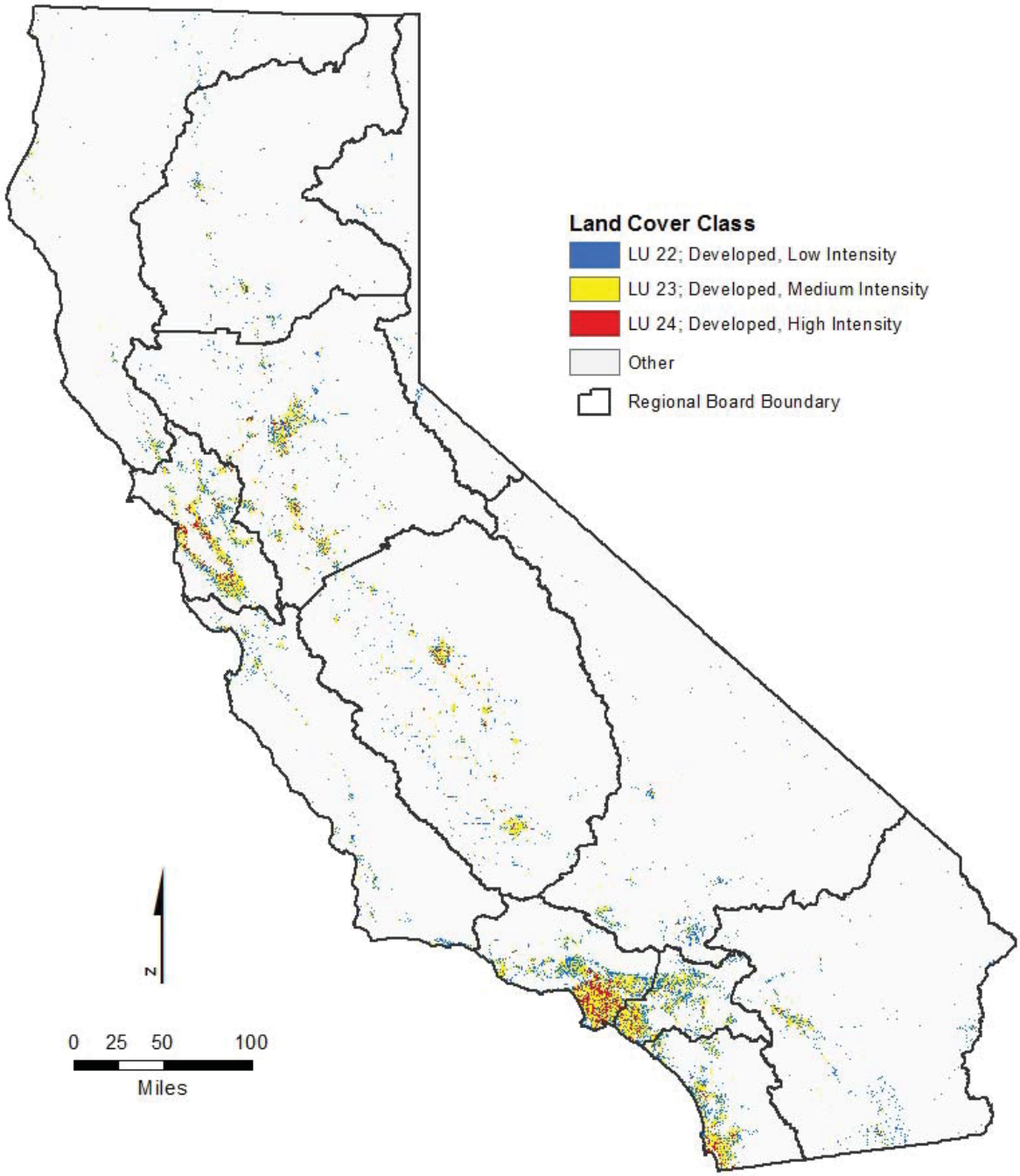


Figure 2. Developed Land Coverage by Regional Water Boards.

Table 4. Acres of Developed Land by Land Cover and Regional Water Board.

Regional Water Board	Developed, Low Intensity (acres)	Developed, Medium Intensity (acres)	Developed High Intensity (acres)	Other (acres)	Total (acres)
North Coast	53,897	28,435	3,362	12,355,869	12,441,564
San Francisco Bay	189,894	283,806	79,220	2,339,394	2,892,314
Central Coast	96,760	65,716	7,371	7,183,662	7,353,509
Los Angeles	234,649	369,182	116,470	2,127,311	2,847,612
Central Valley	422,468	394,517	88,186	37,075,180	37,980,350
Lahontan	124,387	38,374	5,517	20,818,762	20,987,040
Colorado River	119,633	56,414	6,829	12,528,939	12,711,815
Santa Ana	216,149	256,567	42,048	1,276,620	1,791,384
San Diego	153,175	196,314	41,780	2,092,315	2,483,584
Total (acres)	1,611,012	1,689,325	390,782	97,798,052	101,489,172

Table 5. Percent of Regional Water Board Designated as Developed Land by Land Cover Type.

Regional Water Board	Developed, Low Intensity (%)	Developed, Medium Intensity (%)	Developed High Intensity (%)	Total Developed (%)
North Coast	0.43%	0.23%	0.03%	0.69%
San Francisco Bay	6.57%	9.81%	2.74%	19.12%
Central Coast	1.32%	0.89%	0.10%	2.31%
Los Angeles	8.24%	12.96%	4.09%	25.29%
Central Valley	1.11%	1.04%	0.23%	2.38%
Lahontan	0.59%	0.18%	0.03%	0.80%
Colorado River	0.94%	0.44%	0.05%	1.44%
Santa Ana	12.07%	14.32%	2.35%	28.74%
San Diego	6.17%	7.90%	1.68%	15.75%

Table 6. Percent of Census Designated Places as Developed Land by Land Cover Type and Regional Water Board.

Regional Board	Developed, Low Intensity (%)	Developed, Medium Intensity (%)	Developed High Intensity (%)	Total Developed (%)
1	5.60%	4.67%	0.51%	10.78%
2	14.35%	23.98%	6.48%	44.82%
3	12.90%	11.77%	1.39%	26.06%
4	18.88%	30.55%	9.39%	58.82%
5R	4.13%	2.75%	0.65%	7.53%
5S	11.68%	14.66%	3.51%	29.85%
5F	7.78%	13.78%	2.58%	24.14%
5 All	8.50%	11.33%	2.48%	22.31%
6SLT	8.26%	1.92%	0.55%	10.73%
6V	7.06%	2.89%	0.35%	10.30%
6 All	7.22%	2.76%	0.38%	10.35%
7	8.37%	6.94%	0.85%	16.16%
8	20.58%	25.12%	3.87%	49.57%
9	15.84%	23.43%	5.21%	44.48%

3.3 Permitted Storm Water Dischargers in California

The final Trash Amendments includes implementation provisions for permitted storm water dischargers, specifically MS4 Phase I and II, Caltrans, IGP, and CGP permittees. In 2012-2013 Annual Performance Report[10], the Water Boards reported16,996 Storm Water facilities regulated under the Storm Water Construction, Storm Water Industrial and Storm Water Municipal Permits. The number of facilities and municipalities, separated by regional water board, are presented in Table 7.

[10] The California Water Boards' Annual Performance Report - Fiscal Year 2012-13 released on September 2013. http://www.waterboards.ca.gov/about_us/performance_report_1213/regulate/21200_npdes_sw_facilities.shtml

Table 7. Facilities Regulated Under the California Water Board's Storm Water Program.

Regional Water Board	Construction General Permittees	Industrial General Permittees	Municipal Storm Water Permittees (Phase I and II)	Total
North Coast	179	337	14	538
San Francisco Bay	1,069	1,316	109	2,494
Central Coast	457	401	45	903
Los Angeles	1,193	2,683	100	3,976
Central Valley	1,614	1,745	95	3,454
Lahontan	379	230	10	619
Colorado River	253	172	19	444
Santa Ana	1,136	1,583	62	2,781
San Diego	924	784	79	1,787
Total	7,204	9,251	532	16,996

3.4 North Coast Region

The North Coast Region comprises all watershed basins, including Lower Klamath Lake and Lost River Basins, draining into the Pacific Ocean from the California-Oregon State line southern boundary and includes the watershed of the Estero de San Antonio and Stemple Creek in Marin and Sonoma Counties (Figure 3, Figure 4). Two natural drainage basins, the Klamath River Basin and the North Coastal Basin, divide the region. The region covers all of Del Norte, Humboldt, Trinity, and Mendocino Counties, major portions of Siskiyou and Sonoma Counties, and small portions of Glenn, Lake, and Marin Counties. It encompasses a total area of approximately 19,390 square miles, including 340 miles of coastline and remote wilderness areas, as well as urbanized and agricultural areas.

Beginning at the Smith River in northern Del Norte County and heading south to the Estero de San Antonio in northern Marin County, the region encompasses a large number of major river estuaries. Other North Coast streams and rivers with significant estuaries include the Klamath River, Redwood Creek, Little River, Mad River, Eel River, Noyo River, Navarro River, Elk Creek, Gualala River, Russian River, and Salmon Creek (this creek mouth also forms a lagoon). Northern Humboldt County coastal lagoons include Big Lagoon and Stone Lagoon. The two largest enclosed bays in the North Coast Region are Humboldt Bay and Arcata Bay (both in Humboldt County). Another enclosed bay, Bodega Bay, is located in Sonoma County near the southern border of the region. Distinct temperature zones characterize the North Coast Region. Precipitation is greater than for any other part of California, and damaging floods are a fairly frequent hazard. Ample precipitation in combination with the mild climate found over most of the North Coast Region has provided a wealth of fish, wildlife, and scenic resources. The numerous streams and rivers of the region contain anadromous fish and the reservoirs, although few in number, support both cold and warm water fish.

Tidelands and marshes are extremely important to many species of waterfowl and shore birds, both for feeding and nesting. Cultivated land and pasturelands also provide supplemental food for many birds, including small pheasant populations. Tideland areas along the north coast provide important habitat for marine invertebrates and nursery areas for forage fish, game fish, and crustaceans. Offshore coastal rocks are used by many species of seabirds as nesting areas.

Major land uses in the region are tourism and recreation; logging and timber milling; aggregate mining; commercial and sport fisheries; sheep, beef and dairy production; and vineyards and wineries. Approximately two percent of California's total population resides in the North Coast region. The largest urban centers are Eureka in Humboldt County and Santa Rosa in Sonoma County.

Eight Areas of Special Biological Significance (ASBS) are located in the North Coast Region: Jughandle Cove (#1), Del Mar Landing (#2), Gerstle Cove (#3), Bodega (#4), Saunders Reef (#5), Trinidad Head (#6), King Range (#7), and Redwoods National Park (#8).

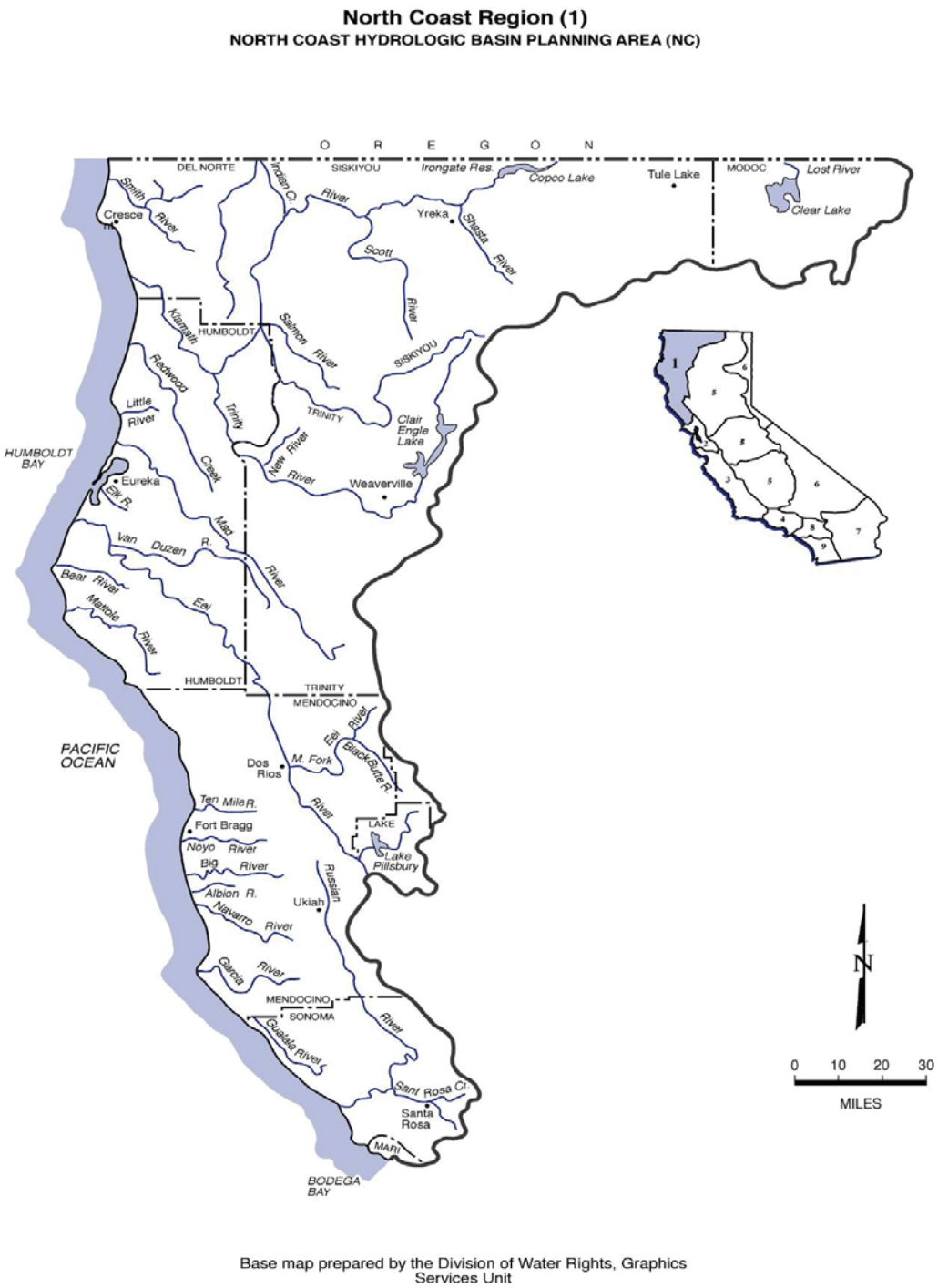


Figure 3. North Coast Region Hydrologic Basin.

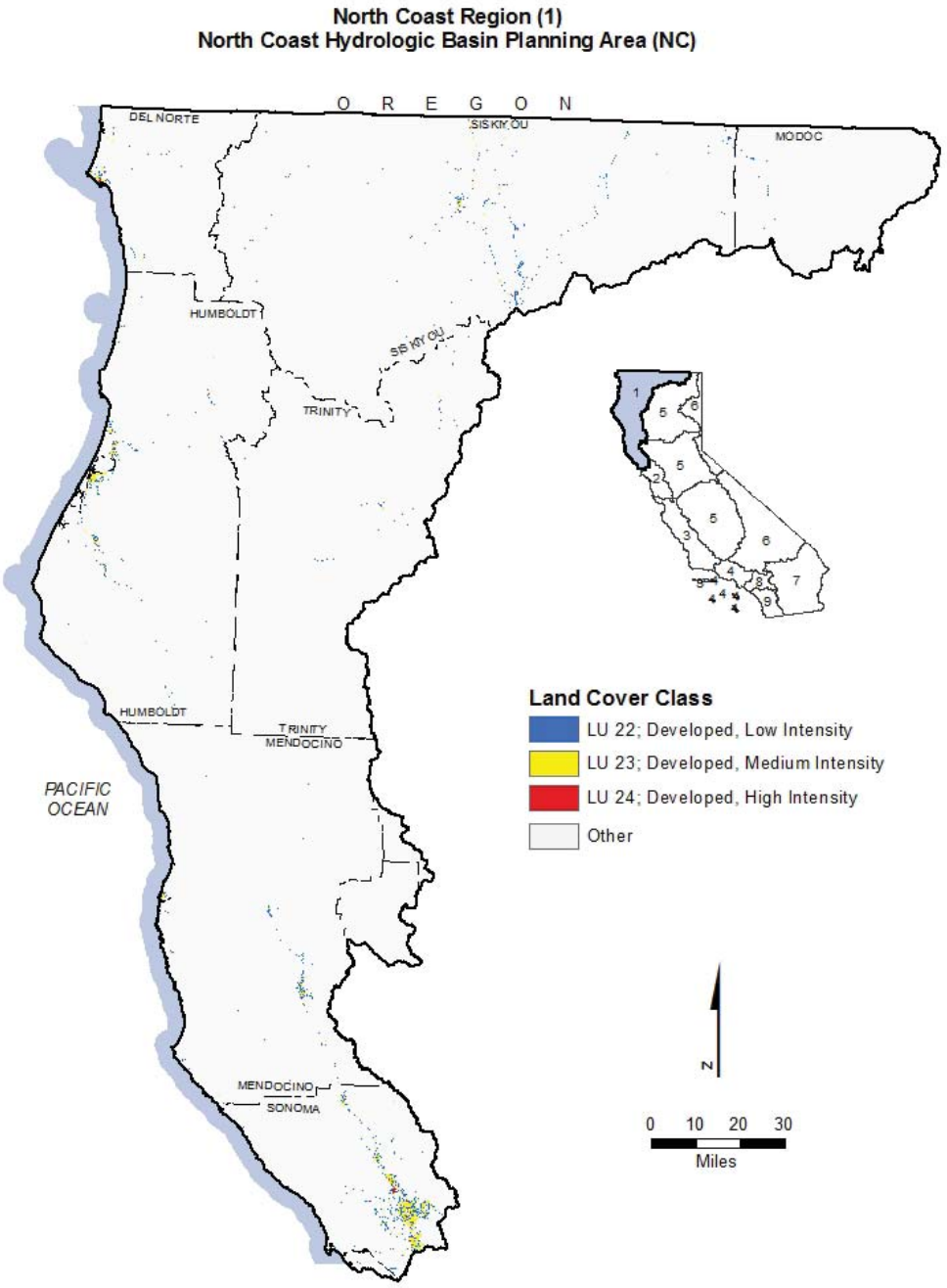


Figure 4. North Coast Region Developed Land Coverage.

3.5 San Francisco Region

The San Francisco Bay Region comprises San Francisco Bay, Suisun Bay beginning at the Sacramento River, and San Joaquin River westerly, from a line which passes between Collinsville and Montezuma Island (Figure 5, Figure 6). The region's boundary follows the borders common to Sacramento and Solano counties, and Sacramento and Contra Costa counties west of the Markely Canyon watershed in Contra Costa County. All basins west of the boundary and all basins draining into the Pacific Ocean between

the southern boundary of the North Coast Region and the southern boundary of the watershed of Pescadero Creek in San Mateo and Santa Cruz counties are included in the region.

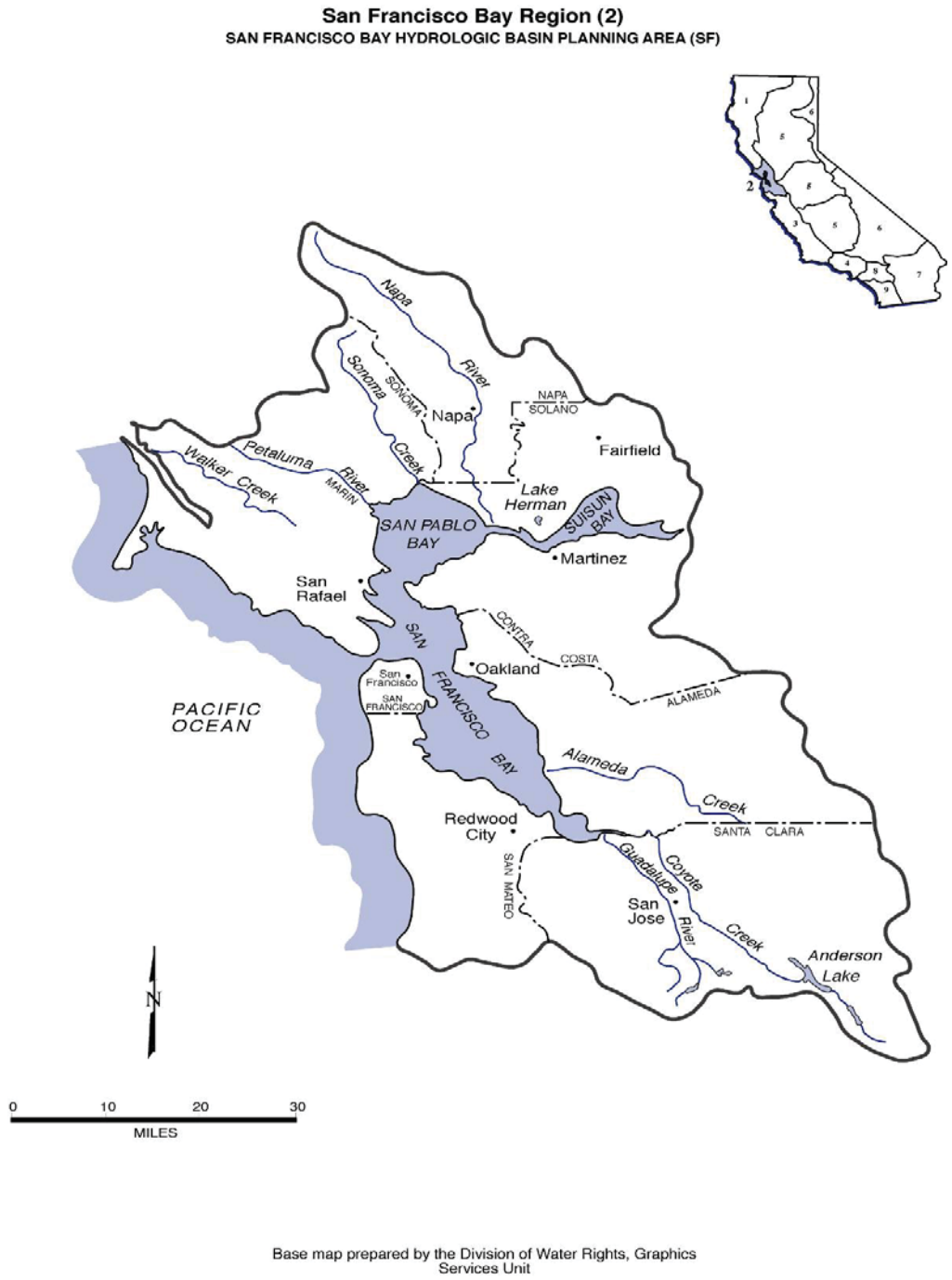
The region comprises most of the San Francisco Estuary to the mouth of the Sacramento-San Joaquin Delta. The San Francisco Estuary conveys the waters of the Sacramento and San Joaquin Rivers to the Pacific Ocean. Located on the central coast of California, the San Francisco Bay system functions as the only drainage outlet for waters of the Central Valley. The region includes the fourth largest metropolitan area in the United States, including all or major portions of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties.

The San Francisco Water Board has jurisdiction over the part of the San Francisco Estuary, which includes all of the San Francisco Bay segments extending east to the Delta (Winter Island near Pittsburg). Within each section of the San Francisco Bay system lie deepwater areas that are adjacent to large expanses of very shallow water. Salinity levels range from hypersaline to fresh water and water temperature varies widely. The San Francisco Bay system's deepwater channels, tidelands, marshlands, fresh water streams, and rivers provide a wide variety of habitats within the Region. Coastal embayments including Tomales Bay and Bolinas Lagoon are also located in this Region.

The Sacramento and San Joaquin Rivers enter the San Francisco Bay system through the Delta at the eastern end of Suisun Bay and contribute almost all of the fresh water inflow into the Bay. Many smaller rivers and streams also convey fresh water to the Bay system. The rate and timing of these fresh water flows influence the physical, chemical and biological conditions in the Bay. Flows in the region are highly seasonal, with more than 90 percent of the annual runoff occurring during the winter rainy season between November and April.

The San Francisco Estuary is made up of many different types of aquatic habitats that support a great diversity of organisms. Suisun Marsh in Suisun Bay is the largest brackish water marsh in the United States. San Pablo Bay is a shallow embayment strongly influenced by runoff from the Sacramento and San Joaquin Rivers. The Central Bay is the portion of the Bay most influenced by oceanic conditions. The South Bay, with less freshwater inflow than the other portions of the Bay, acts more like a tidal lagoon. Together these areas sustain rich communities of aquatic life and serve as important wintering sites for migrating waterfowl and spawning areas for anadromous fish.

Six ASBS are located in the San Francisco Bay Region: James V. Fitzgerald (#9), Farallon Islands (#10), Duxbury Reef (#11), Point Reyes Headlands (#12), Double Point (#13), and Bird Rock (#14).



Base map prepared by the Division of Water Rights, Graphics Services Unit

Figure 5. San Francisco Bay Region Hydrologic Basin.

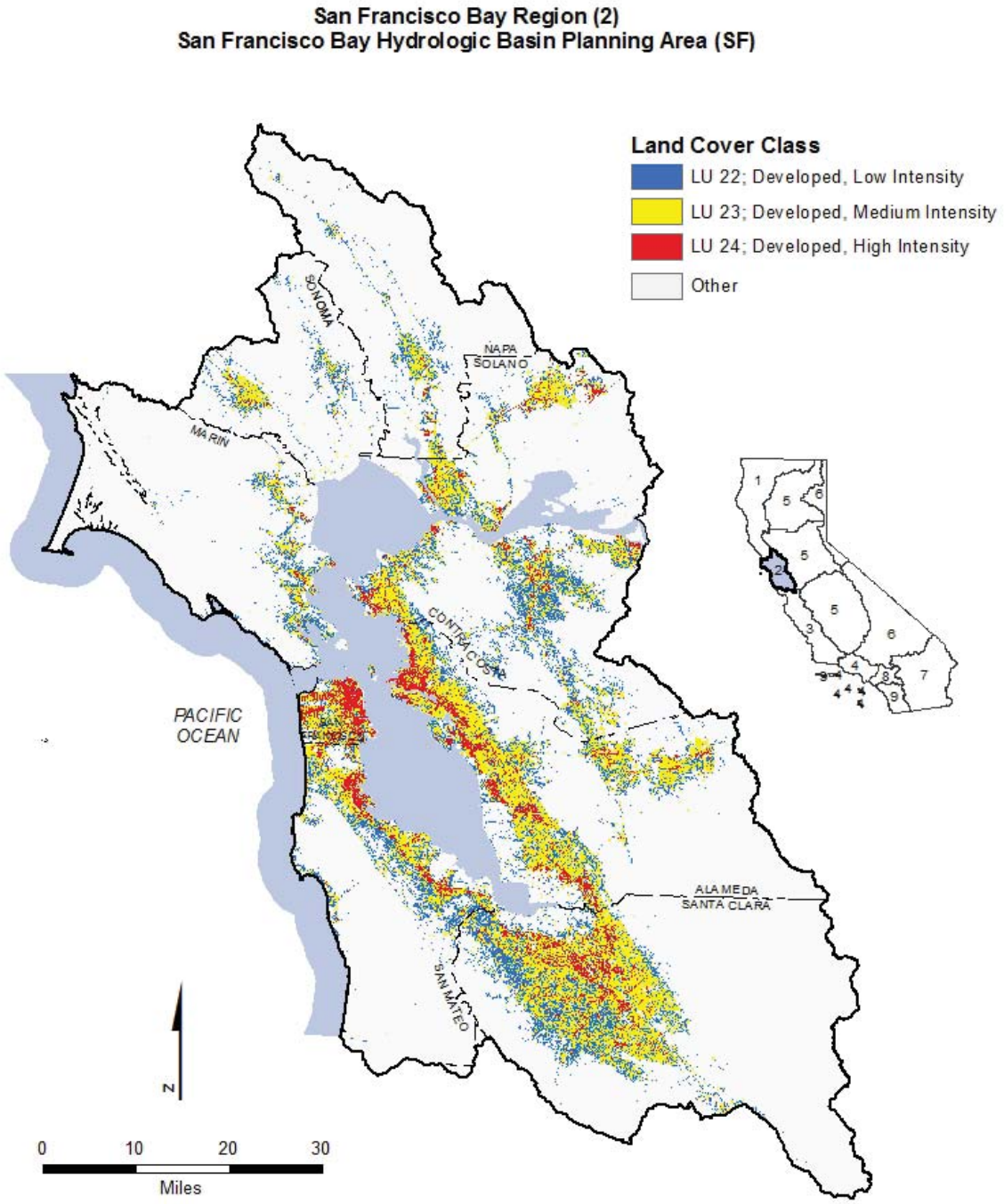


Figure 6. San Francisco Bay Region Developed Land Coverage.

3.6 Central Coast Region

The Central Coast Region comprises all basins (including Carrizo Plain in San Luis Obispo and Kern Counties) draining into the Pacific Ocean from the southern boundary of the Pescadero Creek watershed in San Mateo and Santa Cruz Counties; to the southeastern boundary of the Rincon Creek watershed, located in western Ventura County (Figure 7, Figure 8). The region extends over a 300-mile long by 40-mile wide section of the state's central coast. Its geographic area encompasses all of Santa Cruz, San Benito, Monterey, San Luis Obispo, and Santa Barbara Counties as well as the southern one-third of Santa Clara County, and small portions of San Mateo, Kern, and Ventura Counties. Included in the region are urban areas such as the Monterey Peninsula and the Santa Barbara coastal plain; prime agricultural lands such as the Salinas, Santa Maria, and Lompoc Valleys; National Forest lands; extremely wet areas such as the Santa Cruz Mountains; and arid areas such as the Carrizo Plain.

Water bodies in the Central Coast Region are varied. Enclosed bays and harbors in the region include Morro Bay, Elkhorn Slough, Tembladero Slough, Santa Cruz Harbor, Moss Landing Harbor, San Luis Harbor, and Santa Barbara Harbor. Several small estuaries also characterize the region, including the Santa Maria River Estuary, San Lorenzo River Estuary, Big Sur River Estuary, and many others. Major rivers, streams, and lakes include San Lorenzo River, Santa Cruz River, San Benito River, Pajaro River, Salinas River, Santa Maria River, Cuyama River, Estrella River and Santa Ynez River, San Antonio Reservoir, Nacimiento Reservoir, Twitchel Reservoir, and Cuchuma Reservoir.

Located in the Central Coast Region are 7 ASBS: Año Nuevo (#15); Pacific Grove (#19); Carmel Bay (#34); Point Lobos (#16); Julia Pfeiffer Burns (#18); San Miguel, Santa Rosa, and Santa Cruz Islands (#17); and Salmon Creek Coast (#20).

The land use activities in the basin have been primarily agrarian. While agriculture and related food processing activities are major industries in the region, land uses also include oil production, tourism, and manufacturing. Total population of the region is estimated at 1.22 million people.

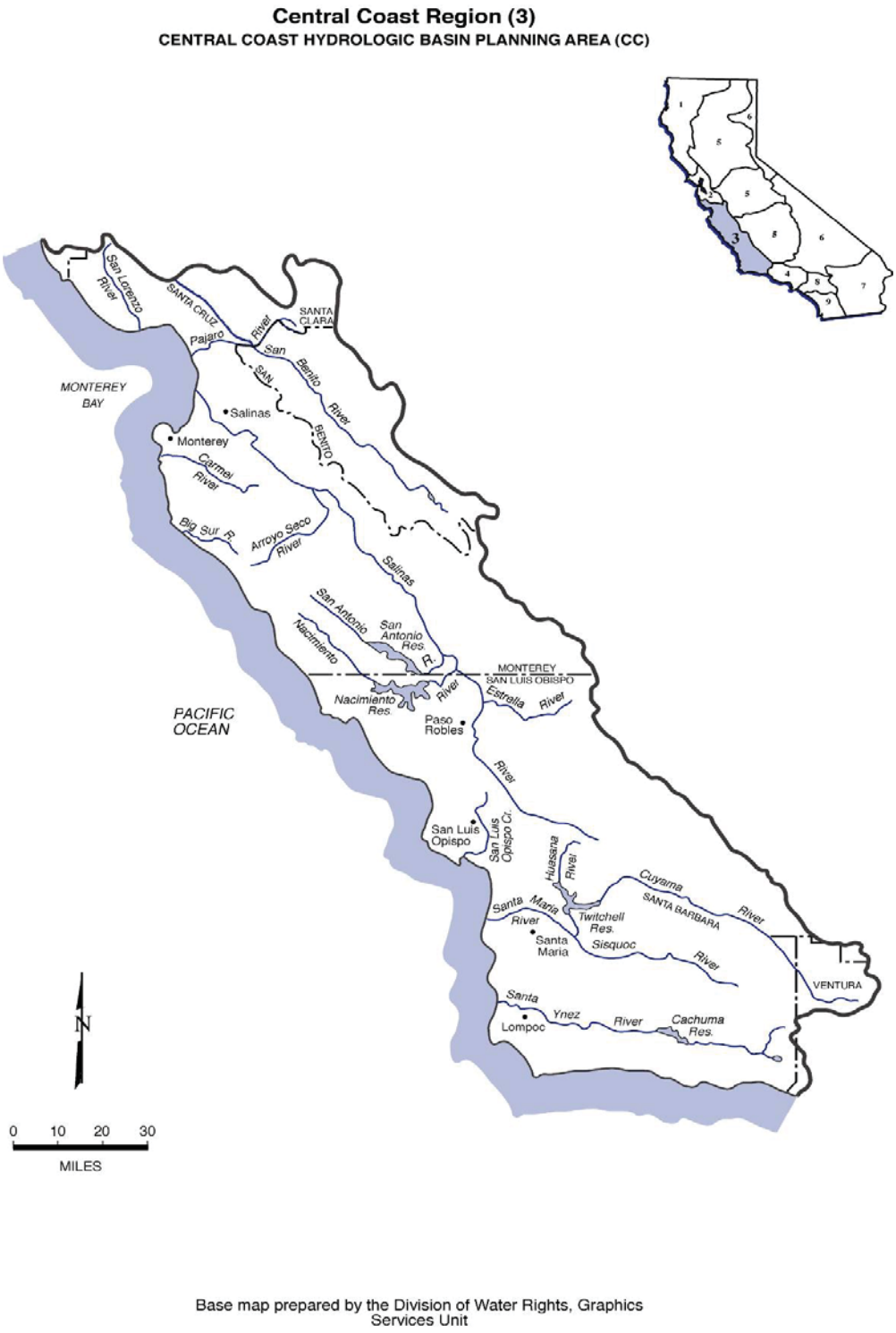


Figure 7. Central Coast Region Hydrologic Basin.

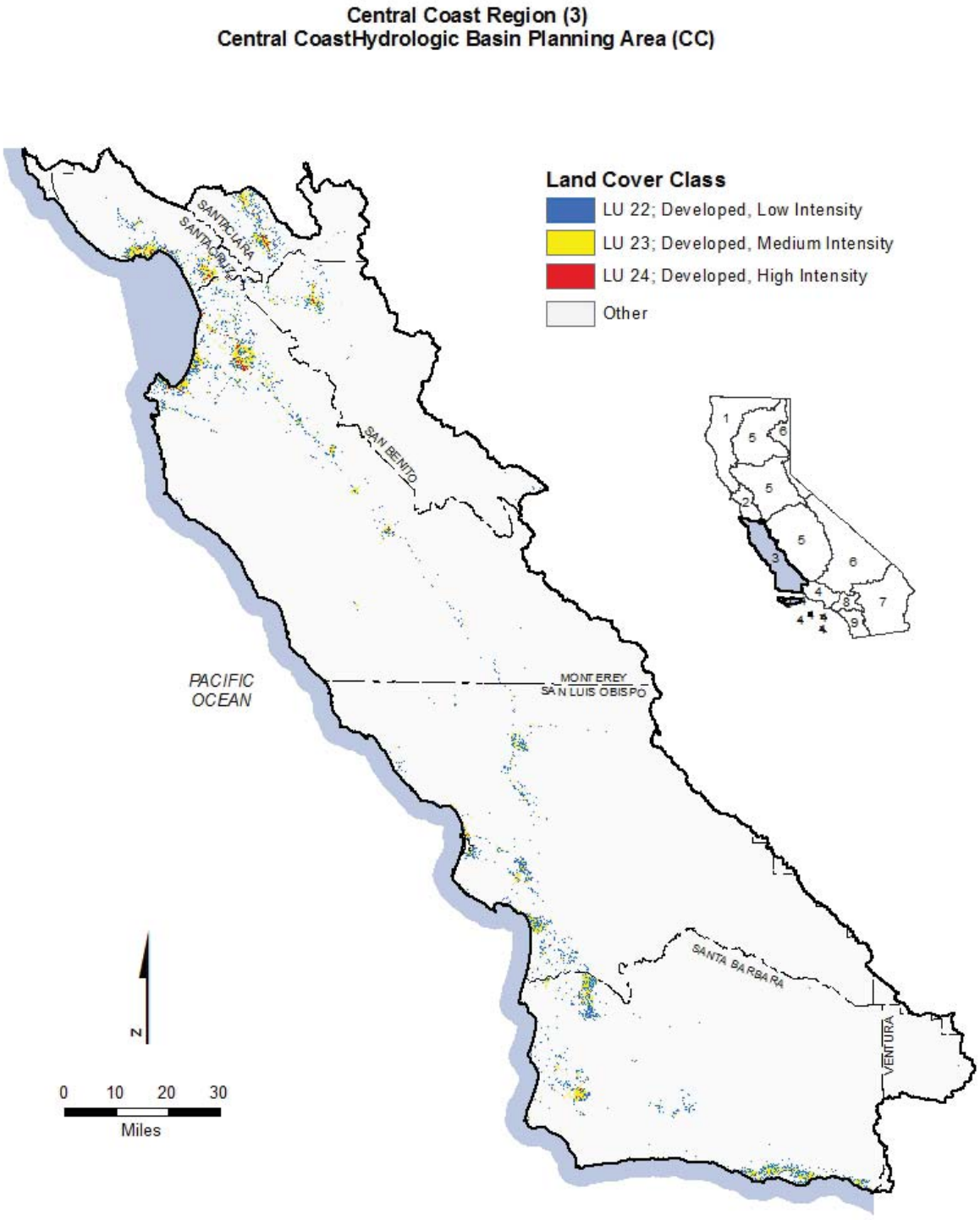


Figure 8. Central Coast Region Developed Land Coverage.

3.7 Los Angeles Region

The Los Angeles Region comprises all basins draining into the Pacific Ocean between the southeastern boundary of the watershed of Rincon Creek, located in western Ventura County, and a line which coincides with the southeastern boundary of Los Angeles County, from the Pacific Ocean to San Antonio Peak, and follows the divide, between the San Gabriel River and Lytle Creek drainages to the divide between Sheep Creek and San Gabriel River drainages (Figure 9, Figure 10).

The region encompasses all coastal drainages flowing into the Pacific Ocean between Rincon Point (on the coast of western Ventura County) and the eastern Los Angeles County line, as well as the drainages of five coastal islands (Anacapa, San Nicolas, Santa Barbara, Santa Catalina and San Clemente). In addition, the region includes all coastal waters within three miles of the continental and island coastlines. Two large deepwater harbors (Los Angeles and Long Beach Harbors) and one smaller deepwater harbor (Port Hueneme) are contained in the region. There are small craft marinas within the harbors, as well as tank farms, naval facilities, fish processing plants, boatyards, and container terminals. Several small-craft marinas also exist along the coast (Marina del Ray, King Harbor, and Ventura Harbor); these contain boatyards, other small businesses and dense residential development.

Several large, primarily concrete-lined rivers (Los Angeles River and San Gabriel River) lead to unlined tidal prisms which are influenced by marine waters. Salinity may be greatly reduced following rains since these rivers drain large urban areas composed of mostly impermeable surfaces. Some of these tidal prisms receive a considerable amount of freshwater throughout the year from publicly owned treatment works discharging tertiary-treated effluent. Lagoons are located at the mouths of other rivers draining relatively undeveloped areas (Mugu Lagoon, Malibu Lagoon, Ventura River Estuary, and Santa Clara River Estuary). There are also a few isolated coastal brackish water bodies receiving runoff from agricultural or residential areas.

Santa Monica Bay, which includes the Palos Verdes Shelf, dominates a large portion of the open coastal water bodies in the region. Eight ASBS are located in the Los Angeles Region: San Nicolas Island and Begg Rock (#21), Santa Barbara and Anacapa Islands (#22), San Clemente Island (#23), Laguna Point to Latigo Point (#24), Northwest Santa Catalina Island (#25), Western Santa Catalina Island (#26), Farnsworth Bank (#27), and Southeast Santa Catalina (#28).

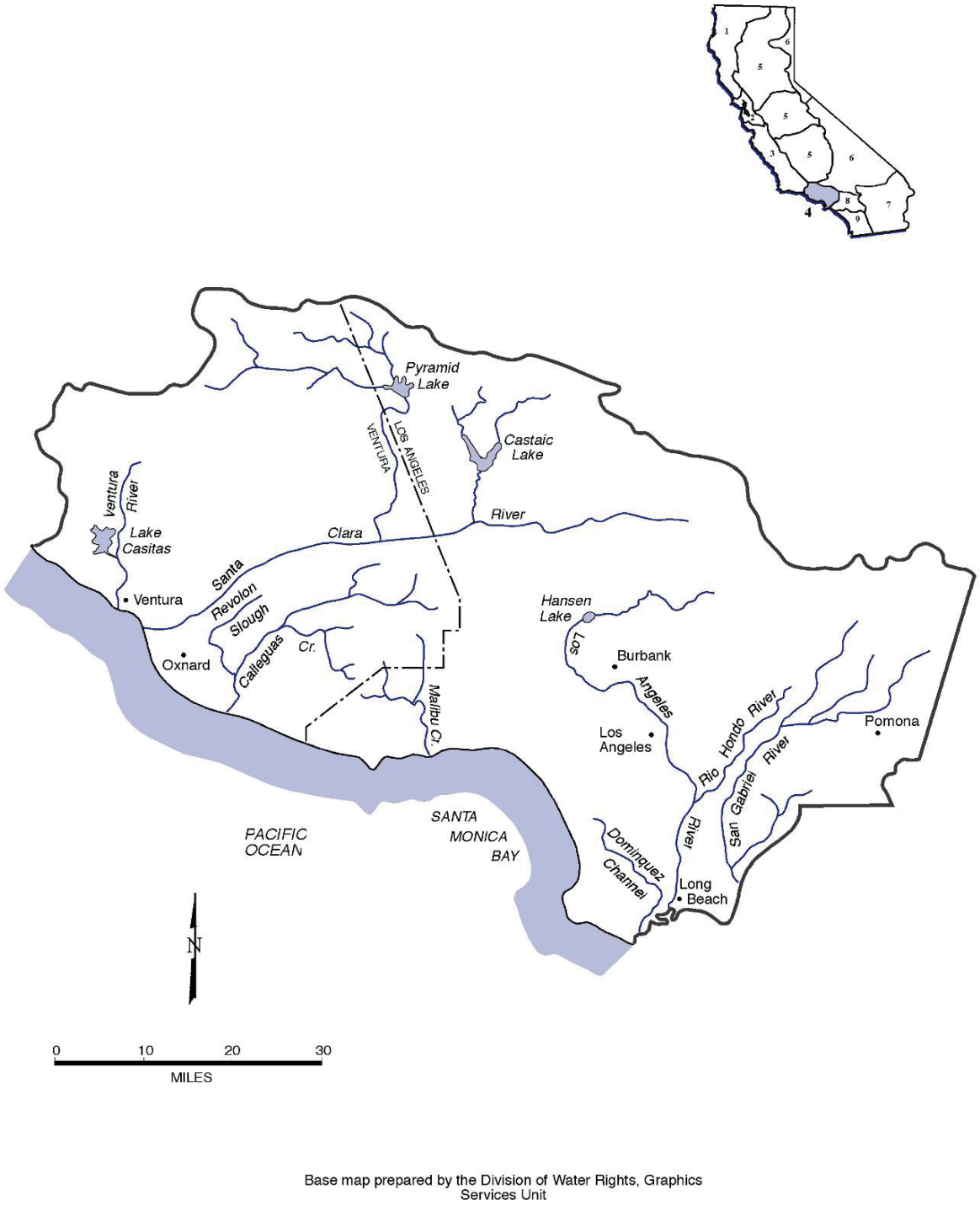


Figure 9. Los Angeles Region Hydrologic Basin.

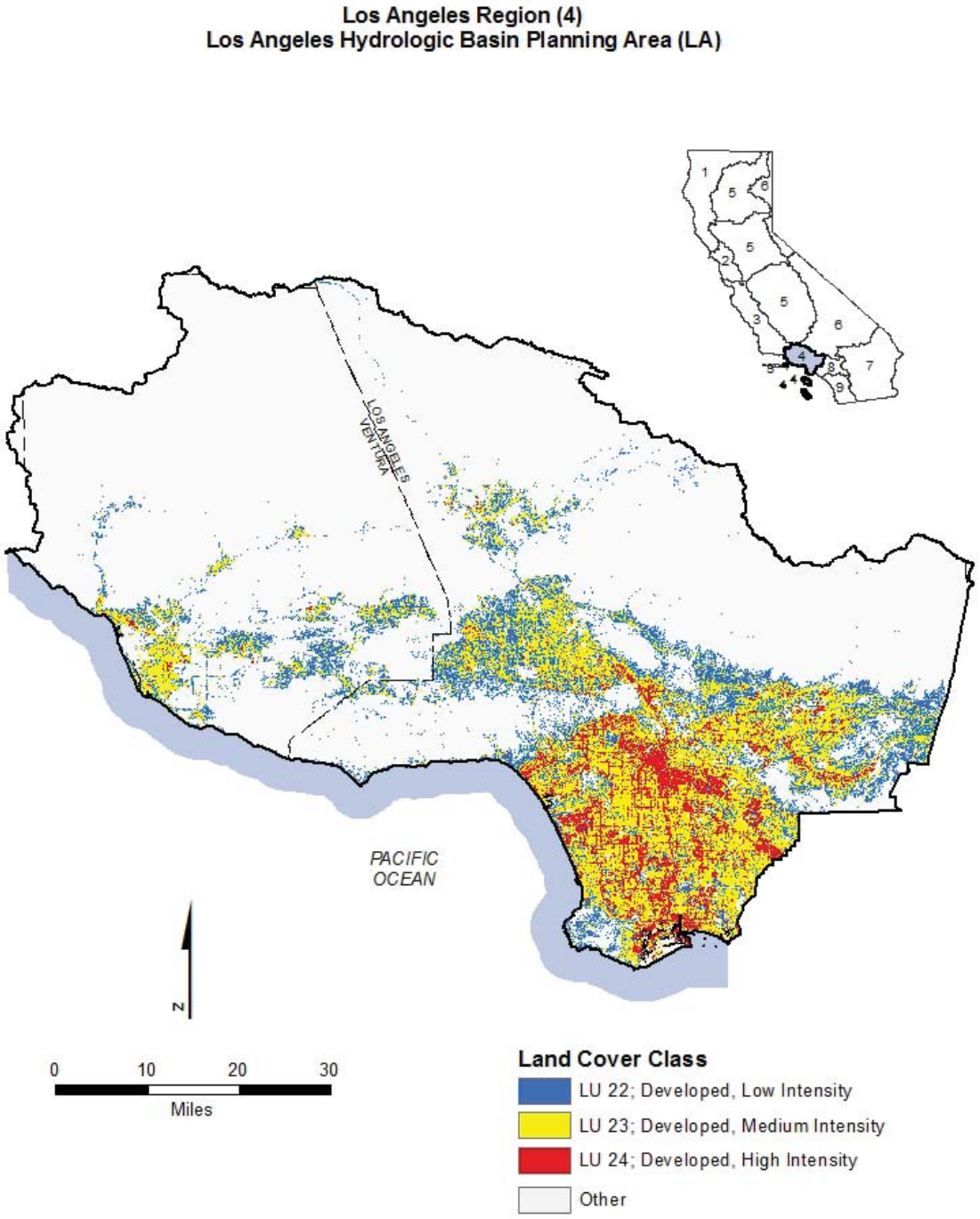


Figure 10. Los Angeles Region Developed Land Coverage.

3.8 Central Valley Region

The Central Valley Region includes approximately 40 percent of the land in California stretching from the Oregon border to the Kern County-Los Angeles County line. The region is divided into three basins. For planning purposes, the Sacramento River and the San Joaquin River Basins are covered under one basin plan, and the Tulare Lake Basin is covered under a separate basin plan.

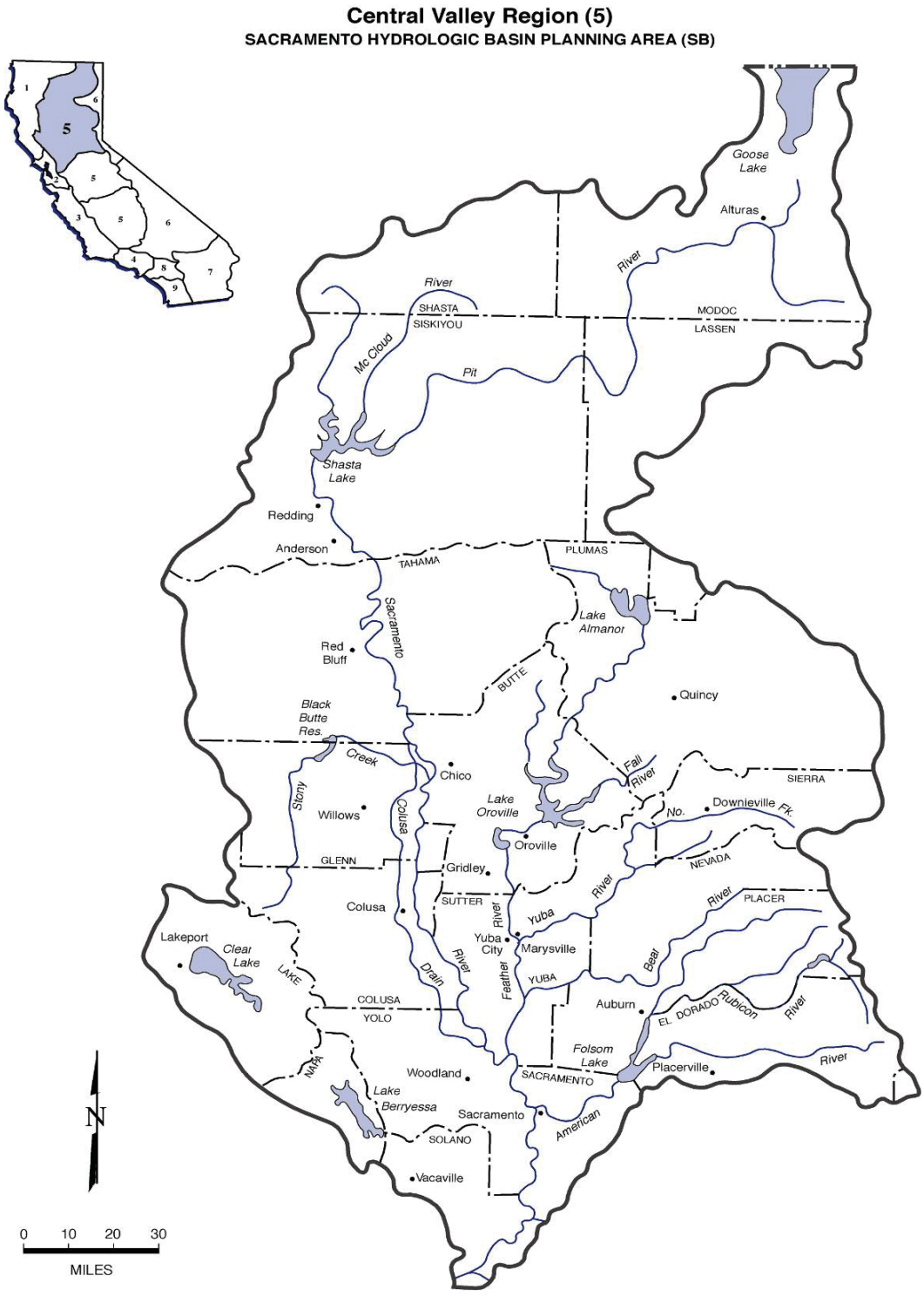
The Sacramento River Basin covers 27,210 square miles and includes the entire area drained by the Sacramento River (Figure 11, Figure 12). The principal streams are the Sacramento River and its larger tributaries: the Pitt, Feather, Yuba, Bear, and American Rivers to the East; and Cottonwood, Stony, Cache, and Putah Creek to the west. Major reservoirs and lakes include Shasta, Oroville, Folsom, Clear Lake, and Lake Berryessa.

The San Joaquin River Basin covers 15,880 square miles and includes the entire area drained by the San Joaquin River (Figure 13, Figure 14). Principal streams in the basin are the San Joaquin River and its larger tributaries: the Consumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno Rivers. Major reservoirs and lakes include Pardee, New Hogan, Millerton, McClure, Don Pedro, and New Melones.

The Tulare Lake Basin covers approximately 16,406 square miles and comprises the drainage area of the San Joaquin Valley south of the San Joaquin River (Figure 15, Figure 16). The planning boundary between the San Joaquin River Basin and the Tulare Lake Basin is defined by the northern boundary of Little Pinoche Creek basin eastward along the channel of the San Joaquin River to Millerton Lake in the Sierra Nevada foothills, and then along the southern boundary of the San Joaquin River drainage basin. Main Rivers within the basin include the King, Kaweah, Tule, and Kern Rivers, which drain to the west face of the Sierra Nevada Mountains. Imported surface water supplies enter the basin through the San Luis Drain-California Aqueduct System, Friant-Kern Channel, and the Delta Mendota Canal.

The two northern most basins are bound by the crests of the Sierra Nevada on the east and the Coast Range and Klamath Mountains on the west. They extend about 400 miles from the California-Oregon border southward to the headwaters of the San Joaquin River. These two river basins cover about one fourth of the total area of the state and over 30 percent of the state's irrigable land. The Sacramento and San Joaquin Rivers furnish roughly 50 percent of the state's water supply. Surface water from the two drainage basins meets and forms the Delta, which ultimately drains into the San Francisco Bay.

The Delta is a maze of river channels and diked islands covering roughly 1,150 square miles, including 78 square miles of water area. Two major water projects located in the South Delta, the Federal Central Valley Project and the State Water Project, deliver water from the Delta to Southern California, the San Joaquin Valley, Tulare Lake Basin, the San Francisco Bay Area, as well as within the Delta boundaries.



Base map prepared by the Division of Water Rights, Graphics Services Unit

Figure 11. Central Valley Region, Sacramento Region Hydrologic Basin.

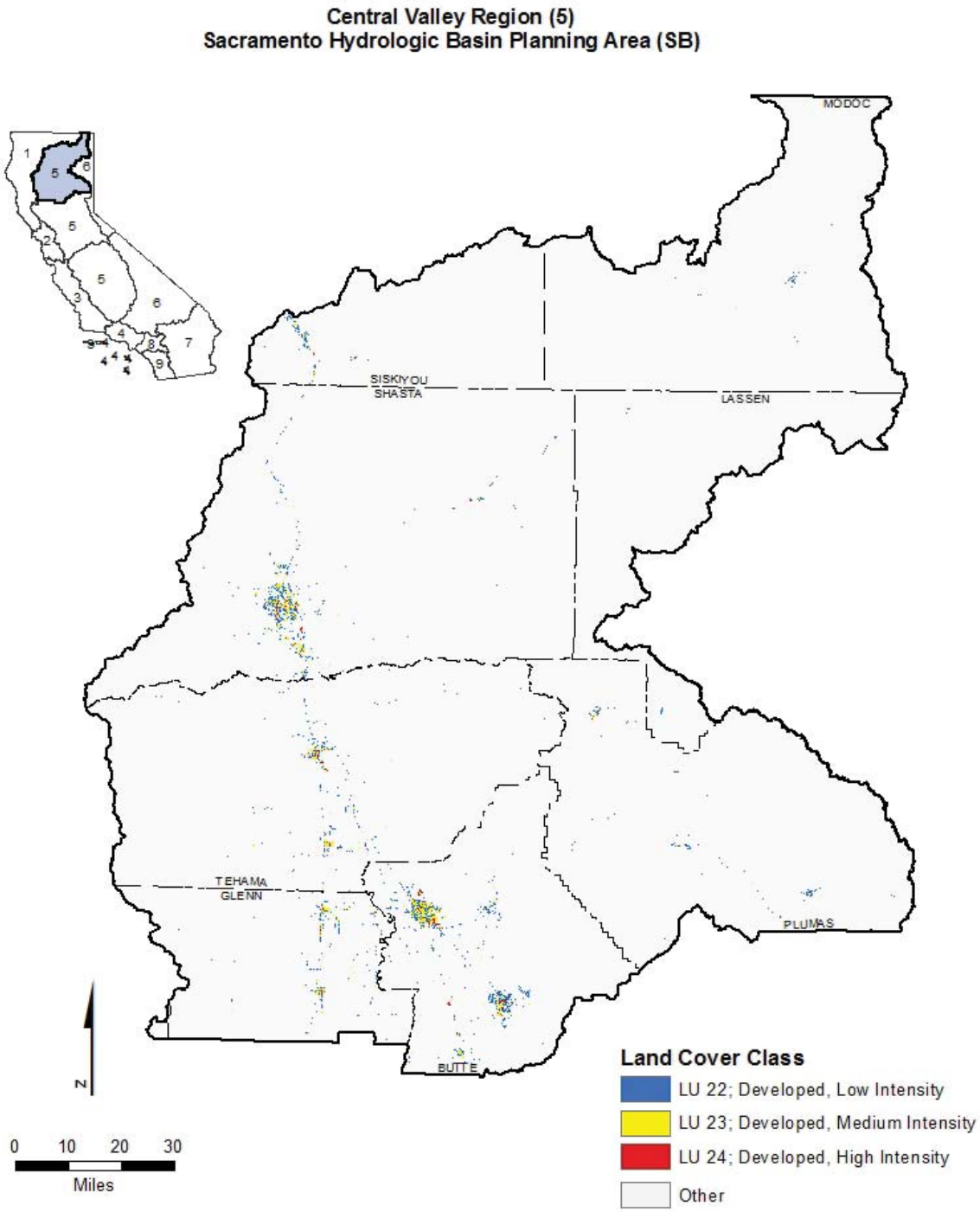
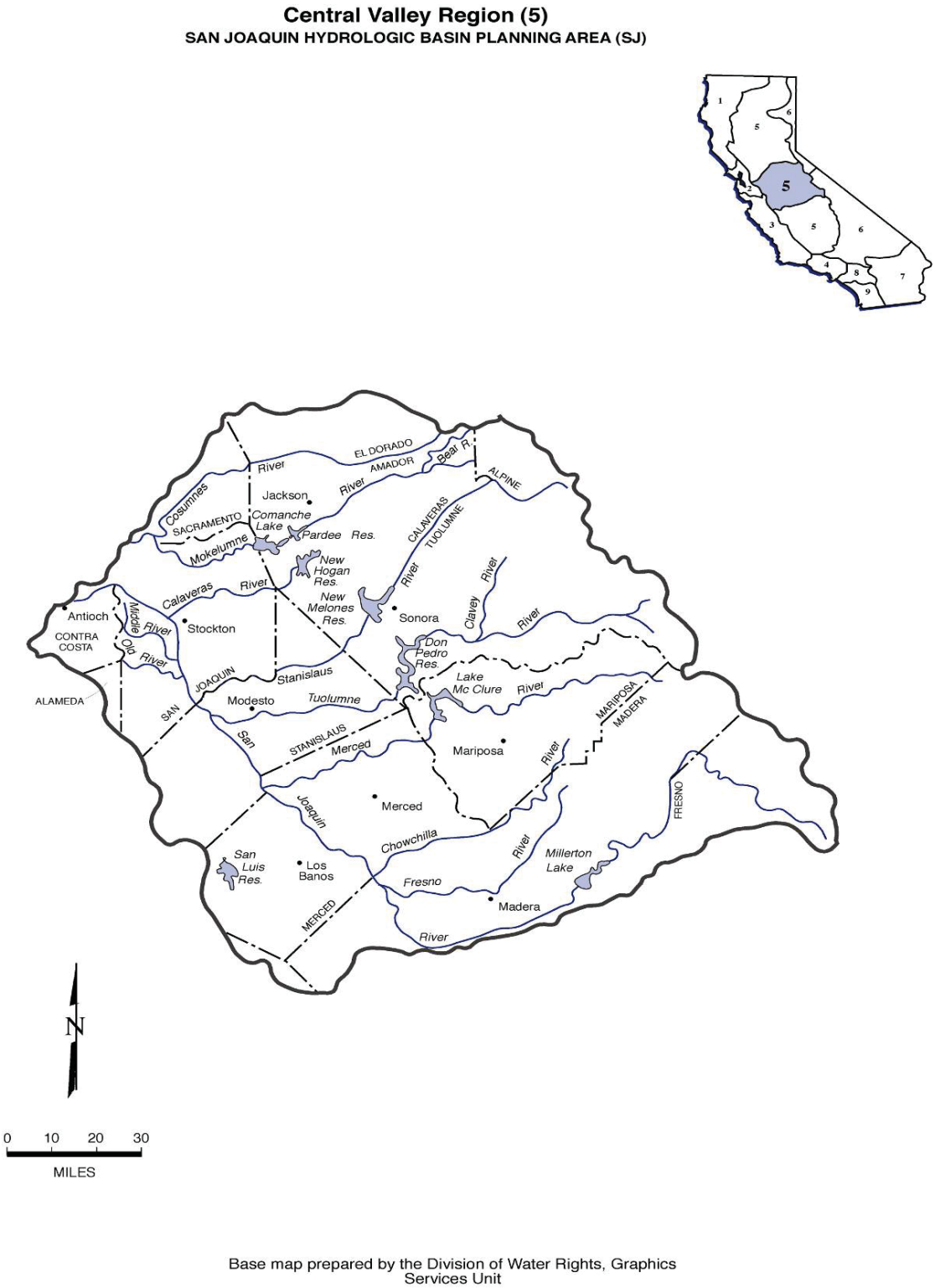


Figure 12. Central Valley Region, Sacramento Region Developed Land Coverage.



Base map prepared by the Division of Water Rights, Graphics Services Unit

Figure 13. Central Valley Region, San Joaquin Hydrologic Basin.

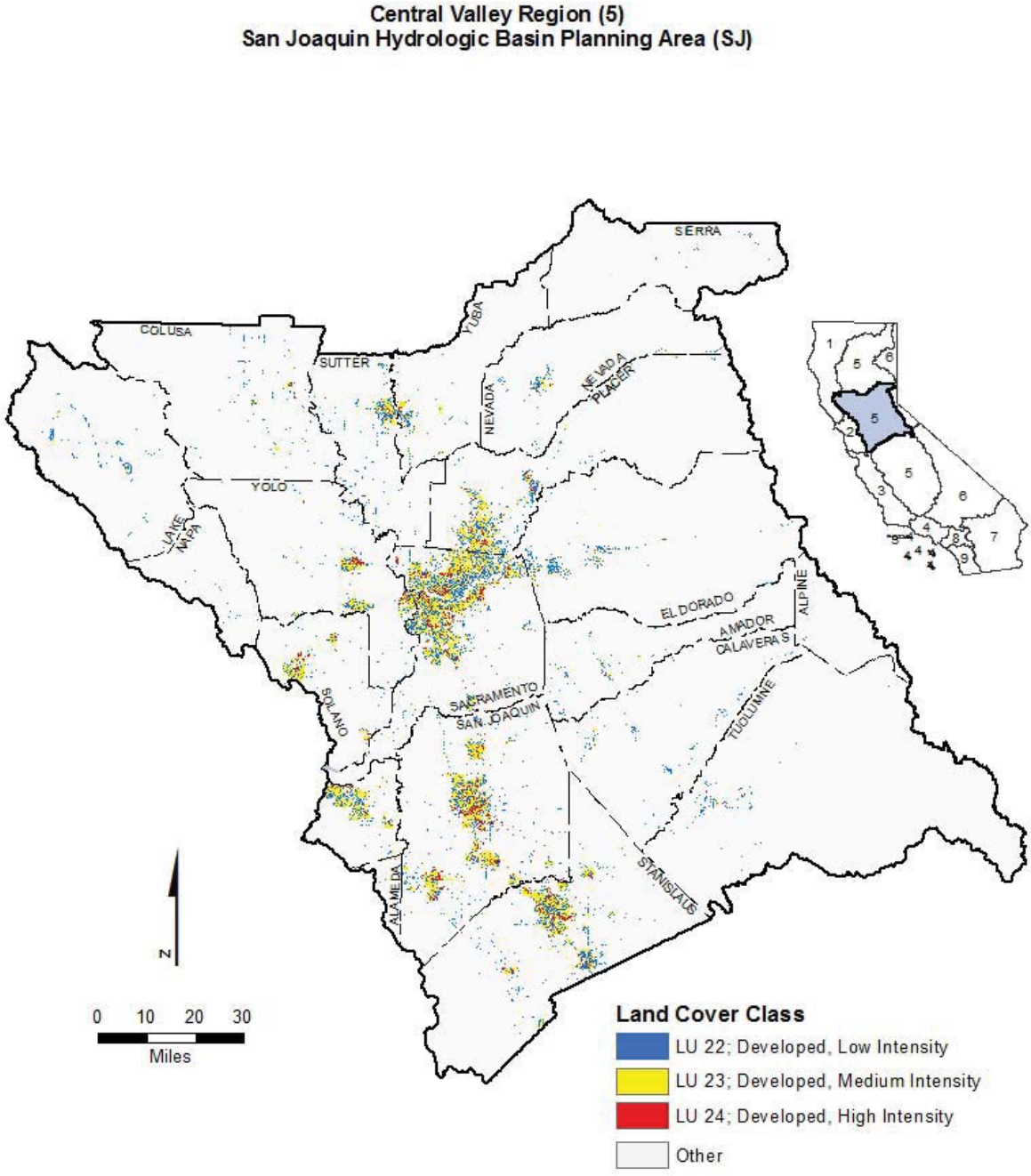


Figure 14. Central Valley Region, San Joaquin Developed Land Coverage.

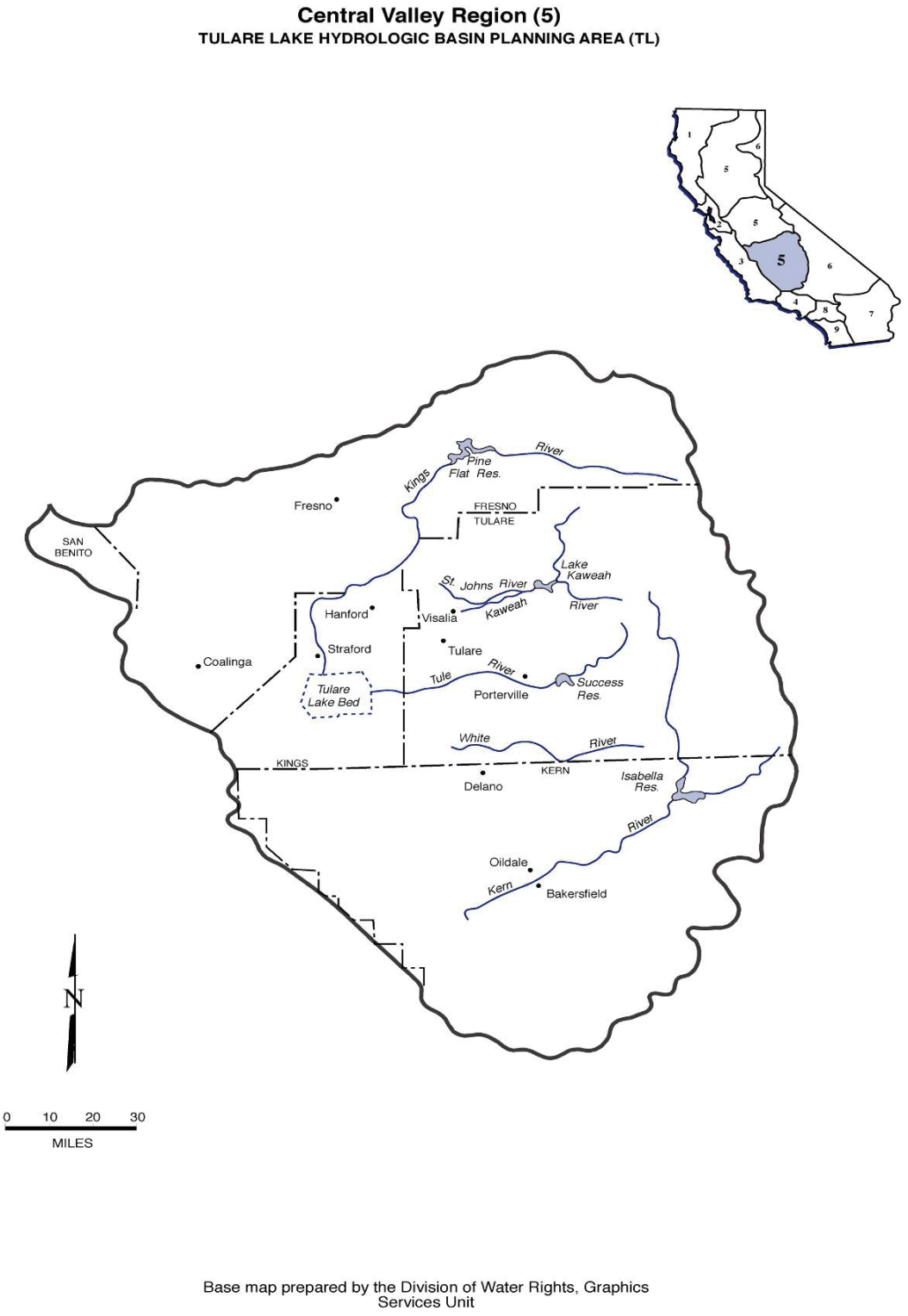


Figure 15. Central Valley Region, Tulare Lake Hydrologic Basin.

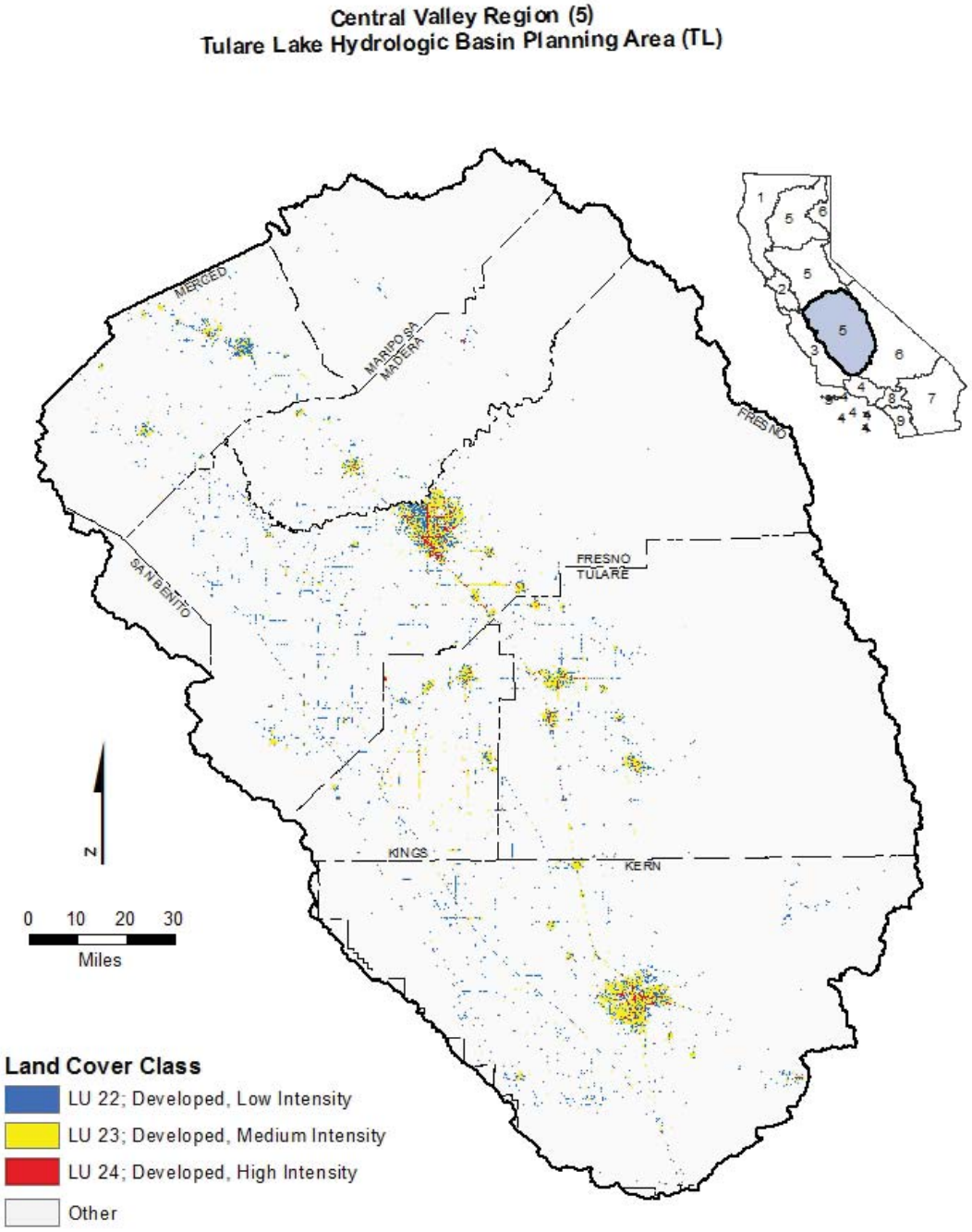


Figure 16. Central Valley Region, Tulare Lake Developed Land Coverage.

3.9 Lahontan Region

The Lahontan Region is divided into North and South Lahontan Basins at the boundary between the Mono Lake and East Walker River watersheds (Figure 17, Figure 18, Figure 19, Figure 20). It is about 570 miles long and has a total area of 33,131 square miles. The Lahontan Region includes the highest (Mount Whitney) and lowest (Death Valley) points in the contiguous United States. The region includes the eastern slopes of the Warner, Sierra Nevada, San Bernardino, Tehachapi and San Gabriel Mountains, and all or part of other ranges including the White, Providence, and Granite Mountains. Topographic depressions include the Madeline Plains, Surprise, Honey Lake, Bridgeport, Owens, Antelope, and Victor Valleys.

The region includes over 700 lakes, 3,170 miles of streams, and 1,581 square miles of groundwater basins. There are 12 major watersheds in the North Lahontan Basin. Among these are the Eagle Lake, Susan River/Honey Lake, Truckee, Carson, and Walker River watersheds. The South Lahontan Basin includes three major surface water systems (the Mono Lake, Owens River, and Mojave River watersheds) and a number of separate closed groundwater basins.

Although annual precipitation amounts can be high (up to 70 inches) at higher elevations, most precipitation in the mountainous areas falls as snow. Desert areas receive relatively little annual precipitation (less than two inches in some locations) but this can be concentrated and lead to flash flooding. The varied topography, soils, and microclimates of the Lahontan Region support a corresponding variety of plant and animal communities. Wetland and riparian plant communities, including marshes, meadows, sphagnum bogs, riparian deciduous forest, and desert washes, are particularly important for wildlife, given the general scarcity of water in the region.

Both developed (e.g., camping, skiing, and day use) and undeveloped (e.g., hiking, fishing) recreation are important land uses in the region. In addition to tourism, other land uses include resource extraction (mining, energy production, and silviculture), agriculture (mostly livestock grazing), and defense-related activities.

Much of the Lahontan Region is in public ownership, with land use controlled by agencies, such as the U.S. Forest Service, National Park Service, and Bureau of Land Management, various branches of the military, the California State Department of Parks and Recreation, and the City of Los Angeles Department of Water and Power. While the permanent resident population (about 500,000 in 1990) of the Region is low, most of it is concentrated in high-density communities in the South Lahontan Basin. In addition, millions of visitors use the Lahontan Region for recreation each year. Rapid population growth has occurred in the Victor and Antelope Valleys, and within commuting distance of Reno, Nevada. Principal communities of the North Lahontan Basin include Susanville, Truckee, Tahoe City, South Lake Tahoe, Markleeville, and Bridgeport. The South Lahontan Basin includes the communities of Mammoth Lakes, Bishop, Ridgecrest, Mojave, Adelanto, Palmdale, Lancaster, Victorville, and Barstow.

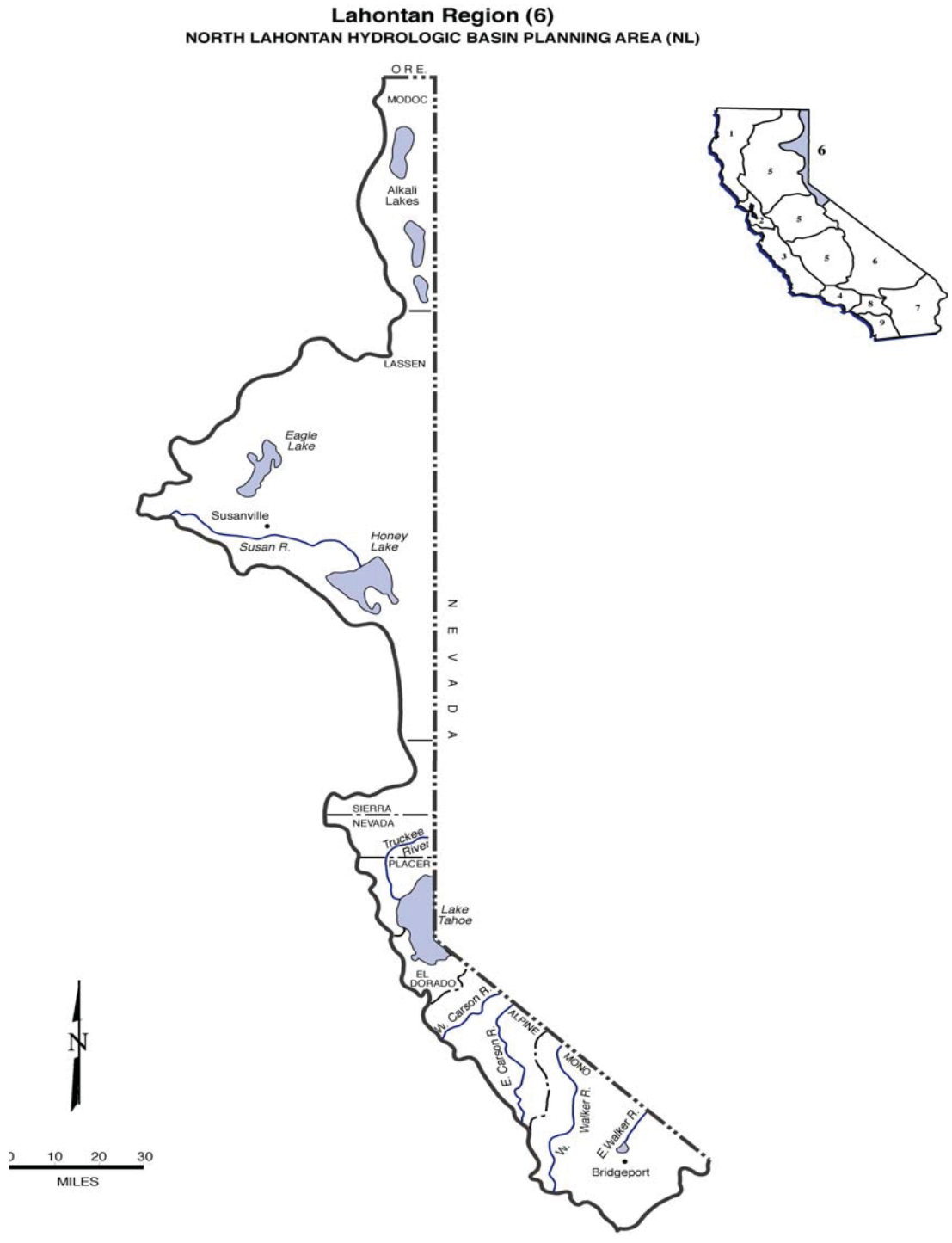


Figure 17. Lahontan Region, North Lahontan Hydrologic Basin.

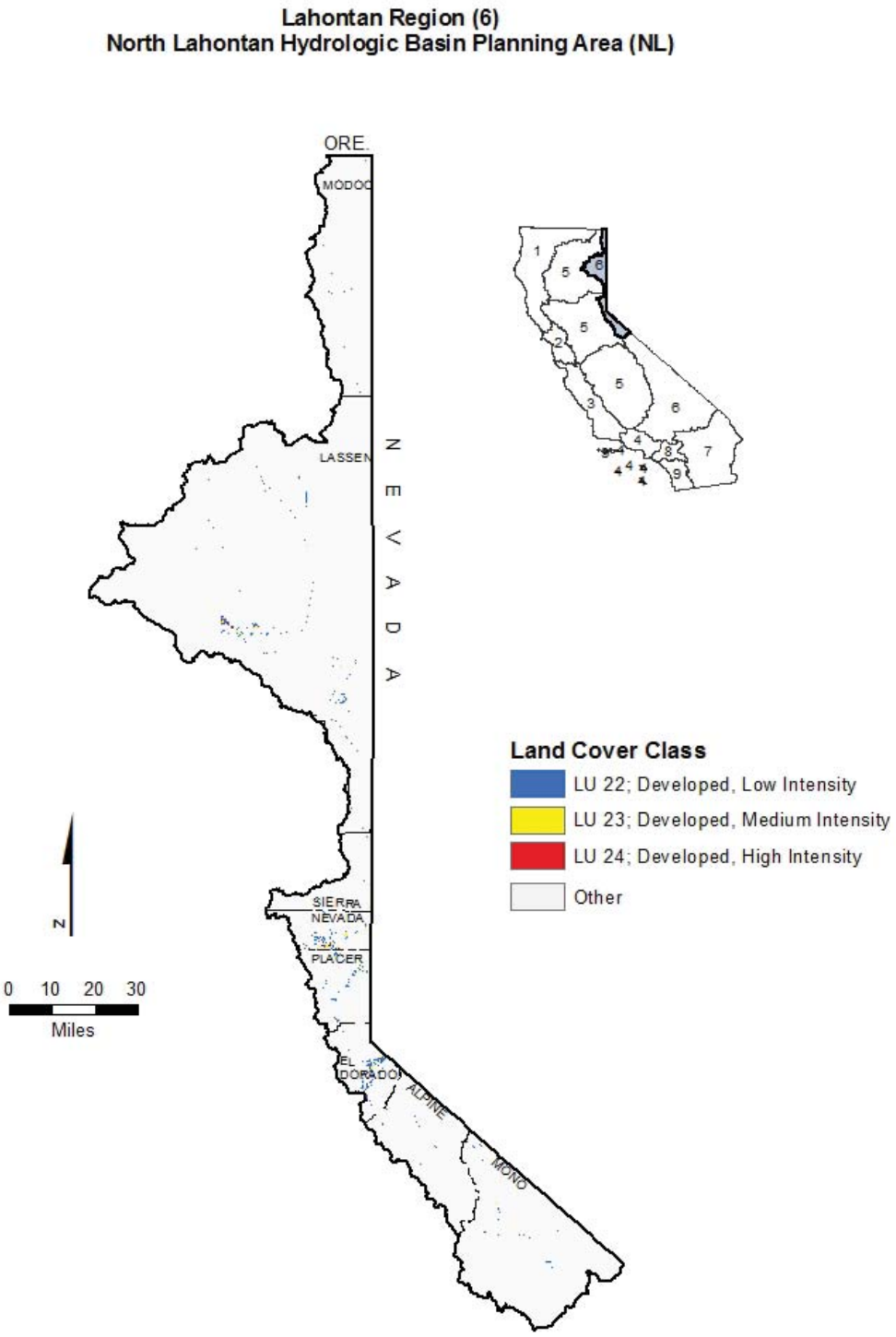


Figure 18. Lahontan Region, North Lahontan Developed Land Coverage.

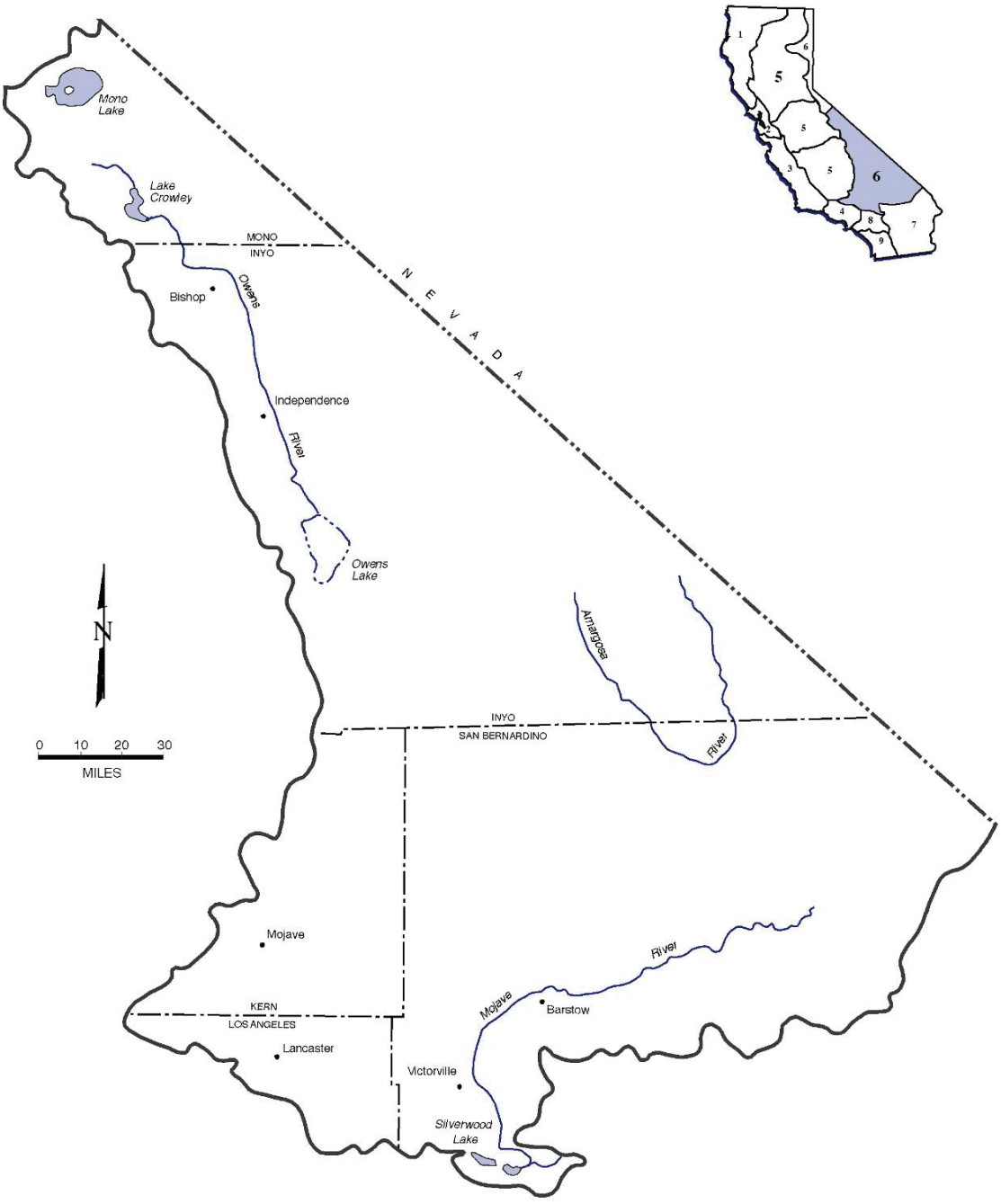


Figure 19. Lahontan Region, South Lahontan Hydrologic Basin.

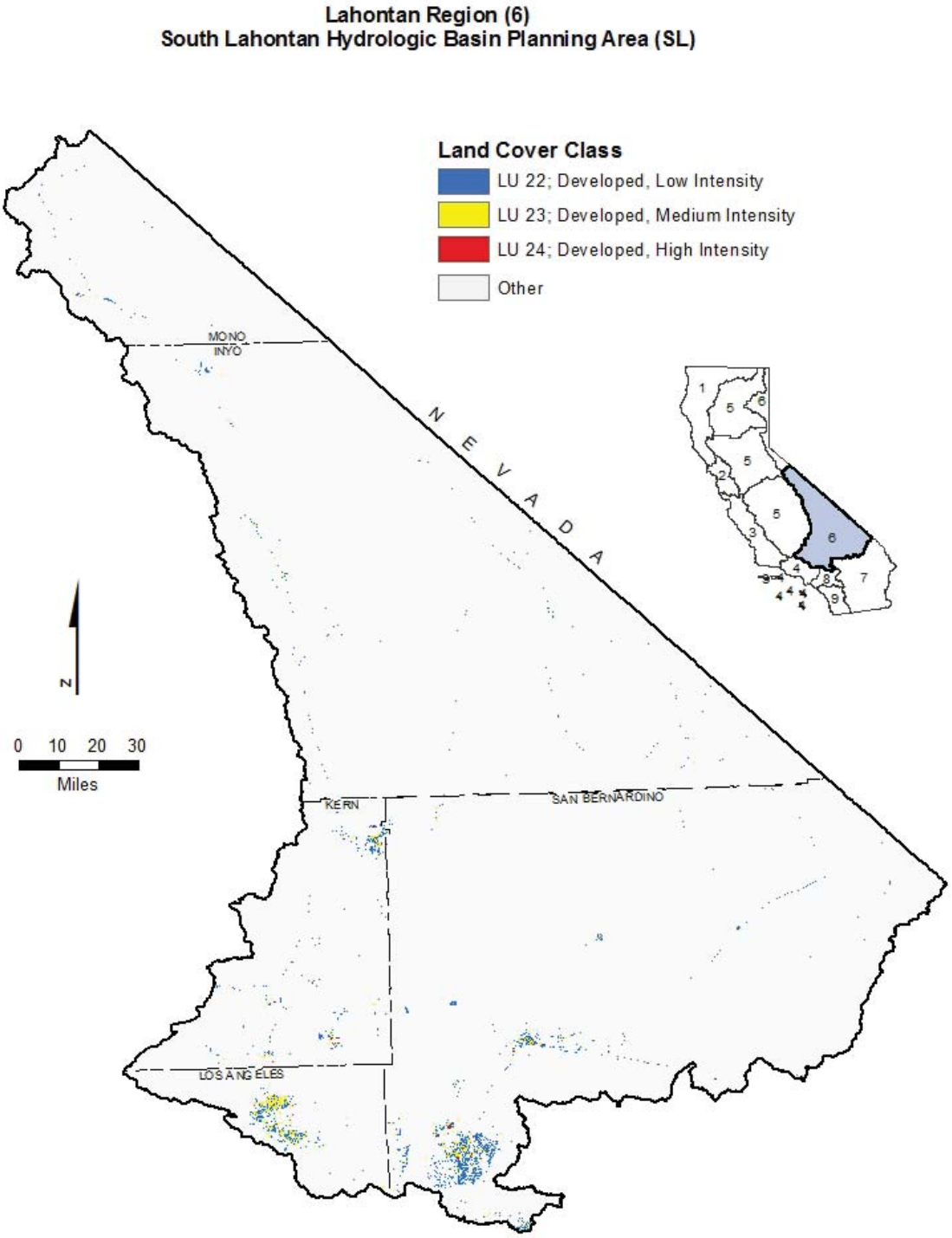


Figure 20. Lahontan Region, South Lahontan Developed Land Coverage.

3.10 Colorado River Basin Region

The Colorado River Basin Region covers approximately 13 million acres (20,000 square miles) in the southeastern portion of California (Figure 21, Figure 22). It includes all of Imperial County and portions of San Bernardino, Riverside, and San Diego Counties. It shares a boundary for 40 miles on the northeast with the State of Nevada. The New York, Providence, Granite, Old Dad, Bristol, Rodman, and Ord Mountain ranges border the region to the north, the San Bernardino, San Jacinto, and Laguna Mountain ranges border the region to the west, the Republic of Mexico borders the Region to the south, and the Colorado River and State of Arizona border the region to the east. Geographically the region represents only a small portion of the total Colorado River drainage area, which includes portions of Arizona, Nevada, Utah, Wyoming, Colorado, New Mexico, and Mexico. A significant geographical feature of the region is the Salton Trough, which contains the Salton Sea and the Coachella and Imperial Valleys. The two valleys are separated by the Salton Sea, which covers the lowest area of the depression. The Salton Sea is California's largest inland body of water and provides wildlife habitat and sport fishery.

Much of the agricultural economy and industry of the region is located in the Salton Trough. There are also industries associated with agriculture, such as sugar refining as well as increasing development of geothermal industries. The Salton Sea serves as a drainage reservoir for irrigation return water and storm water from the Coachella Valley, Imperial Valley, and Borrego Valley, and also receives drainage water from the Mexicali Valley in Mexico. Development along California's 230 mile reach of the Colorado River, which flows along the eastern boundary of the Region, include agricultural areas in Palo Verde Valley and Bard Valley, urban centers at Needles, Blythe, and Winterhaven, several transcontinental gas compressor stations, and numerous small recreational communities. Some mining operations are located in the surrounding mountains. Also the Fort Mojave, Chemehuevi, Colorado River, and Yuma Indian Reservations are located along the River.

The region has the driest climate in California. Snow falls in the region's higher elevations, with mean seasonal precipitation ranging from 30 to 40 inches in the upper San Jacinto and San Bernardino Mountains. The lower elevations receive relatively little rainfall. An average of four inches of precipitation occurs along the Colorado River, with much of this coming from late summer thunderstorms moving north from Mexico. Typical mean seasonal precipitation in the desert valleys is 3.6 inches at Indio and 3.2 inches at El Centro. Precipitation over the entire area occurs mostly from November through April, and August through September, but its distribution and intensity are often sporadic. Local thunderstorms may contribute all the average seasonal precipitation at one time or only a trace of precipitation may be recorded at any locale for the entire season.

The region provides habitat for a variety of native and introduced species of wildlife. Animals tolerant of arid conditions, including small rodents, coyotes, foxes, birds, and a variety of reptiles, inhabit large areas within the region. Along the Colorado River and in the higher elevations of the San Bernardino and San Jacinto Mountains, where water is more abundant, and where deer, bighorn sheep, and a diversity of small animals exist. Practically all of the fishes inhabiting the region are introduced species. The Salton Sea

National Wildlife Refuge and state waterfowl management areas are located in or near the Salton Sea. The refuge supports large numbers of waterfowl in addition to other types of birds. Located along the Colorado River are the Havasu, Cibola and Imperial National Wildlife Refuges. The region provides habitat for certain endangered/threatened species of wildlife including desert pupfish, razorback sucker, Yuma clapper rail, black rail, least Bell's vireo, yellow billed cuckoo, desert tortoise, and peninsular bighorn sheep.

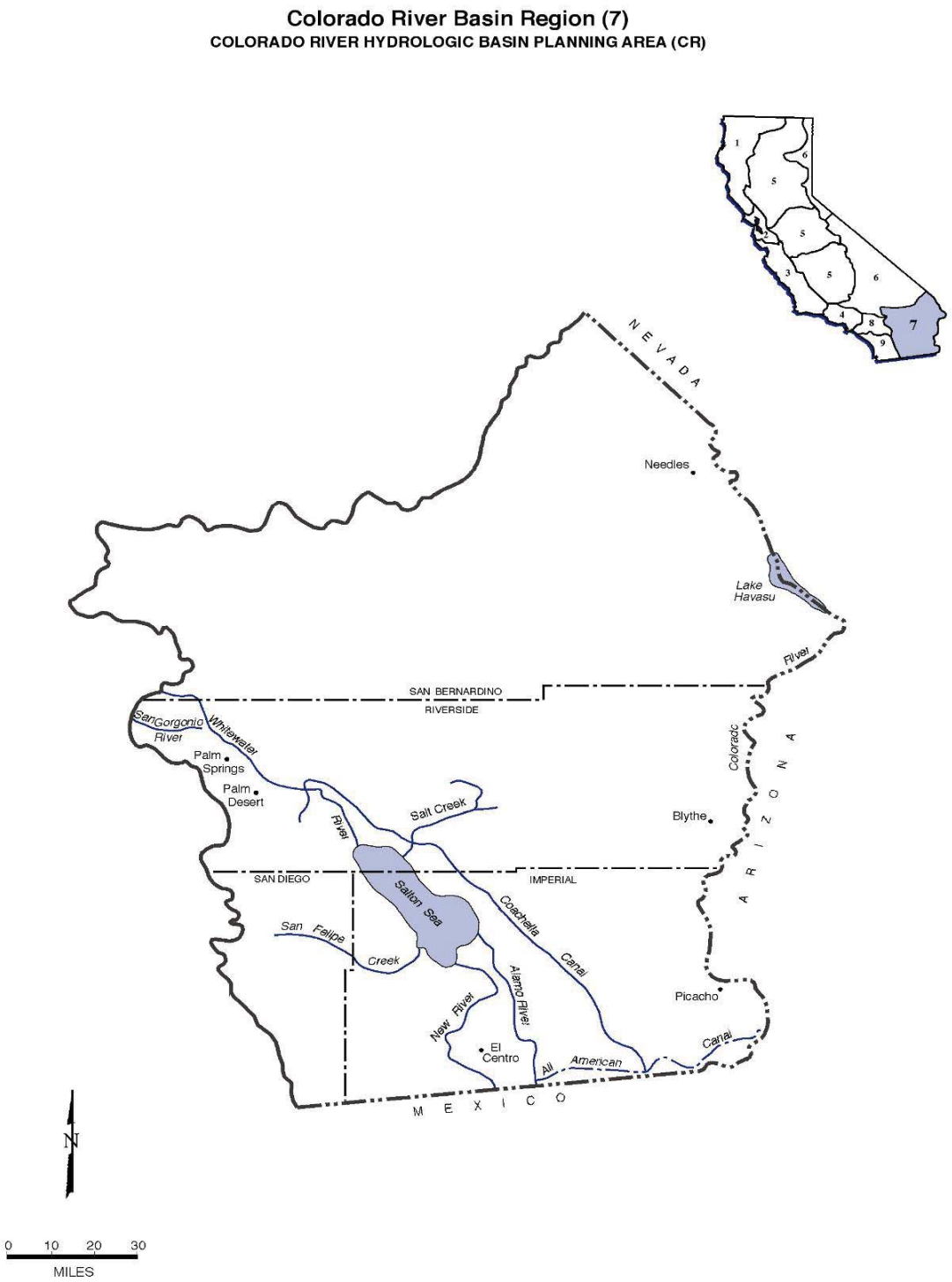


Figure 21. Colorado River Region Hydrologic Basin.

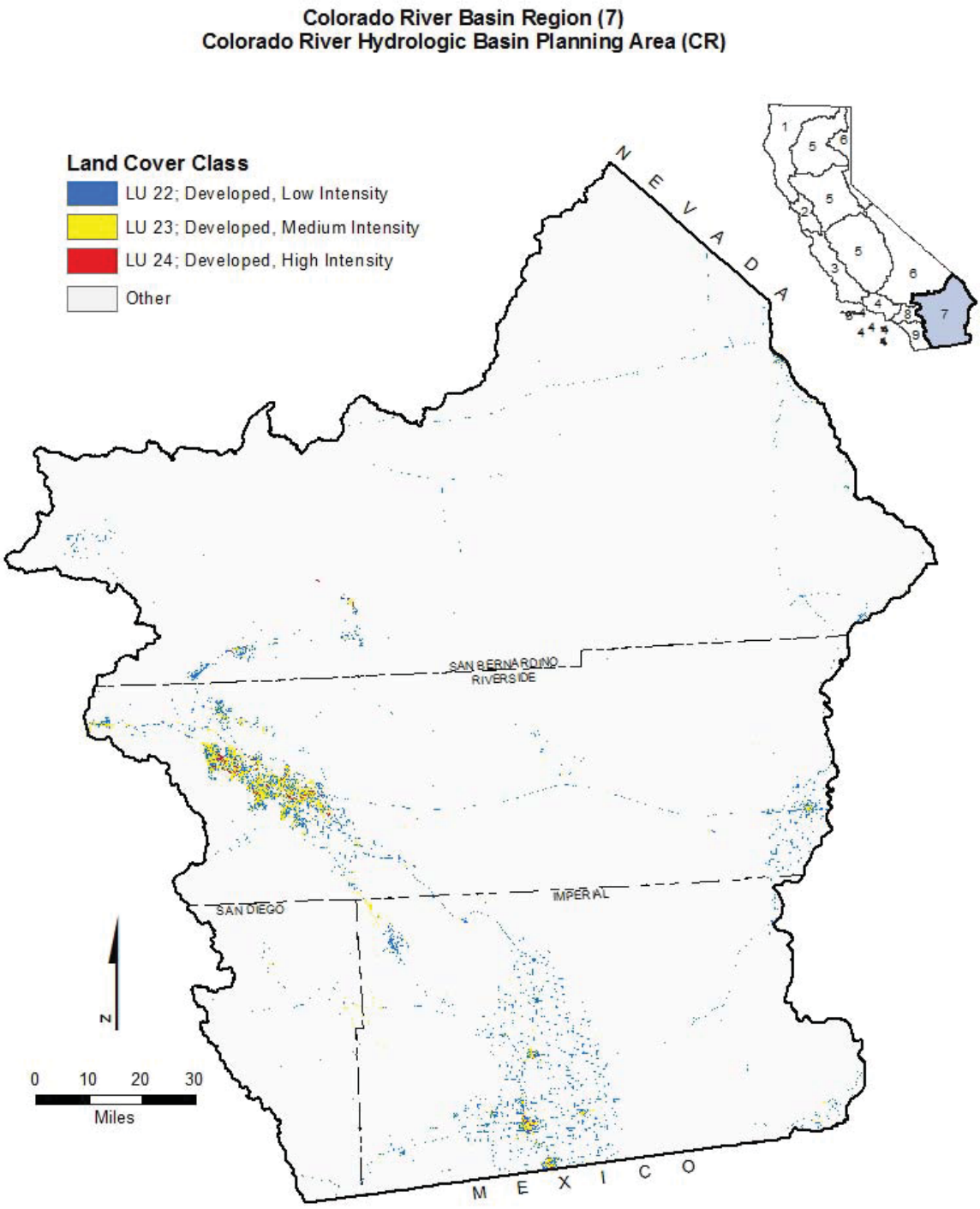


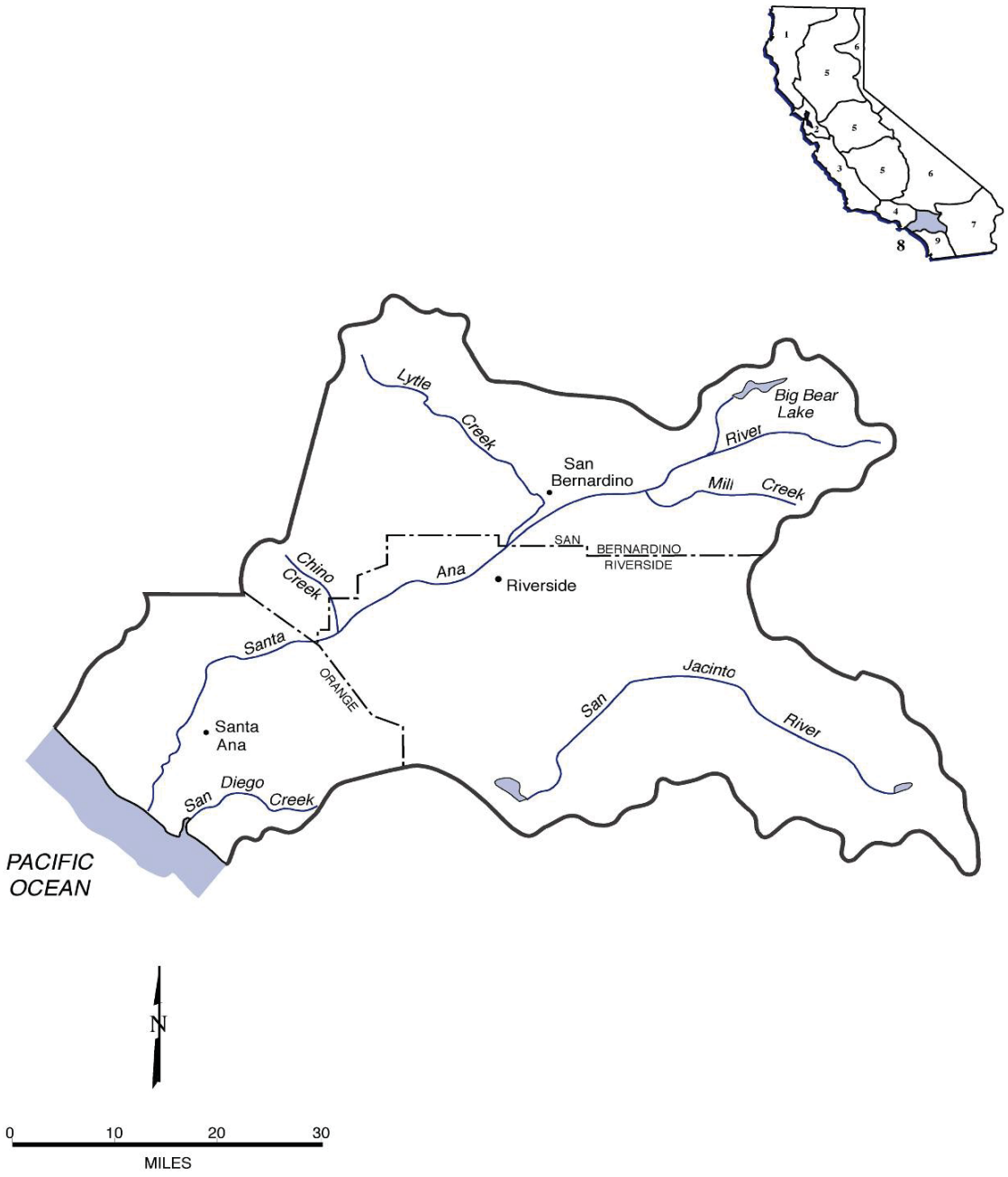
Figure 22. Colorado River Region Developed Land Coverage.

3.11 Santa Ana Region

The Santa Ana Region comprises all basins draining into the Pacific Ocean between the southern boundary of the Los Angeles Region and the drainage divide between Muddy and Moro Canyons, from the ocean to the summit of San Joaquin Hills; along the divide between lands draining into Newport Bay and Laguna Canyon to Niguel Road; along

Niguel Road and Los Aliso Avenue to the divide between Newport Bay and Aliso Creek drainages; and along the divide and the southeastern boundary of the Santa Ana River drainage to the divide between Baldwin Lake and Mojave Desert drainages; to the divide between the Pacific Ocean and Mojave Desert drainages (Figure 23, Figure 24). The Santa Ana Region is the smallest of the nine regions in the state (2,800 square miles) and is located in southern California, roughly between Los Angeles and San Diego. Although small geographically, the region's four million-plus residents (1993 estimate) make it one of the most densely populated regions.

The climate of the Santa Ana Region is generally dry in the summer with mild, wet winters). The average annual rainfall in the region is about 15 inches, most of it occurring between November and March. The enclosed bays in the region include Newport Bay, Bolsa Bay (including Bolsa Chica Marsh), and Anaheim Bay. Principal rivers include Santa Ana, San Jacinto and San Diego. Lakes and reservoirs include Big Bear, Hemet, Mathews, Canyon Lake, Lake Elsinore, Santiago Reservoir, and Perris Reservoir. Two ASBS are located in the Santa Ana Region: Robert E. Badham (#32) and Irvine Coast (also located in the San Diego Region) (#33).



Base map prepared by the Division of Water Rights, Graphics Services Unit

Figure 23. Santa Ana Region Hydrologic Basin.

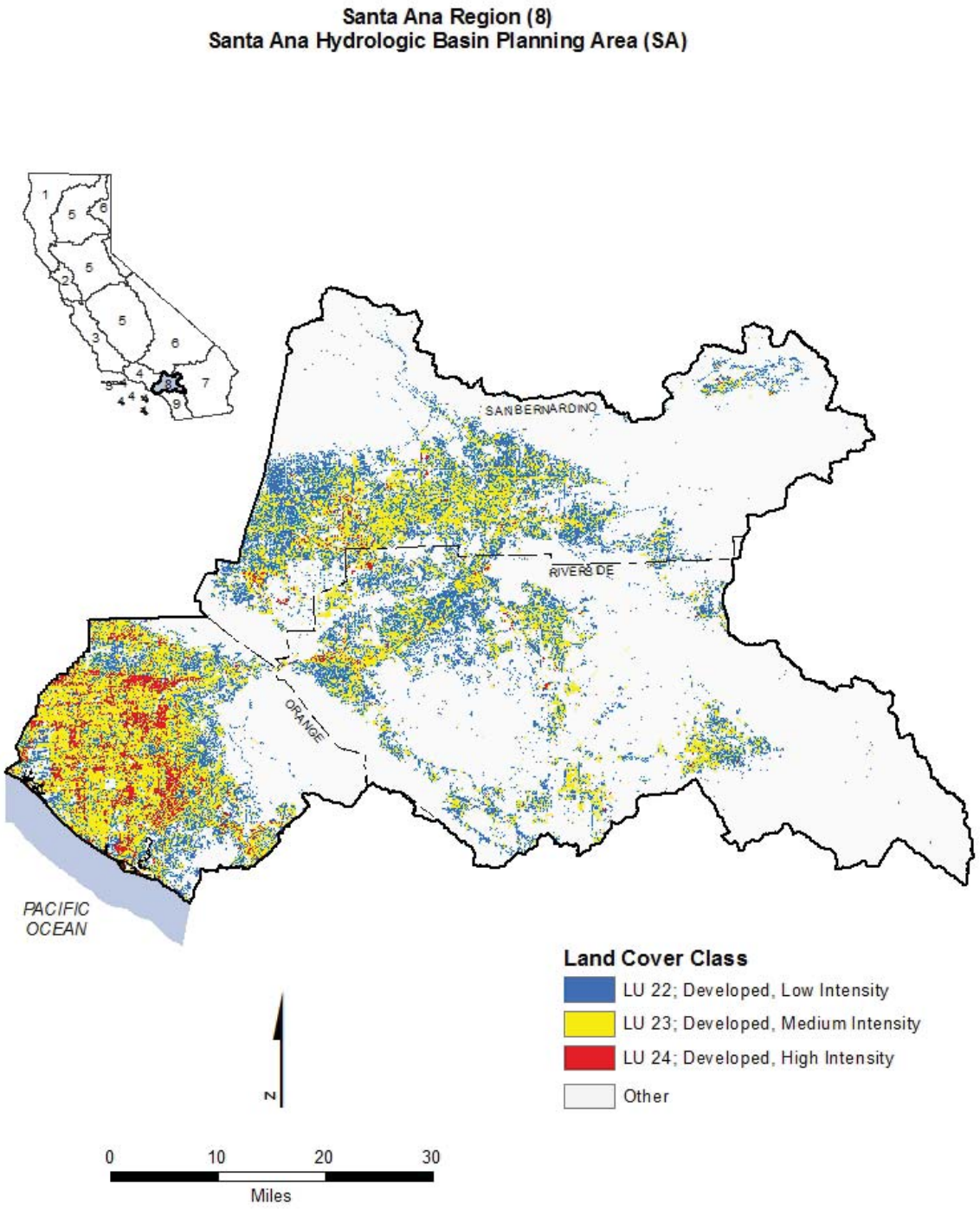


Figure 24. Santa Ana Region Developed Land Coverage.

3.12 San Diego Region

The San Diego Region comprises all basins draining into the Pacific Ocean between the southern boundary of the Santa Ana Region and the California-Mexico boundary (Figure 25, Figure 26). The San Diego Region is located along the coast of the Pacific Ocean from the Mexican border to north of Laguna Beach. The Region is rectangular in shape and extends approximately 80 miles along the coastline and 40 miles east to the crest of the mountains. The Region includes portions of San Diego, Orange, and Riverside Counties. The cities of San Diego, National City, Chula Vista, Coronado, and Imperial Beach surround San Diego Bay in the southern portion of the Region.

The population of the region is heavily concentrated along the coastal strip. Six deep water sewage outfalls and one across the beach from the new border plant at the Tijuana River empty into the ocean. Two harbors, Mission Bay and San Diego Bay, support major recreational and commercial boat traffic. Coastal lagoons are found along the San Diego County coast at the mouths of creeks and rivers.

San Diego Bay is long and narrow, 15 miles in length and approximately one mile across. A deep-water harbor, San Diego Bay has experienced waste discharge from former sewage outfalls, industries, and urban runoff. Up to 9,000 vessels may be moored there. San Diego Bay also hosts four major U.S. Navy bases with approximately 80 surface ships and submarines. Coastal waters include bays, harbors, estuaries, beaches, and open ocean.

Weather patterns are generally dry in the summer with mild, wet winters, with an average rainfall of approximately ten inches per year occurring along the coast.

Deep draft commercial harbors include San Diego Bay and Oceanside Harbor and shallower harbors include Mission Bay and Dana Point Harbor. Tijuana Estuary, Sweetwater Marsh, San Diego River Flood Control Channel, Kendal-Frost Wildlife Reserve, San Dieguito River Estuary, San Elijo Lagoon, Batiquitos Lagoon, Agua Hedionda Lagoon, Buena Vista Lagoon, San Luis Rey Estuary, and Santa Margarita River Estuary are the important estuaries of the region. There are 13 principal stream systems in the region originating in the western highlands and flowing to the Pacific Ocean. From north to south these are Aliso Creek, San Juan Creek, San Mateo Creek, San Onofre Creek, Santa Margarita River, San Luis Ray River, San Marcos Creek, Escondido Creek, San Dieguito River, San Diego River, Sweetwater River, Otay River, and the Tijuana River. Most of these streams are interrupted in character having both perennial and ephemeral components due to the rainfall pattern in the region. Surface water impoundments capture flow from almost all the major stream. Four ASBS are located in the San Diego Region: Irvine Coast (also located in the Santa Ana Region) (#33), La Jolla (#29), Heisler Park (#30), and San Diego-Scripps (#31).

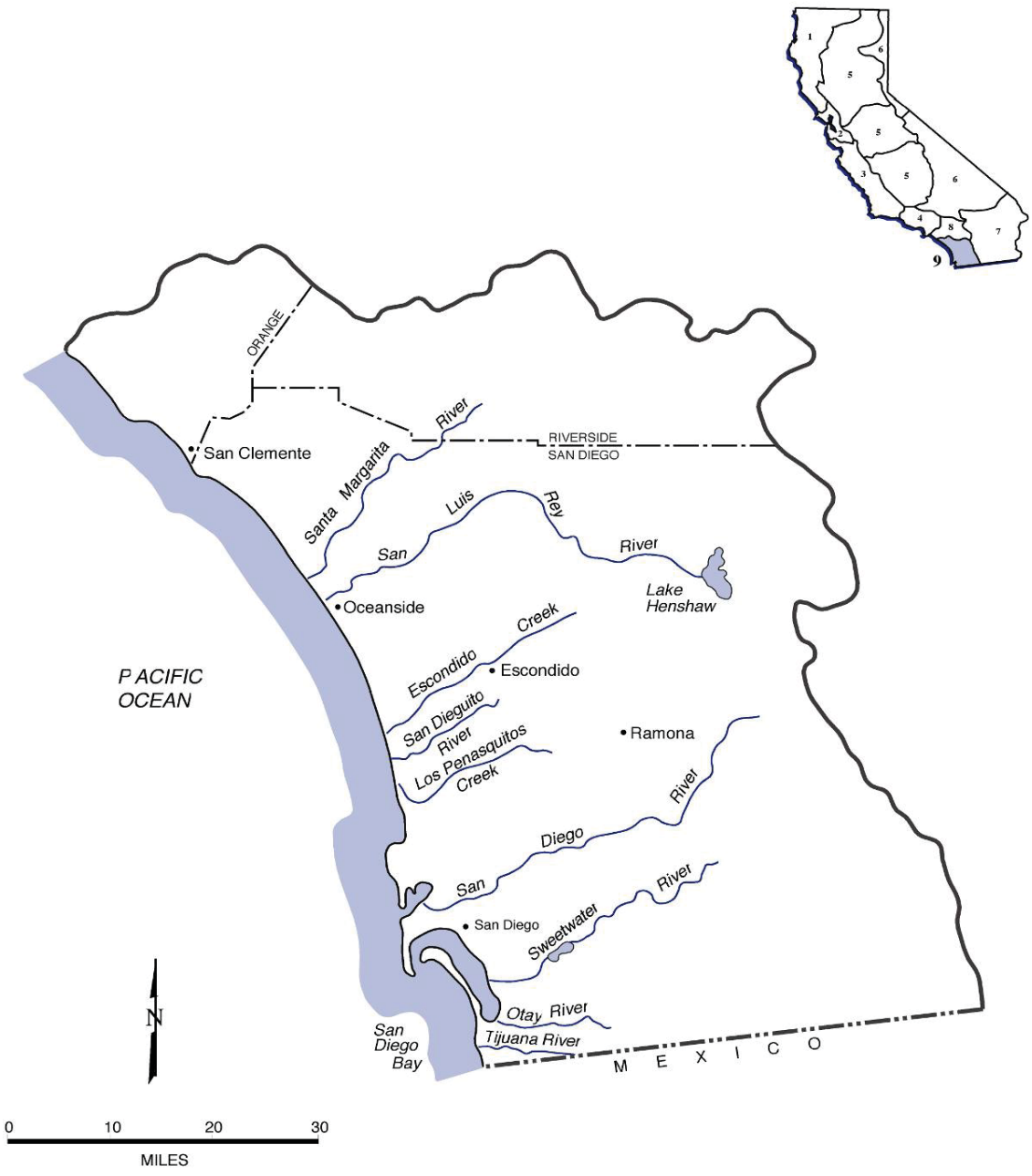


Figure 25. San Diego Region Hydrologic Basin.

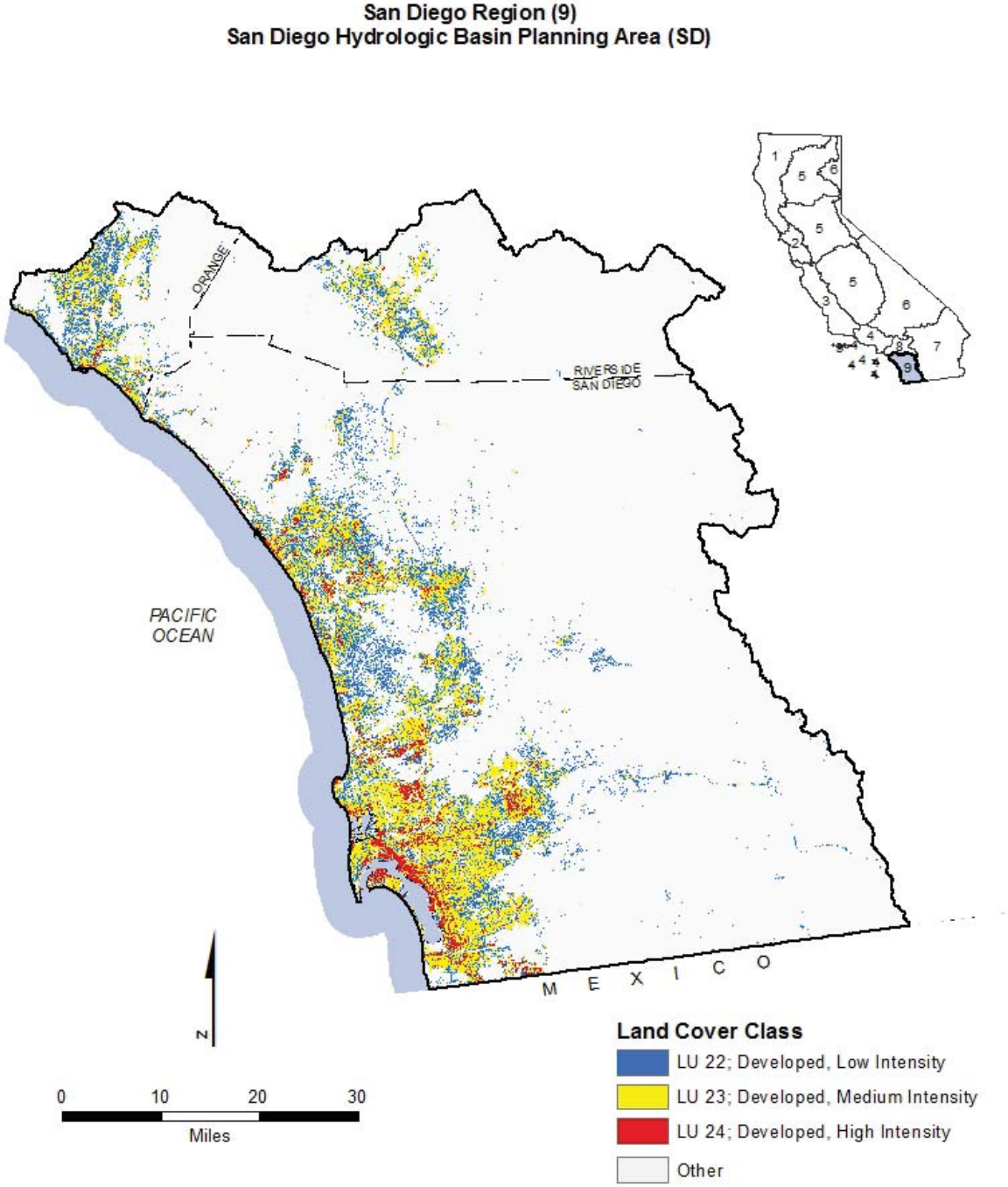


Figure 26. San Diego Region Developed Land Coverage.

4 ANALYSIS OF ISSUES AND CONSIDERATIONS

This section describes the major amendment-related issues identified during the scoping and development process, and provides a discussion of the State Water Board's rationale for the final Trash Amendments as currently proposed in this Final Staff Report. Each issue discussion is organized as follows:

Issue: A brief question framing the issue.

Current Conditions: A description of how the Water Boards currently act on the issue, where applicable.

Considerations: For each issue or topic, at least two considerations are provided. Each consideration is evaluated with respect to the program needs and the appropriate sections within Division 7 of the California Water Code. The considerations presented here also inform the requirement to analyze the reasonable range of alternatives to the project to avoid or reduce any potentially significant adverse environmental impacts, as described in Section 8.

Recommendation: In this section, State Water Board's recommended consideration (or combination of considerations) is identified and proposed for adoption.

4.1 Issue 1: How should the Trash Amendments define "trash"?

Current Conditions:

Waste and litter are currently defined in California law. As defined by the California Water Code, "waste" includes:

> "Sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal." (§ 13050(d))

The California Government Code defines "litter" as:

> "All improperly discarded waste material, including, but not limited to, convenience food, beverage, and other product packages or containers constructed of steel, aluminum, glass, paper, plastic, and other natural and synthetic materials, thrown or deposited on the lands and waters of the state, but not including the properly discarded waste of the primary processing of agriculture, mining, logging, sawmilling, or manufacturing." (§ 68055.1(g))

Considerations:

1. **No Project: No definition.** Each Water Board would define "trash" for itself in its respective basin plans. This option potentially would result in a wide variety of definitions, and result in a failure to achieve statewide consistency. Therefore, this approach is not recommended.

2. **Define "trash" by using Basin Plans, California Government Code, and the California Water Code.** This definition would combine the definitions of "litter" in the California Government Code and "waste" in the California Water Code to include litter, waste, and types of trash including but not limited to plastic, expanded styrene, cigarette butts, wood, glass, cardboard, metal, and green waste. The resulting definition would read as follows:

   Trash *means all improperly discarded solid material from any production, manufacturing, or processing operation including, but not limited to, products, product packaging, or containers constructed of plastic, steel, aluminum, glass, paper, or other synthetic or natural materials.*

   This definition includes smaller trash, such as preproduction plastics and other materials. These small forms of trash have an impact on beneficial uses and should be addressed by the objective. This approach is recommended.

3. **Define "trash" by using the California Government Code and the California Water Code, and include size limitation to definition consistent with current technology.** This definition would combine the definitions of "litter" in the California Government Code, with "waste" in the California Water Code to include litter, waste, and other debris of concern such as plastic, expanded styrene, cigarette butts, wood, cardboard, metal, and green waste. The definition would state that it only applies to trash greater than 5 mm in size, consistent with full capture systems.

   Trash *means all improperly discarded solid material over 5 mm in size from any production, manufacturing, or processing operation including, but not limited to, products, product packaging, or containers constructed of plastic, steel, aluminum, glass, paper, or other synthetic or natural materials.*

   The drawback to including a size limitation is that it does not effectively address smaller trash, such as preproduction plastic and other materials that have an impact on beneficial uses. Therefore this approach is not recommended.

Recommendation: Adopt a definition of "trash" with no size limitation (Consideration 2).

4.2 Issue 2: What type of water quality objective for trash should be considered?

The U.S. EPA must approve objectives in statewide water quality control plans. Once the objectives have been approved, they become federally mandated and enforceable. Water quality objectives can be narrative or numeric with discrete targets. A narrative objective is as enforceable as a numeric objective.

Current Conditions:

Although language varies by each regional water board, in general, the basin plans contain narrative water quality objectives that prohibit the presence of floatable, solid, suspended, and settleable materials in amounts that adversely affect beneficial uses.

There are currently 33 existing narrative objectives in the eleven different water quality control plans that apply to the discharge of trash to state waters.

In addition to the water quality standard, as discussed above, the 303(d) listing methodology defines trash as a "nuisance"[11] and states that water segments may be listed as impaired if there is a "significant nuisance condition compared to reference conditions." The existing trash TMDLs establish numeric targets of zero trash based on the interpretation of the narrative water quality objectives in the Los Angeles and Colorado River Basin Plans. Thus, the water bodies with 303(d) listings for trash are found to lack an assimilative capacity for any amount of trash (Los Angeles Water Board 2000; 2004; 2007a; 2007b; 2007c; 2007d; 2007e; 2007f; 2008g; 2010).

Furthermore, multiple assessment methods, using varying objectives, have been implemented by the Regional Water Boards. Assessment parameters presented in the *Rapid Trash Assessment Method Applied to Waters of the San Francisco Bay Region: Trash Measurements in Streams* included: level of trash, actual number of trash items found, threat to aquatic life, threat to public health, illegal dumping and littering, and accumulation of trash (Surface Water Ambient Monitoring Program 2007).

Considerations:

1. **No Project: No new objective.** The Water Boards would have to continue to rely on existing basin plans and Ocean Plan, which do not contain trash-specific narratives; instead the objectives refer to trash-related pollutants and other pollutants such as foam and sediment in general terms (i.e., floatable, suspended, and settleable material). Similarly, there currently is no water quality objective specifically for trash in the Ocean Plan and ISWEBE Plan. In addition, the existing regional water boards' basin plan narrative objectives lack consistency. Therefore, this approach is not recommended.

2. **Create a statewide numeric water quality objective of "zero trash."** This objective would create a new statewide numeric water quality objective of "zero trash." The numeric objective could be adopted in individual basin plans by regional water boards or by the State Water Board in statewide water quality control plans (i.e., the Ocean Plan and ISWEBE Plan).

   Specifically, this objective would require that all surface waters not contain trash. Effectively, this performance-based numeric objective would result in an absolute

[11] According to California Water Code (§ 13050(m)), nuisance is defined as anything which meets all of the following requirements:

(1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.

(2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.

(3) Occurs during, or as a result of, the treatment or disposal of wastes.

trash discharge prohibition. Such a discharge prohibition could be implemented in phases to address high trash generating areas first. These areas would be determined by either: (1) state-defined categorical areas or, (2) municipalities or responsible jurisdictions.

A numeric objective of "zero trash" could be an efficient regulatory tool because the measurement of compliance is clearly defined. This option would establish a quantitative objective as a statewide numeric standard. While zero trash is the desirable goal, it may not be a feasible numeric objective. On a feasible level, a single piece of trash found in a water body may or may not constitute impairment, and it may or may not be aesthetically unpleasing. Therefore, this approach is not recommended.

3. **Standardize the existing narrative objectives that vary among the water quality control plans.** Individual regional water boards have existing narrative objectives in their basin plans associated with trash. The standardized narrative objective would reflect the concept that the waters of the state shall be *free from floatable, settleable, and suspended materials.*

   Under this alternative, the State Water Board would adopt an order directing each Regional Water Board to adopt a standardized narrative objective in each basin plan through individual amendments. This would be a complex and resource intensive activity, and there is no guarantee that the narrative objectives ultimately adopted would be consistent from region to region. Therefore, this approach is not recommended.

4. **Establish a new statewide narrative objective specifically for trash in the Ocean Plan and ISWEBE Plan.** This option would create a new statewide narrative objective specifically addressing trash with standardized language in all statewide water quality control plans. The objective would be amended into the Ocean Plan and ISWEBE Plan. Statewide water quality control plans supersede basin plans, thereby eliminating the necessity of adopting a narrative objective in each basin plan. This would make more efficient use of Water Board resources. Therefore, this approach is recommended.

Recommendation: Adopt a statewide narrative water quality objective specifically for trash in the Ocean and ISWEBE Plan (Consideration 4).

4.3 Issue 3: Which surface waters should the Trash Amendments be applicable to?

Current Conditions:

There are 73 listed impairments for trash in California waters. TMDLs have been developed to date in the Los Angeles Region and the Colorado River Basin Region. In the Colorado River Basin, a TMDL for trash was adopted for the New River (at the international boundary) that included a numeric target of zero trash (Colorado River Basin Water Board 2006). In the Los Angeles Region, fifteen TMDLs were adopted for trash and debris by either the Los Angeles Water Board or U.S. EPA (Los Angeles

Water Board 2000; 2004; 2007a; 2007b; 2007c; 2007d; 2007e; 2007f; 2008g; 2010, U.S. EPA 2012a).

Considerations:

1. **No Project.** Water Boards may address trash control through a mixture of regional planning efforts and water body specific TMDLs. Because No Project would not meet the trash objectives to provide a consistent statewide program to address trash in state waters, this approach is not recommended.
2. **Applicable to all surface waters.** In this option, the Trash Amendments would apply to all surface waters covered by the Ocean Plan and the ISWEBE Plan. This would provide statewide consistency for trash control. However, permittees within the Los Angeles Region have made much progress towards compliance with the existing trash and debris TMDLs, so superseding the Los Angeles Water Board's Basin Plan could be counter-productive. Therefore, this approach is not recommended.
3. **Applicable to all surface waters with the exception to those covered by an existing trash and debris TMDL within the jurisdiction of the Los Angeles Water Board.** In this option, the Trash Amendments would apply to all surface waters covered by the Ocean Plan and the ISWEBE Plan with the exception of those covered by an existing trash and debris TMDLs within the Los Angeles Region. The fifteen trash TMDLs in the Los Angeles Region would continue to have more stringent provisions than the final Trash Amendments. This option is not intended to reduce statewide consistency for trash controls, as the Trash Amendments would propose similar set of compliance measures as the trash and debris TMDLs. Instead, the final Trash Amendments would build on lessons learned from the extensive trash control efforts in the Los Angeles Region. However, the final Trash Amendments would direct the Los Angeles Water Board to reconsider the scope of its trash TMDLs within one year of the Trash Amendments' effective date to consider focusing its permittees' trash control efforts on high trash generation areas rather than all areas within each permittee's jurisdiction. The reconsideration would occur for all existing trash TMDLs, except for the Los Angeles River Watershed and Ballona Creek Trash TMDLs, because those two TMDLs are approaching final compliance deadlines of September 30, 2016 and September 30, 2015, respectively. Because this approach creates statewide consistency regarding the concept of trash controls in state water while acknowledging the progress made in the Los Angeles Region, this approach is recommended.

Recommendation: The Trash Amendments should apply to all surface waters in the state with the exception of those waters within the jurisdiction of the Los Angeles Water Board that have existing trash and debris TMDLs. The Los Angeles Water Board should reconsider the scope of all existing trash TMDLs, except for the Los Angeles River Watershed and Ballona Creek Trash TMDLs (Consideration 3).

4.4 Issue 4: What should the scope of a discharge of prohibition for trash, including preproduction plastic[12], be?

Current Conditions:

There is no statewide prohibition of discharge of trash to state waters. Instead, various programs exist in parts of the state to address the elimination of trash from state waters. Region-specific NPDES permits, such as in the San Francisco Bay Region, have existing requirements to minimize trash, and trash and debris TMDLs in the Los Angeles Region have similar implementation measures. Trash control measures can range from structural controls (e.g., partial capture systems and full capture systems) to institutional controls (e.g., increased street sweeping, enforcement of litter laws, and adoption of municipal ordinances prohibiting specific products), and combinations of controls.

Through AB 258, the "Preproduction Plastic Debris Program" became effective in the California Water Code (§ 13367) on January 1, 2008. This tasks the Water Boards to implement a program to control discharges of preproduction plastics from point and nonpoint sources. Preproduction plastic can be improperly discharged during transport, packaging, and processing when proper housekeeping practices are not employed. Once spilled or released into the environment, their small size of 5 mm or less can preclude effective cleanup. In compliance with Water Code section 13367(d), the IGP contains minimum BMPs to regulate plastic manufacturing, handling, or transportation facilities.

Considerations:

1. **No Project.** The Water Boards would continue to regulate trash through either TMDLs and/or region-specific NPDES permit requirements. For preproduction plastics, the Water Boards would continue to implement AB 258 through the IGP permit, which does not cover discharges from locations such as railroad trans-loading stations. Because No Project would not meet the trash objectives to provide a consistent statewide program to address trash in state waters, this approach is not recommended.

2. **Implement the water quality objective through a conditional prohibition of discharge.** Under this option, the water quality objective for trash would be implemented through a conditional prohibition of discharge of trash directly into waters of the state or where trash may ultimately be deposited into waters of the state. The prohibition of discharge would apply to both permitted and non-permitted dischargers. Non-permitted dischargers would either comply with prohibition of discharge or be subject to direct enforcement action. Dischargers with NPDES storm water permits (i.e., MS4 Phase I, MS4 Phase II, Caltrans, IGP, and CGP), WDRs, and waivers of WDRs would comply with the prohibition through a plan of implementation contained in the respective permits. The plan

[12] California Water Code section 13367 states that "preproduction plastic includes plastic resin pellets and powdered coloring for plastics."

of implementation would provide options for permittees to choose from a variety of treatment and institutional controls to minimize the discharge of trash.

There are a wide variety of treatment and institutional controls that have been found to be effective in reducing or eliminating trash in waters. Treatment control options include full capture systems, partial capture systems, LID, and multi-benefit projects. Institutional controls are non-structural BMPs, such as street sweeping, trash collection, anti-litter educational outreach programs, and regulatory source controls.

In addition, the prohibition of discharge would specifically apply to the discharge of preproduction plastic by all manufacturers and transporters of preproduction plastics, and manufacturers that use preproduction plastics.

The conditional prohibition of discharge allows for the implementation of the water quality objective for trash through Water Board permits or through direct enforcement of non-permitted dischargers. Additionally, this option provides flexibility to permittees to determine the most effective means of trash control in light of site conditions, types of trash, and the resources available for maintenance and operation. Therefore, this approach is recommended.

3. **Outright prohibition of discharge for preproduction plastic.** This option would prohibit the discharge of preproduction plastic to waters of the state. Preproduction plastic can be as small as one millimeter, and as such it would not be caught by full capture system. Once released into the environment, drainage system, or waterway, their small size prevents effective cleanup. Because this approach does not build upon implementation efforts achieved in the IGP, a stronger alternative is recommended below.

4. **Use both the existing Industrial General Permit and an outright prohibition of discharge for preproduction plastic.** In this option, the prohibition of discharge for preproduction plastic could continue to be implemented through the IGP, as well as directly through the enforcement of the prohibition of discharge on facilities and industrial activities that are not subject to the IGP. This provides the widest and most efficient approach to controlling the discharge of preproduction plastic, and is therefore recommended.

Recommendation: The Trash Amendments should implement the water quality objective through a conditional prohibition of discharge of trash (Consideration 2). The existing IGP and an outright prohibition of discharge should be used to address the prohibition of discharge of preproduction plastic (Consideration 4).

4.5 Issue 5: Where should trash control measures be employed?

Current Considerations:

In the Los Angeles Region, fifteen TMDLs were adopted for trash and debris by either the Los Angeles Water Board and/or U.S. EPA (Table 16). The existing trash and debris TMDLs targets all land uses within the scope of the TMDL, regardless of the

trash generations rates within those land uses. In 2001, the City of Los Angeles Watershed Protection Division performed a geographical analysis of trash generation in the City of Los Angeles. The study showed that trash is most severe in Downtown LA and nearby communities where commercial, industrial, and residential land uses are predominant (City of Los Angeles 2002). According to the 2004 Trash Baseline Monitoring results in Los Angeles County, the highest trash-generating land-uses were high-density residential, mixed use urban, commercial, and industrial land uses in the Ballona Creek and Los Angeles River Watershed, respectively (County of Los Angeles Department of Public Works 2004a; 2004b).

Under the San Francisco Bay MRP, permittees are developing and implementing Short-Term Trash Load Reduction Plans. The Bay Area Stormwater Management Agencies Association (BASMAA) worked collaboratively with the San Francisco Bay MRP permittees to develop a regionally consistent method to establish baseline trash loads from their municipality. The resulting BASMAA Baseline Trash Generation Rates Project assisted the permittees in establishing a baseline by which to demonstrate progress towards trash load reduction goals. The project determined that the four land uses with the highest trash generation rates are (1) retail and wholesale, (2) high-density residential, (3) K-12 schools, and (4) commercial/services and industrial. It also developed a conceptual model for trash generation rates (EOA, Inc. 2012a). The project focused on developing baseline generation rates and categorizing the permittees' jurisdictions as high, medium, and low trash generation rates. This allows the San Francisco Bay MRP permittees to strategize and focus trash controls to effectively achieve trash load reductions. The results of the Los Angeles and San Francisco studies indicate that trash is generated at higher rates in highly populated and/or highly visited areas that attract high volumes of vehicular and pedestrian traffic.

Considerations:

1. **No Project: No prioritization regarding the location of trash controls.** In this option, there is no prioritization regarding of the location of trash control for permitted storm water dischargers. This option lacks statewide clarity and consistency for the permitting authority and permittees. Therefore, this approach is not recommended.
2. **All storm drains in all land uses regardless of trash generation rates.** In this option, all areas under the jurisdiction of the permitted storm water dischargers would require trash controls. This option would provide statewide consistency, specifically with the trash and debris TMDLs in the Los Angeles Region. However, trash reduction measures would be required in locations with low trash generation rates, and therefore very little negative impact. This option would be resource intensive when compared to the benefit derived. Therefore, this approach is not recommended.
3. **Focus trash controls on areas with high trash generation rates.** In this option, implementation of the prohibition of discharge would be focused on areas with high trash generation rates.

   The studies from the development and implementation of the trash and debris TMDLs in the Los Angeles Region found that the land uses of highest trash

generation are high density residential, commercial, and industrial land uses (County of Los Angeles Department of Public Works 2004a, Los Angeles Regional Water Board 2007f). While each municipality and country has different land use definitions and codes, an approximate 15-30 dwelling units per acre definition for high density residential is offered as an example of the dwelling unit standards used in local general plans by the Governor's Office of Planning and Research in its 2003 General Plan Guidelines (Governor's Office of Planning and Research 2003). For MS4 Phase I and Phase II permittees high trash generating land use areas or what the final Trash Amendments refer to as "priority land uses" would include: high density residential, commercial, industrial, mixed urban, and public transportation areas. Additionally, a permittee would have the ability to propose alternative equivalent land uses to continue to focus limited resources to the areas with the highest trash generation rates.

Caltrans has jurisdiction over a linear system, and the high trash generating areas under its jurisdiction are different than the priority land uses for a municipality. Based on Caltrans trash studies and consultation (Caltrans 2000, Caltrans 2004), the Adopt-A-Highway program, and the Keep California Beautiful program, the "significant trash generating areas" for Caltrans could include areas such as: (1) highway on- and off- ramps in high-density residential, commercial, mixed urban, and industrial land uses; (2) rest areas and park-and-rides; (3) state highways in commercial and industrial land uses; and (4) other mainline highway segments that can be identified by Caltrans through pilot studies and/or surveys.

In comparison to MS4 Phase I, MS4 Phase II, and Caltrans permittees, industrial facilities or construction sites with NPDES permits are substantially smaller in size. Thus, IGP and CGP permittees would have the ability to control trash for all storm water discharges and authorized non-storm water discharges in their jurisdiction.

Because the Los Angeles and San Francisco studies teach that prioritization of the areas with the highest trash generation rates will substantially reduce the discharge of trash to surface waters while maximizing the allocation of trash control resources, this approach is recommended.

Recommendation: Focus trash controls to areas with high trash generation rates (Consideration 3).

4.6 Issue 6: What implementation measures should be employed for trash control in NPDES storm water permits (i.e., point sources)?

Current Considerations:

Trash is currently addressed through the water quality objectives in basin plans and water body specific TMDLs (Table 15). There is a lack of statewide consistency regarding how the water quality objectives are implemented in NPDES permits. Each NPDES storm water permit has a varying set of requirements, ranging from minimal institutional controls, such as street sweeping and education, to control of the entire jurisdiction's discharge of trash through treatment and institutional controls.

For example, in the Los Angeles Region, fifteen TMDLs were adopted for trash and debris by either the Los Angeles Water Board and/or U.S. EPA (Table 16). Implementation plans for point source responsible parties to achieve waste load allocations vary slightly but are based on phased percent reduction goals that can be achieved either implementing full capture systems within all land uses or implementing other treatment and/or non-structural BMPs to comply with the TMDL. Under the San Francisco Bay MRP, compliance with the discharge prohibition and trash-related receiving water limitations is met through a timely implementation of control measures, BMPs and any trash reduction ordinances or mandatory full trash capture systems to reduce trash loads from MS4s by set percent reductions over three phases.

State Water Board MS4 Phase II (Order No. 2013-001) and Caltrans (Order No. 2012-0011) permits have street sweeping and education requirements. The CGP prohibits the discharge of any debris from construction sites, and encourages the use of more environmentally safe, biodegradable materials on construction sites to minimize the potential risk to water quality. The IGP contains minimum BMP provisions to regulate the discharge of preproduction plastic from manufacturing, handling, or transportation facilities.

Considerations:

1. **No Project: No establishment of implementation measures for NPDES storm water permits.** An absence of implementation measures in the final Trash Amendments would mean that no trash control guidance would be provided to the Water Boards when reissuing their NPDES storm water permits. MS4 Phase I and MS4 Phase II permits could require the reduction of trash in their storm water discharges to the Maximum Extent Practicable. IGP and CGP permittees would be left to a myriad of different standards depending on the site, receiving waters, listing and TMDL status, and basin plan language, resulting in unclear permitting requirements and the potential for trash discharges to not be effectively prohibited.

   This approach is not recommended because of the potential lack of consistency regarding trash control across NPDES storm water permits.

2. **Require the sole use of full capture systems.** Under this option, all permitted storm water dischargers would implement the use of full capture systems to reduce and eliminate trash discharged into the water bodies of California. The definition of full capture systems could mirror the same definition as provided in the Los Angeles River Watershed trash TMDL (Los Angeles 2007f). The definition is as follows:

   > *"A full capture system is treatment control (either a single device or a series of devices) that traps all particles that are 5 mm or greater, and has a design treatment capacity that is either: a) of not less than the peak flow rate, Q, resulting from a one-year, one-hour, storm in the subdrainage area, or b) appropriately sized to, and designed to carry at least the same flows as, the corresponding storm drain."*

Installation of full capture systems would demonstrate compliance for the relevant drainage area, provided that the full capture systems were adequately designed, sized, installed, and maintained. The installation of a full capture system by a permittee would not establish any presumption that the system was adequately sized, and the Water Boards would reserve the right to review sizing or other data in the future to validate that a system would satisfy the definition of a full capture system. Maintenance records indicating trash loads removed and overall system efficiency would be reported regularly and made available for inspection by the regional water boards and public viewing.

The maintenance of such systems on private properties, especially those which have been demonstrated to have extensive internal drainage systems with multiple storm drain inlets (e.g., schools, sports complexes, residential/ industrial/ commercial developments) would also be addressed in this option.

This option would require that all NPDES storm water permittees to install full capture systems without other options to control trash. This option does not take into consideration particular conditions within jurisdictions or sites. This could cause an undue burden on areas and communities that would better benefit from focusing their resources on more cost-effective methods of trash control. Therefore, this approach is not recommended.

3. **Require the sole use of institutional controls.** In this option, NPDES storm water permits would contain requirements that permittees comply with the prohibition of discharge through the sole use of institutional controls (such as street sweeping, clean-up events, education programs, additional public trash cans and increased collection frequency expanded recycling and composting efforts, and adoption of regulatory source controls). This option would meet the goal of preventing trash from entering state waters and provide statewide consistency. However, permittees should have flexibility to determine the most effective means of controlling trash because of particular conditions of sites, types of trash, and the resources available for maintenance and operation. Therefore, this approach is not recommended.

4. **Establish a dual alternative "compliance Track" approach.**

In this option, implementation of the prohibition of discharge would be tailored for each NPDES storm water permit category.

MS4 Phase I and Phase II Permits

For MS4 Phase I and Phase II permits, implementation of the prohibition of discharge would focus on areas with high trash generation rates. Based on Los Angeles and San Francisco studies, the municipal areas with high trash generation rates are identified as "priority land uses". The "priority land uses" would consist of high density residential, industrial, commercial, mixed urban and public transportation stations or equivalent alternative land uses.

As each Phase I and Phase II MS4 has individual site-specific characteristics, permittees could comply with the prohibition of discharge of trash through one of two compliance Tracks.

Under Track 1, permittees would install a network of full capture systems for all storm drains that capture runoff from one or more “priority land uses”.

Under Track 2, permittees would install, operate, and maintain a combination of controls (structural and institutional), as long as the combination of controls achieves the same performance results as compliance under Track 1, namely full capture system equivalency. Structural controls could include any combination of full capture systems, other treatment controls, such as LID, and multi-benefit projects.

Caltrans

For the Caltrans permit, implementation of the prohibition of discharge world focus on “significant trash generating areas”, which may include area such as: on- and off-ramps in “priority land uses”, rest areas and park-and-rides, state highways in commercial and industrial land uses and other segments identified by Caltrans. As Caltrans is a linear system, exclusive use of full capture systems might not be appropriate to achieve the water quality objective for trash. Caltrans would comply with requirements similar to Track 2 to develop and execute an implementation plan to install, operate, and maintain full capture systems, other treatment controls (e.g., partial capture systems and LID), or institutional controls, and/or multi-benefit projects.

IGP/CGP

In comparison to jurisdictions under MS4 Phase I, Phase II and Caltrans permits, industrial facilities or construction sites with NPDES permits are substantially smaller in size. Thus, IGP and CGP permittees would comply with an outright prohibition of discharge trash from all storm water discharges and authorized non-storm water discharges. If the industrial or construction permittee, however, can demonstrate that it is unable to comply with the outright prohibition of discharge, then the permittee may comply through one of two Tracks.

Under Track 1, the permittee would install, operate, and maintain full capture systems for storm drains that service the facility or site.

Under Track 2, the permittee would develop and execute an implementation plan that committed to any combination of controls, such as full capture systems, other treatment controls (e.g. partial capture systems and LID), institutional controls, and/or multi-benefit projects to achieve the same performance results as installation, operation and maintenance of full capture systems would achieve.

A dual alternative “compliance Track” approach tailored to each NPDES storm water permit category would provide flexibility to permittees to determine the

most effective means of controlling trash while taking into consideration particular site conditions, types of trash, and the available resources for maintenance and operation. This option is therefore recommended.

Recommendation: Implement the water quality objective and prohibition of discharge with a dual alternative "compliance Track" approach tailored to each NPDES storm water permit category (Consideration 4).

4.7 Issue 7: What implementation measures should be employed for trash from nonpoint sources (such as open space recreational areas)?

Current Conditions:

Currently, many open space recreational land uses, such as beaches, marinas, campgrounds, and picnic areas experience intensive use and littering. These are often not covered by MS4 permits.

In the Los Angeles Region, the fifteen trash and debris TMDLs address discharges from nonpoint sources through load allocations. At present, the load allocations are implemented through a conditional waiver from waste discharge requirements. Nonpoint source dischargers may achieve compliance with the load allocations by implementing a minimum frequency of assessment and collection/best management practice (MFAC/BMP) program. The MFAC/BMP Program includes an initial minimum frequency of trash assessment and collection and suite of structural and/or non-structural BMPs.

Considerations:

1. **No Project: No establishment of implementation measures for nonpoint sources.** Without statewide implementation measures for trash control for nonpoint sources, nonpoint sources of trash would continue to either lack implementation provisions or contain load allocation within individual water body TMDLs. Because No Project would not meet the trash objectives to provide a consistent statewide program to address trash in state waters, this approach is not recommended.

2. **Assessment, collection and management practices for trash control would be required of all nonpoint source dischargers.** Nonpoint source dischargers would be required to develop and implement a program of management practices for control of trash within a WDR or a waiver of WDR. Management practices could include enforcement of litter laws, education, recycling programs, more or better trash receptacles, and/or more frequent servicing of trash receptacles. Assessment, collection and management practices may include initial and annual assessments of trash generation, a determination of collection frequency necessary to meet the water quality objective, and a suite of structural and/or nonstructural management practices that prevent trash from entering or accumulating in waters of the state.

   The discharger would be required within a WDR or a Waiver of a WDR to facilitate the initial annual assessment collection and disposal of all trash found in or adjacent to surface waters, including along shorelines, channels, or

river/stream banks, and would implement an initial suite of BMPs based on current trash management practices in land areas that are found to be sources of trash to a water body.

Considering regions with large publicly owned rural areas, it may be most appropriate to address nonpoint source trash on federal and state-owned lands through State Water Board Management Agency Agreements or Memoranda of Understanding with the corresponding land management agencies and/or through statewide waivers or discharge permits.

In regards to responsible jurisdictions, the responsibility of collection and disposal of trash extends to upstream land owners as well as shoreline owners.

One drawback to requiring this approach in all jurisdictions is that most open space land usage is not a significant generator of trash. Requiring this level of effort for large swaths of public land would not be cost-effective or result in significant trash reductions. Certain high usage nonpoint source areas, however, such as beaches, marinas, campgrounds, and picnic areas, often experience substantial littering. Therefore, this approach is not recommended.

3. **Trash control measures for nonpoint source dischargers would be each Water Boards' discretion.** Statewide, nonpoint source discharges of trash cause less of an impact to state water than do point sources; however, at the local or regional level nonpoint sources can be a substantial source of trash. These areas may include high usage campgrounds, picnic areas, beach recreation areas, and marinas, which can be subject to WDRs or conditional waivers of WDRs. These types of areas would be assessed by the Water Boards to determine if trash controls are necessary. For such areas determined to require trash controls within a WDR or waiver of a WDR, management practices could include enforcement of litter laws, education, recycling programs, more or better trash receptacles, and/or more frequent servicing of trash receptacles. This approach is recommended as it targets regional regulation of the discharge of trash from locations with high trash generating rates.

Recommendation: Trash control measures for nonpoint sources that generate large amounts of trash at the local or regional level would be at the Water Boards' discretion (Consideration 3).

4.8 Issue 8: How should the Trash Amendments address time schedules?

Current Conditions:

In accordance with the California Water Code section 13242, implementation programs for achieving water quality objectives shall include a description of necessary actions, a time schedule for actions to be taken, and a description of surveillance to be undertaken to determine compliance with the water quality objectives. All compliance schedules in NPDES storm water permits (i.e., MS4 Phase I, MS4 Phase II, Caltrans, IGP, and CGP) need to follow the Policy for Compliance Schedules in NPDES Permits as adopted by the State Water Board on April 15, 2008 (Resolution No. 2008-0025). TMDL compliance schedules are adopted by the applicable regional water board.

Considerations:

1. **No Project: No time schedule.** This option would leave policies and practices as they are currently under permits and TMDLs. If this option is selected, then compliance schedules would continue to vary among regions, resulting in statewide inconsistency. Therefore, this approach is not recommended.

2. **Require immediate compliance.** Immediate compliance could be required for all permittees except those operating under existing trash and debris TMDLs in the Los Angeles Region. This alternative may be unpopular with permittees that are unfamiliar with trash monitoring and implementation and may find immediate compliance difficult to achieve; their inability to meet the proposed objective may result in enforcement actions that might otherwise have been avoided through the adoption of compliance schedules. Therefore, this approach is not recommended.

3. **Adopt a single statewide time schedule for all categories of permits.** This alternative would designate a single specific time schedule during which all permittees, regardless of category, would be required to implement necessary controls in order to achieve compliance. For example, all permittees may be required to come into full compliance within a single permit cycle. This might require a planning and funding burden for municipalities committing to the installation of certified full capture systems. Due to the differences in the size and scope of the jurisdiction of storm water permittees, this approach is not recommended.

4. **Adopt different statewide time schedules for different categories of permits.** This alternative would designate specific amounts of time during which different categories of NPDES permittees would be required to achieve compliance. For MS4 permittees with regulatory authority over priority land uses, compliance schedules would be set at ten years of the effective date of the first implementing permit with a cap of fifteen years from the effective date of the Trash Amendments for achieving full compliance. Ten years would allow for up to two permitting cycles. The second permit could build on the first permit with lessons learned from permittees' trash control efforts. The fifteen year cap provides certainty of a full-compliance end date, and also gives Water Boards up to five years to incorporate trash requirements into their respective permits. For Caltrans, the time schedule would be based on the effective date of the implementing NPDES permit with a ten-year compliance schedule. For permittees under the IGP and CGP, full compliance would be accomplished as specified by the time schedule set in the first implementing permit. To allow for differences in NPDES permit types, this approach is recommended.

Staff Recommendation: Adopt different statewide time schedules for different categories of permits (Consideration 4).

4.9 Issue 9: Should time extensions be provided for employing regulatory source controls?

Current Conditions:

California is the leader in implementing local ordinances with goals of reducing trash. The two types of local government ordinances focus on single-use disposable items, such as expanded polystyrene foam and single-use carryout bags. At least 65 jurisdictions have either banned extended polystyrene foam food containers completely or have prohibited use by government agencies or at public events. A few jurisdictions that have banned or partially banned polystyrene for takeout food packaging, which includes the City and County of San Francisco, Los Angeles County, Sonoma County, the City of Malibu, and the City of Berkeley. In 2006, the City and County of San Francisco passed a ban on single-use carryout bags in grocery stores and pharmacies. Since then, at least 72 local jurisdictions adopted city and county ordinances for single-use carryout bags. Most ordinances have a paper bag fee (10-25 cents) as well as a ban on plastic due to the desire to promote reusable bags as the bag of choice.

Considerations:

1. **No Project: No allowance for time extensions to create incentives for employing regulatory source controls.** Regulatory source controls are a subset of the suite of institutional controls that a MS4 permittee may utilize to control trash under Track 2. Therefore, additional time for final compliance may not be warranted to create an incentive for adoption of an ordinance that may also be employed for final compliance with the prohibition of discharge.

2. **Provide a time extension for new regulatory source control ordinances.** The aim of adopting regulatory source controls is to remove a specific type of item from the waste stream. Regulatory source controls require intensive collaboration and support among local governments, public, and retailers. This process can take several years to adopt and become effective. Providing a time extension for final compliance would provide an additional incentive for a local government to pass regulatory source control ordinances. Under this consideration, the time extension would only be afforded to municipal permittees that pass an ordinance following the effective date of the Trash Amendments. Limiting the time extension to only new regulatory source controls would have the effect of penalizing municipalities that have already adopted regulatory source control ordinances to control trash.

3. **Provide a time extension for regulatory source control ordinances enacted up to three years prior to the effective date of the Trash Amendments.** Because regulatory source controls require intensive collaboration and support among local governments, public, and retailers, and can take several years to adopt and become effective, providing a time extension for final compliance would provide an additional incentive for a local governments to adopt regulatory source control ordinances. Extending the time extension to municipalities that have passed regulatory source controls prior to the effective date of the Trash Amendments provides statewide consistency and equal benefits to all municipal

permittees who have taken effort to reduce trash with regulatory source controls. For the time extension to be granted, however, a regulatory source control would need to take effect with three years of the effective date of the Trash Amendments in order to achieve performance results with the compliance schedule.

Recommendation: This Issue is being proposed as an option for State Water Board consideration in order to receive public comment and feedback on the pros and cons of this Issue. After receiving public input on the potential advantages and disadvantages to this approach, the recommendation is to not allow time extensions for a MS4 permittee's adoption of regulatory source controls (Consideration 1).

4.10 Issue 10: How should the Trash Amendments structure monitoring and reporting of trash control efforts?

Current Conditions:

In accordance with the California Water Code section 13242, implementation programs for achieving water quality objectives shall include a description of necessary actions, a time schedule for actions to be taken, and a description of surveillance to be undertaken to determine compliance with the water quality objectives.

Considerations:

1. **No Project: No monitoring or reporting required above what is already required.** This approach would be consistent with any monitoring or reporting that is currently required by regional water boards. Although it would not cost permittees any additional resources, it would be insufficient to evaluate compliance with the final Trash Amendments and would run counter to California Water Code section 13242. Therefore, this approach is not recommended.

2. **Monitoring and cleanup in receiving waters by all permittees, regardless of method of compliance.** There are several approaches to monitoring that may be employed:

    a. **Minimum frequency of assessment and collection (MFAC).** The MFAC program includes an initial minimum frequency of trash assessment and collection. The MFAC program would include collection and disposal of all trash found in the receiving waters and shoreline. The initial minimum frequency may be established based on seasonal use of the area, regionally-specified storm sizes, and after major public events at certain locations, such as the county fairgrounds.

    b. **Establishment of Daily Generation Rate.** An area's trash discharges may be estimated using a mass balance approach, based on the daily generation rate for the specific area. The daily generation rate is the average amount of trash deposited within a specified drainage area over 24-hour period. The daily generation rate can be used in a mass balance to estimate the amount of trash discharged during a rain event.

The daily generation rate may be determined by local jurisdictions from direct measurement of trash deposited in the drainage area during any 30-day period from June 22nd to September 22nd of a given year and recalculated every year thereafter. This three-month period is assumed to encompass high outdoor activity when trash is most likely to be deposited on the ground.

Accounting of daily generation rate as well as trash removal via street sweeping, catch basin clean outs, garbage and cigarette butt receptacles, etc. would be tracked in a central spreadsheet or database to facilitate the calculation of discharge for each rain event. The spreadsheet and/or database would be available to the Water Boards for inspection during normal working hours. The database/spreadsheet system would allow for the computation of calculated discharges and could be coordinated with enforcement.

c. **Alternate compliance monitoring programs.** Water Boards could approve, at their discretion, alternative compliance monitoring programs upon finding that an alternative program would provide a scientifically-based estimate of the amount of trash discharged from the storm drain system.

These approaches are not prescriptive as each permittee will have a unique implementation strategy, and the monitoring approach needs to be suited for each strategy.

3. **Monitoring and reporting tailored to the type of compliance.**

As the compliance options vary among NPDES permits for storm water discharges, the monitoring and reporting options could be tailored to the type of compliance. Within this option under consideration, the balance between the need for consistency and flexibility would be achieved through standardized objectives in the monitoring program. The final Trash Amendments could establish minimum monitoring and reporting provisions, and Water Boards could include more extensive provision in implementing permits.

MS4 permittees complying under Track 1 would provide a report to the applicable Water Board demonstrating installation, operation, and maintenance of full capture systems on an annual basis. MS4 permittees complying under Track 2 would develop and implement annual monitoring plans to demonstrate effectiveness of the controls and compliance with full capture system equivalency. This requires that permittees collect monitoring data about existing trash levels prior to implementation of institutional controls to set a baseline for comparison to trash levels after implementation of controls. Monitoring reports developed by MS4 Permittees should consider the following questions:

1) What type of and how many treatment controls, institutional controls, and/or multi-benefit projects have been used, and in what locations?

2) How many full capture systems have been installed (if any), and in what locations have they been installed, and what is the individual and cumulative area served by them?
3) What is the effectiveness of the total combination of treatment controls, institutional controls, and/or multi-benefit projects employed by the permittee?
4) Has the amount of trash discharged from the MS4 decreased from the previous year? If so, by how much? If not, explain why.
5) Has the amount of trash in the MS4's receiving water(s) decreased from the previous year? If so, by how much? If not, explain why.

Caltrans should develop and implement annual monitoring plans to demonstrate effectiveness of the controls and compliance with full capture system equivalency. Monitoring reports developed by Caltrans should consider the following questions:

1) What type of and how many treatment controls, institutional controls, and/or multi-benefit projects have been used, and in what locations?
2) How many full capture systems have been installed (if any), and in what locations have they been installed, and what is the individual and cumulative area served by them?
3) What is the effectiveness of the total combination of treatment controls, institutional controls, and multi-benefit projects employed by Caltrans?
4) Has the amount of trash discharged from Caltrans' MS4 decreased from the previous year? If so, by how much? If not, explain why.
5) Has the amount of trash in the receiving waters decreased from the previous year? If so, by how much? If not, explain why.

Industrial and construction permittees would not have specific monitoring requirements. The controls and measures used to comply with the prohibition of discharge can be required to be reported and included in the Storm Water Pollution Prevention Plan.

The tailored approach would provide flexibility to Water Board permit writers to design monitoring programs that reflect the compliance methods elected by permittees along with regional characteristics. For statewide consistency, all monitoring programs would be striving to answers the same fundamental questions. Therefore, this approach is recommended.

Recommendation: Monitoring and reporting should be tailored to the type of compliance (Consideration 3).

5 REASONABLY FORESEEABLE METHODS OF COMPLIANCE

The final Trash Amendments do not specify a manner of compliance and accordingly, the actual compliance strategies would be selected by the local agencies and other permittees. Although the final Trash Amendments do not mandate the manner of compliance, the State Water Board's SED for the proposed project is required to include an analysis of the reasonably foreseeable methods of compliance with the project (see 23 CCR 3777; Pub. Res Code § 21159). Several of the reasonably foreseeable methods of compliance are well known, and a discussion of a reasonable range of these methods of compliance and design parameters is presented below. In addition, the possible environmental effects that could be caused by these compliance methods are presented in Section 6.

During the development of the final Trash Amendments, numerous stakeholder and public meetings were held during which the manner of compliance was discussed. Some of the most likely measures discussed included treatment controls (e.g., partial capture systems and full capture systems) and institutional controls (e.g., increased street sweeping, enforcement of litter laws, and development of municipal ordinances prohibiting food packaging with polystyrene materials). This section provides a description of storm water systems and of sites where treatment controls might be placed to comply with the final Trash Amendments. In addition, this section discusses treatment control alternatives, such as catch basin inserts and vortex separators, and institutional control alternatives, such as street sweeping, public education, and ordinances.

5.1 Treatment Controls - Storm Drain Systems

Underground storm drains are typically designed to carry the runoff from up to a ten-year storm event. Open channels are typically designed to carry the runoff from up to a 50-year storm event, and in some cases, this design flow rate is increased to accommodate debris laden flows. The rate of runoff a drain can safely convey, expressed in cubic feet per second, is called its peak capacity. While a drain's capacity would not diminish over the years, the amount of runoff generated by a given storm event can increase over the years. This potential increase could be due to a number of factors including: an increase in the amount of development and impervious surfaces within the tributary area, and the addition of smaller upstream tributary drains that deliver runoff more quickly to the collecting drain. The potential for such increases at a particular site is a consideration in the applicability of a particular treatment control method of compliance with the final Trash Amendments.

Storms are commonly referred to by their "frequency." For example: a one-year storm event, having a long-term probability of happening at least once a year is a very common occurrence. On the other hand, a 50-year storm event is a much rarer occurrence, with a long-term probability of occurring only once in 50 years. The actual rate of runoff from storms of a given size or frequency depends on a number of factors, including the intensity and duration of the rainfall, the size of the tributary area, the topography, the soil types within the tributary drainage area, and the overall connected imperviousness of the tributary area.

5.1.1 Reasonably Foreseeable Methods of Compliance: Design and Installation of Devices for Trash Removal

The treatment controls likely to be used for compliance with the final Trash Amendments are devices that would be installed in existing storm drains. Older storm drains may be physically limited in expansion capability and maintenance right-of-way and the complying permittees must consider these factors when designing and siting new trash devices within existing facilities.

A factor to consider when designing and siting devices is drain capacity. For instance, if a treatment control is to be installed mid-drain, the storm drain system must have sufficient capacity, or the storm drain must be modified to maintain sufficient capacity. Start-of-pipe devices such as catch basin opening screens and excluders or end-of-pipe devices such as trash racks, fabric mesh socks and wire screens, may have less impact on hydraulic drain capacity under certain hydraulic conditions than devices installed mid-pipe. The smaller the amount of flow a retrofitted device or system must treat; the less hydraulic impact it will have on the storm drain system as a whole.

In addition, the definition of "full capture system" in the final Trash Amendments includes reference to capturing trash particles that are the size of 5 mm or greater. The 5 mm size limit is approximately the diameter of a pencil or cigarette butt. A smaller particle size implies a smaller filtering mesh or screen size, and a smaller mesh or screen size implies more resistance to the flow passing through it. When designing and siting controls, assuming that a certain percentage of a screen would be blocked by trash during a storm event, the total area of the screen openings would have to be larger than the area of the drain's cross section by that percentage.

In addition to the requirement of removing litter with a size of 5 mm, the design of a full capture system should take into account reliability and performance sensitivity under varying loads. Based on current industry standards for existing facilities, a typical full capture system is expected to meet the following minimum criteria:

- It must not adversely affect the level of flood protection provided by the drainage system;
- It should be vector-resistant, or not pond water for more than 48 hours after the end of a storm;
- It should not worsen water quality by re-suspending trash, sediments, or bacteria, or by leaching heavy metals or semi-volatile organic compounds;
- It should have no plastic or fiberglass interior parts that would break or shatter in the path of direct flow;
- Its pipes, conduits and vaults should not be more than 32 feet below ground, and should be easily accessible by a vacuum truck hose for clean-out, be reasonably accessible by a qualified maintenance worker, have provisions for confined space entry and safety guard rails around the rim; and
- It should provide means to block off the inflow and tail water backflow to isolate the device for safe maintenance and repair of the unit.

5.1.2 Catch Basins and Catch Basin Inserts

Treatment controls likely to be used for compliance with the final Trash Amendments may include installation of catch basins or inserts within existing catch basins. A catch basin or storm drain inlet is an inlet to the storm drain system that typically includes a grate or curb opening where storm water enters the catch basin, and a sump to capture sediment, debris and associated pollutants. They are also used in combined sewer watersheds to capture floatables and settle some solids. Catch basins act as pretreatment for other treatment practices by capturing large particles. The performance of catch basins at removing sediment and other pollutants depends on the design of the catch basin (e.g., the size of the sump), and routine maintenance to retain the storage available in the sump to capture sediment.

Catch basins are used in drainage systems throughout the United States. Many catch basins, however, are not designed for trash capture. Ideal application of catch basins as a reasonably foreseeable method of compliance with the final Trash Amendments is as pretreatment to another storm water management practice. Retrofitting existing catch basins may help to improve their performance substantially. A reasonably foreseeable method of compliance may include a simple retrofit of catch basins to ensure that all catch basins have a hooded outlet to prevent floatable materials, such as trash and debris, from entering the storm drain system.

The performance of catch basins is related to the volume in the sump (i.e., the storage in the catch basin below the outlet). Optimal catch basin sizing criteria which relates all catch basin dimensions to the diameter of the outlet pipe.

Maintenance of the installed catch basins is expected to include trash removal if a screen or other debris capturing device is used, and removal of sediment using a vactor truck. Operators will need to be properly trained in catch basin maintenance. When sediment fills greater than 60 percent of their volume, catch basins reach steady state. Therefore, storm flows may then bypass treatment and may also re-suspend sediments trapped in the catch basin. Regular clean-outs will typically be required to retain the volume in the catch basin sump available for treatment of storm water flows.

At a minimum, catch basins would be expected to be cleaned once or twice per year to maintain effectiveness (Aronson et al. 1993). Two studies suggest that increasing the frequency of maintenance can improve the performance of catch basins, particularly in industrial or commercial areas. One study of 60 catch basins in Alameda County, California, found that increasing the maintenance frequency from once per year to twice per year could increase the total sediment removed by catch basins on an annual basis (Mineart and Singh 1994). These results suggest that, at least for industrial uses, more frequent cleaning of catch basins would improve removal efficiency. The cost of operation and maintenance would, however, be expected to increase with installation of catch basins (or inserts).

Within a catch basin, a "catch basin insert" may also be perforated metal screens placed horizontally or vertically within a catch basin. There are a multitude of inserts of various shapes and configurations. One device suitable for compliance with the final Trash Amendments is a grated plastic box or metal screen that fits directly into the

curbside catch basin. As the storm water passes through the box, trash, rubbish, and sediment remain in the box while storm water exits.

Metal screening inserts may be deployed in a vertical or horizontal configuration within the catch basin for the retention of trash. These inserts would be expected to maximize much of the existing catch basin volume and concurrently pass through flow.

Catch basin screens design is expected to be open to curb flow in order to reduce the potential for flooding during wet weather. For example, American Storm Water has a catch basin screen with an automatic retractable screen gate design which can be adjusted to "un-lock" and open up to storm water curb flow from 20 percent to 60 percent of curb height. This device which is termed the “Surf Gate” is also designed with a special "locking" application, which keeps children safe and large debris from getting into the catch basin.

Grate inserts may also be utilized as a compliance method and are typically found in parking lots, alleys, and sloping streets. Inserts installed in these basins mainly capture trash smaller than an inch due to the standardized grating spacing. Inserts designed for curb opening basins would be best suited for capturing larger debris like water bottles and plastics bags, as the opening under the curb may range from four to eight inches.

5.1.3 Vortex Separation Systems

The treatment controls likely to be used for compliance with the final Trash Amendments may include installation of vortex separation system units. Vortex separation systems units are designed to capture almost all trash deposited into a storm drain system. A vortex separation system unit diverts the incoming flow of storm water and pollutants into a pollutant separation and containment chamber. Solids within the separation chamber are kept in continuous motion, and are prevented from blocking the screen so that water can pass through the screen and flow downstream. Solid pollutants including trash, debris and coarse sediments are retained in a centrally located solids catchment chamber with the heavier solids ultimately settling into the base of the unit or sump. This would be expected to be a permanent device that would be retrofitted for oil separation as necessary. Outfitting a large drainage with a number of large vortex separation system units may be less costly than using a larger number of small vortex separation system units.

An example of vortex separation system technology is the Continuous Deflective Separation unit, developed by Continuous Deflective Separation Technologies, Inc. When applied to storm water, the Continuous Deflective Separation unit is designed to capture and retain sediments, floatable and settleable trash and debris over a wide range of flow conditions (up to 300 cubic feet per second). The fine screens used in storm water applications vary in size from 1.2 – 4.7 millimeter (0.048 - 0.185 inches). The Continuous Deflective Separation units are placed underground and would be expected to be utilized in highly urbanized areas where space is limited. In general, a Continuous Deflective Separation unit typically occupies about 4-1/2 square feet of surface area for each cubic feet per second that it treats, with the bulk of the installation being well below grade. The solids would be removed using a vactor truck, a removable basket, or a clam shell depending on the user's preference and size of the unit. For new installations, it is expected that continued monitoring of the condition of

the unit would be required after every runoff event for the first 30 days. Based on the behavior of the unit relative to storm events, inspections may be scheduled on projections using storm events vs. pollutant buildup. For ongoing operation, unit inspections are expected to occur at least once every 30 days during the wet weather season. As part of the expected maintenance, floatables would be removed and the sump cleaned when the sump is above 85 percent full. Also, at least once a year, it is expected that the unit would be pumped down and the screen carefully inspected for damage and to ensure that the screen is properly fastened.

The City of San Jose analyzed the relative capital and operation/maintenance cost of small devices (connector pipe screens and automatic retractable screens at the curb) and the hydrodynamic separator capturing trash from an area of 1000 acres, over 10 and 20-year time frames, accounting for repair and replacement of small units and increases in labor costs. The City of San Jose found that small devices were more economical in the first decade, but the cost advantage disappears in the second decade (San Francisco Estuary Partnership 2014).

5.1.4 Trash Nets

A treatment control likely to be used for compliance with the final Trash Amendments may include installation of trash nets. These are devices that use the natural energy of the flow to trap trash, floatables and solids in disposable mesh nets. One type of trash net, developed by Fresh Creek Technologies, Inc. may be reasonably foreseeable as a method of compliance because it was certified by the Los Angeles Water Board on April 29, 2004 for use on the Los Angeles River Watershed TMDL (Dickerson 2004). Currently, three modular models are available from Fresh Creek Technologies, Inc.:

- The *In-Line Netting* TrashTrap® model is a modular chamber containing the capture apparatus for holding the disposable nets. The system is installed in-line with the outfall pipe. A prefabricated chamber minimizes site work and cost. Inline units are underground and out of sight, particularly well-suited for densely populated locations.
- The *End-of-Pipe Netting* TrashTrap® model is installed at the end of the pipe. These units are often installed as a retrofit to an existing outfall structure. When this opportunity exists, the End-of-Pipe system is highly cost effective.
- The *Floating Netting* TrashTrap® model is a modular pontoon structure that floats at the end of the outfall. Floating units are an economical solution where site conditions (minimum water depth of two feet and a relatively sheltered site) permit its use. They are often installed with only minor modifications to the existing site.

Model selection and sizing of trash nets would be based on site-specific criteria including peak volume, peak velocity, and trash/floatables volume. Modularity and capacity of the installation would be achieved by varying the number of nets in the system. Installations, consistent with current practice, are expected to range from single net units to systems with 10 nets handling flows above 3,000 cubic feet per second. The standard mesh net would handle flows up to 30 cubic feet per second or 22 million gallons per day and velocities up to five feet per second at the mouth of the

net. A truck with a hoist for changing the nets, and a container for holding the full nets would be expected for servicing trash nets. A crew of two accomplishes the net change out in a matter of a few minutes. Road access to the site would be required for the service vehicle.

The *End-of-Pipe* nets are another control that is reasonably foreseeable as a method of satisfying the final Trash Amendments because of the low cost, the ease of maintenance, and also because the devices can be relocated after a set period at one location (provided the pipe diameters are the same). With limited funding, installation could be spread over several land uses and lead to valuable monitoring results. For smaller systems the total installation time can be as short as one day. Since the devices require attachment to the end of a pipe, this can severely reduce the number of locations within a drainage system that can be monitored. In addition, these nets cannot be installed on very large channels (seven feet in diameter is the maximum).

5.1.5 Gross Solids Removal Devices

A treatment control likely to be used for compliance with the final Trash Amendments may include installation of Gross Solids Removal Devices. Several types of these devices were developed by Caltrans to be retrofitted into existing highway drainage systems or implemented in future highway drainage systems. Gross Solids Removal Devices are structures that would remove litter and solids five millimeters (0.25 inches nominal) and larger from the storm water runoff using various screening technologies. Overflow devices would be expected to be incorporated; usual design of the overflow release device is based upon the design storm for the roadway. Though designed to capture litter, the devices would also be expected to capture vegetation debris. The devices described below are generally limited to accept flows from pipes 30 inches in diameter and smaller.

To assess the feasibility of utilizing Gross Solids Removal Devices, Caltrans developed a Pilot Program with multiple phase pilot studies. A pilot study generally consisted of one or more devices that were developed from concept, advanced through design and installation, and placed in service for two years of testing to evaluate overall performance (Caltrans 2003). Based on the Pilot Program, three types of Gross Solids Removal Devices have been shown the most promising and are therefore considered within the reasonably foreseeable methods of compliance: linear radial and two versions using an inclined screen. On October 7, 2004, the Los Angeles Water Board certified two Caltrans' Gross Solids Removal Devices, Linear Radial – Configuration 1 (LR1 I-10) and Inclined Screen – Configuration 1 (IS1 SR-170), to comply with the Ballona Creek and Los Angeles River Trash TMDLs (Bishop 2004).

Linear Radial Device

This device is relatively long and narrow, with flow entering one end and exiting the other end. It is suited for narrow and flat rights-of-way with limited space. It utilizes modular well screen casings with 5 mm (0.25-inch nominal) louvers and is contained in a concrete vault, although it also could be attached to a headwall at a pipe outfall. While runoff flows enter into the screens, they pass radially through the louvers and trap litter in the casing. A smooth bottom to convey litter to the end of the screen sections is required, so a segment of the circumference of each screen is uncovered. The

louvered sections have access doors for cleaning with vacuum truck or other equipment. Under most placement conditions the goal would be to capture within the casing one year's volume of litter. This device has been configured with an overflow/bypass for larger storm events and if the unit becomes plugged.

Inclined Screen Devices

Two Inclined Screen Devices have been developed. Each device requires about one meter (three feet) of hydraulic head and is better suited for fill sections. In the Type 1 device, the storm water runoff flows over the weir and falls through the inclined bar rack. The screen has five millimeter maximum spacing between the bars. Flow passes through the screen and exits via the discharge pipe. The trough distributes influent over the inclined screen. Storm water pushes captured litter toward the litter storage area. The gross solids storage area is sloped to drain to prevent standing water. This device has been configured with an overflow/bypass for larger storm events and if the unit becomes plugged. It has a goal of litter capture and storage for one year. The Type 2 Inclined Screen only comes in a sloped sidewall version.

5.2 Institutional Controls

The non-structural actions likely to be used for compliance with the final Trash Amendments include institutional controls. These types of actions are methods to control trash loading to state waters and may include enforcement of existing litter laws, increased street sweeping, cleaning of storm water conveyance structures, such as catch basins and storm drain inlets, and ordinances.

Institutional controls may also offer societal benefits that are associated with reducing litter in our city streets, parks and other public areas. For example, institutional controls employed by the City of Los Angeles for the Los Angeles River Watershed trash TMDL have demonstrated a 12.5 percent reduction in the total WLA (Black & Veatch 2012). Institutional controls can typically be implemented in a relatively short period of time. The capital investment required to implement institutional controls is generally less than for full capture systems.

The final Trash Amendments define "institutional controls" as follows:

> Institutional controls are non-structural best management practices (i.e., no structures are involved) that may include, but not be limited to, street sweeping, sidewalk trash bins, collection of the trash, anti-litter educational and outreach programs, producer take-back for packaging, and ordinances.

"Regulatory source controls" was previously included within the definition of institutional controls in the proposed Trash Amendments as one of the several treatment controls that could be utilized by MS4 permittees with regulatory authority over priority land uses to comply with the prohibition of trash under Track 2. In turn, "regulatory source controls" was previously defined in the proposed Trash Amendments as:

> Institutional controls that are enforced by an ordinance of the municipality to stop and/or reduce pollutants at their point of generation so that they do not come into contact with storm water. Regulatory source controls could consist of, but not be limited to, bans of single use consumer products.

Regulatory source controls were generally proposed as a tool for MS4 permittees to enact ordinances. A primary type of regulatory source control contemplated by this Policy was a bag ban ordinance to prohibit retailers from distributing carry-out plastic bag. The proposed final Trash Amendments omit regulatory source controls (and its definition) as a method for demonstrating Track 2 compliance.

The proposed Final Staff Report retains "ordinances," however, as a permissible type of institutional control an MS4 permittee could employ to achieve compliancy with Track 2 (even though the proposed final Trash Amendments removed "regulatory source controls" as a permissible method). Contrary to ordinances or laws that prohibit distribution of plastic carry-out bags, which are typically accompanied with requirements and/or incentives to utilize reusable bags to avoid a product-substitution effect (such as Senate Bill 270), other types of product bans enacted by an ordinance, such as take-out items, may involve a substitution of the banned item. Mere substitution would not result in reduced trash generation if such product substitution would be discarded in the same manner as the banned item. Any such product ban enacted by an ordinance that would not reduce trash would not assist in achieving compliance. It is possible that an MS4 permittee's adoption of other types of ordinances could include anti-litter laws or bans on smoking that would meet the requirements.

5.2.1 Enforcement of Litter Laws

An institutional control that would likely to be used for compliance with the final Trash Amendments would be enforcement of existing liter laws. By enforcing litter laws in sensitive areas or in areas that generate substantial amounts of litter, an ultimate source of trash loading to a given water body would be reduced or eliminated. Ordinances that prohibit litter are already in place in most municipalities. For example, the Los Angeles City Municipal Code prohibits the disposal of trash anywhere such trash could pollute the storm drain system:

> No person shall throw, deposit, leave, cause or permit to be thrown, deposited, placed, or left, any refuse, rubbish, garbage, or other discarded or abandoned objects, articles, and accumulations, in or upon any street, gutter, alley, sidewalk, storm drain, inlet, catch basin, conduit or other drainage structures, business place, or upon any public or private lot of land in the City so that such materials, when exposed to storm water or any runoff, become a pollutant in the storm drain system (City of Los Angeles Municipal Code § 64.70.02.C.1(a)).

Ensuring compliance with existing statewide and local litter laws and ordinances would eliminate the substantial adverse environmental and economic impacts from the litter, and the need for additional structural or institutional controls that generate their own nominal adverse environmental impacts.

5.2.2 Street Sweeping

An institutional control that would likely to be used for compliance with the final Trash Amendments would be continuation of or increasing street sweeping. Street sweeping minimizes trash loading to storm drain systems and water bodies by removing trash from streets and curbs. Maintaining a regular street sweeping schedule reduces the buildup of trash on streets and prevents trash from entering catch basins and the storm drain system. Street sweeping can also improve the appearance of roadways and urban areas. There are three types of street sweepers expected to be utilized for compliance with the final Trash Amendments: mechanical, vacuum filter, and regenerative air sweepers (U.S. EPA 2012b).

- Mechanical sweepers use a broom to remove particles from the street curb and a water spray to control dust. The removed particles are carried by a cylindrical broom to a conveyor belt and into a storage hopper (Federal Highway Administration 2012).

- Vacuum-assisted sweepers also use brooms to remove particles. The removed particles, however, are saturated with water and transported by a vacuum intake to the hopper. Vacuum-assisted dry sweepers use a specialized brush that allows the vacuum system to recover almost all particulate matter. A continuous filtration system prevents very fine particulate matter from leaving the hopper and trailing on the street behind the sweeper (Federal Highway Administration 2012).

- Regenerative air sweepers blow air onto the pavement and immediately vacuum it back to entrain and capture accumulated sediments. A dust separation system regenerates air for blowing back onto the pavement (Federal Highway Administration 2012).

No definitive independent studies have yet been staged to determine the best sweeping system (U.S. EPA 2012b). It is expected, however, that local agencies may use a combination of types of street sweeper to maximize efficiency (CASQA 2003a). In the Los Angeles Region, use of certain sweeper types is dictated by South Coast Air Quality Management District Rule 1186, which requires local agencies to acquire or use only respirable particulate matter certified sweepers beginning January 1, 2000. Furthermore, Rule 1186.1 requires local agencies to acquire alternative fuel or less polluting street sweepers beginning July 1, 2002 (South Coast Air Quality Management District 2006).

Increasing the frequency of street sweeping in areas with high traffic volume and trash accumulation would further reduce trash loading to the waterways. Increases in street sweeping are expected before the rainy season begins. A successful street sweeping program would be expected to include accurate recordkeeping of curb-miles swept, proper storage and disposal of street sweepings, regular equipment maintenance, and

parking policies that restrict parking in problematic areas and notify residents of sweeping schedules (CASQA 2003a).

Using modern and efficient street sweepers may reduce the need for other structural storm water controls and may prove to be more cost-effective than certain structural controls, especially in more urbanized areas with greater areas of pavement (U.S. EPA 2012b).

5.2.3 Storm Drain Cleaning

Another institutional control that would likely to be used for compliance with the final Trash Amendments would be continuation of or increasing cleaning of storm drain systems. Routine cleaning of the storm drain system reduces the amount of trash entering water bodies, prevents clogging, and ensures the flood control capacity of the system. Cleanings may occur manually or with pump eductors, vacuums, or bucket loaders. A successful storm drain cleaning program would be expected to include regular inspection and cleaning of catch basins and storm drain inlets, increased inspection and cleaning in areas with high trash accumulation, accurate recordkeeping, cleaning immediately prior to the rainy season to remove accumulated trash, and proper storage and disposal of collected material (CASQA 2003a).

5.2.4 Public Education

An additional institutional control that would likely to be used for compliance with the final Trash Amendments would be continuation of or increasing public education programs. Public education can be an effective implementation alternative to reduce the amount of trash entering water bodies. The public is often unaware that trash littered on the street ends up in receiving waters, much less the cost of abating it.

Community outreach is expected to be one way to educate the public about the effects of littering on the quality of receiving waters. Local agencies would provide educational materials to the public via television, radio, print media (e.g., brochures, flyers, and community newsletters), information hotlines outreach to educators and schools, community event participation, and support of volunteer monitoring and cleanup programs. Storm drain inlet stenciling would be another means of educating the public about the direct discharge of storm water to receiving waters and the effects of littering and dumping on receiving water quality. Stenciling can be conducted in partnership with other agencies and organizations to garner greater support for educational programs (U.S. EPA 2005).

Public education programs are already in place in some jurisdictions. Under the Los Angeles County Municipal Storm Water Permit, for example, permittees are required to implement educational storm water outreach programs (Order No. R4-2012-0175). The residential component of this program includes:

- Conducting storm water pollution prevention public service announcements and advertising campaigns.
- Distribute public education materials regarding the proper handling of waste materials.

- Maintaining a storm water website that includes educational material and opportunities for the public to participate in storm water pollution prevention and clean-up activities.
- Using culturally diverse educational strategies.

Public education materials have already been developed and are available through the Erase the Waste campaign, sponsored by the Water Boards. Erase the Waste is a public education program, working to reduce harmful storm water pollution and improve the environment of the region's coastal and inland communities. The campaign started in Los Angeles County, and materials produced during its three-year run have now been packaged for state and nationwide use. It is built around the theme, *Erase the Waste* – a positive, empowering theme that encourages all residents and stakeholders to take ownership of their communities, help reduce and prevent storm water pollution from the local landscape and "become part of the pollution solution."

The Water Boards have made available the *California Storm Water Toolbox*[13] which includes the following tools for residents, community and civic groups, educators, municipalities and public agencies:

- Advertisements, posters, collateral materials and a comprehensive Neighborhood Action Kit in English, Spanish, Chinese, Korean and Vietnamese – a comprehensive "how-to" guide to community-focused pollution prevention.
- A landmark Water Quality Service Learning Model for grades four through six that meets the state's curriculum standards.
- The Water Quality Detectives After-School Program, an adapted version of the curriculum for middle school and after school setting.
- The California Storm Water Resource Directory, an online inventory of storm water materials developed in partnership with CASQA.

5.2.5 Ordinances

Ordinances are a municipal regulation and type of institutional control. Ordinances can range from litter laws, smoking bans, to product bans. Ordinances may focus on eliminating or reducing the sources of trash by removing potential products from the waste stream. These methods focus on preventing pollution versus employing methods of controlling pollution. Across California, cities, counties, and the state have litter laws and other existing ordinances. In addition to the enforcement of existing litter laws, reasonably foreseeable methods of achieving compliance could include new litter laws and other ordinances. Contrary to ordinances or laws that prohibit distribution of plastic carry-out bags, which are typically accompanied with requirements and/or incentives to utilize reusable bags to avoid a product-substitution effect (such as Senate Bill 270), other types of product bans enacted by ordinance, such as take-out items, may involve a substitution of the banned item. Mere substitution would not result in reduced trash

[13] The *California Storm Water Toolbox* is accessible at: http://www.waterboards.ca.gov/water_issues/programs/outreach/erase_waste/index.shtml#toolbox.

generation if such product substitution would be discarded in the same manner as the banned item. Any such product ban enacted by an ordinance that would not reduce trash would not be an allowable Track 2 method to assist in achieving compliance. It is possible that an MS4 permittee's adoption of other types of ordinances could include mandatory fees on disposable item (like cups) that encourage customers to bring red-usable, and anti-littler laws or bans on smoking that would meet the requirements.

5.3 Overview of Installation, Operation and Maintenance Activities for Trash Treatment Controls

This section discusses the installation, and operation and/or maintenance activities associated with the reasonably foreseeable methods of compliance with the final Trash Amendments. This information should provide a frame of reference in determining potential environmental impacts of these alternatives described in Section 6 (Environmental Effects of the Trash Amendments) and Section 8 (Alternatives Analysis). Some reasonably foreseeable installation activities for compliance with the final Trash Amendments would consist of the installation of improvements to the storm drain system to attain "full capture". These improvements include installation of screens and inserts for catch basins, Gross Solids Removal Devices within the alignment of storm drain pipes, and trash collection nets in storm drain outlets. Temporary impacts to natural resources from these types of installation activities typically include air pollution from dust and construction equipment, increased runoff and soil erosion, and installation noise.

Installation of storm drain improvements to comply with the final Trash Amendments would likely be located throughout the developed areas of the state. The final Trash Amendments provide up to ten years to complete the installation of storm drain improvements. The installation would occur at different locations at different periods. Equipment to be installed would likely include filters, metal screen, fabric nets, and Gross Solids Removal Devices. Some of the equipment would be mounted on small steel structures. Equipment weights range from several hundred pounds to 100,000 pounds, therefore the installation rigs would range from small truck-mounted cranes to larger track-mounted units. The equipment would be electrically connected together by cable or by buss (open air copper or aluminum tubes). The installation would be either through the inlets or outlets or with the piping. Gross Solids Removal Device station sites would typically be finished with fencing around the site.

5.3.1 Storm Drain Improvement Installation Staging and Methods

Most sites for installation activities and staging would be in high density residential, mixed urban, commercial, or industrial areas, as well as public transportation stations, and along portions of State highways. Site preparation would include clearing, grubbing and grading with bulldozers and dump trucks. Access roads would be prepared concurrently with the site operations.

Catch Basin Inserts

Improvements to catch basins are expected to include concrete work, installation of filters within the catch basins and installation of screens at the catch basin inlets. These

activities entail concrete demolition and refinishing and field fabrication methods such as welding and mechanical bolting. These improvements would be located in existing catch basins within existing storm drain systems. Construction of new catch basins is not specifically required to comply with the final Trash Amendments, although damaged catch basins may require replacement or new catch basins may be an element of the discretionary compliance program under Track 2. Existing catch basins are located below sidewalks and streets with openings flush with the curb.

Catch basin improvements may include:

- Removal of manhole cover and accessing bottom of catch basin and manually inserting prefabricated catch basin inserts in the bottom or interior of the catch basin.
- Concrete demolition and removal if the entire catch basin needs replacement.
- Catch basin installation – this task pertains to catch basins that require replacement.
- Concrete drilling and welding – this task is required to install fasteners and bracing for screens and brushes at the storm drain inlets. These screens can be welded onto the installed bracing.
- Concrete finishing – to restore site after installation is completed.

Installation of catch basin improvements would likely require the following types of tools: compressor, hand power tools, hand tools, backhoe, welder, light-duty truck.

Gross Solid Removal Device and Vortex Separation System Installation

Gross Solids Removal Devices would be for new installations that are located in transportation rights of way. These devices are typically fabricated off-site and transported to the site for installation. The installation sites are typically not located in areas of sensitive receptors[14]. Installation activities are expected to include:

- Site Preparation – a flat area of sufficient size to locate a concrete equipment pad is required. Vegetation removal might be required, as well as placement of a gravel sub-base for the area. The site should be selected for access by an equipment crane, maintenance vehicles and trash collection vehicles.
- Fencing – security fencing is generally preferred for water quality treatment systems located within existing structures in watersheds. Chain link fencing is often selected which involves installation of fence poles. Fence screens are often used in areas where a Gross Solids Removal Device causes adverse visual impacts.
- Concrete pad – Gross Solids Removal Devices are generally fabricated as modular units that are transported to the site and bolted to a concrete pad. This

[14] Sensitive receptors include, but are not limited to, hospitals, schools, daycare facilities, elderly housing and convalescent facilities. These are areas where the occupants are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides, and other pollutants.

task involves preparing a level sub-base, placement of rebar and forms, and pouring ready-mix concrete to form a pad of sufficient dimensions to support the Gross Solids Removal Devices.

- Gross Solids Removal Device placement – the Gross Solids Removal Devices are placed onto the concrete with an equipment crane and secured with anchor bolts.
- Pipe fitting/connection – the storm drain conveyance piping is connected to the Gross Solids Removal Device with standard plumbing connects such as unions or joints. The connections are leak tested.
- Utility service – for Gross Solids Removal Devices which require electrical service, wiring from a nearby service connector would be made to a switchbox located on the concrete pad. Appropriate conduit and wiring for outdoor service would be used.

Equipment required to install Gross Solids Removal Devices is expected to include: equipment crane, concrete mix truck, hand power tools, hand tools, backhoe, and light duty truck. Caltrans provided descriptions of installation of Gross Solids Removal Device in the report Phase I Pilot Study – Gross Solid Removal Devices (Caltrans 2003).

Trash Nets

Trash nets would be installed at the outlets of storm drains and channels. These locations are typically located within the interior of the storm drain system where there is limited public access. Installation of trash nets includes field joining techniques and may include concrete repair. Trash net installation is expected to include:

- Preparation of concrete for installation of bracing to hold trash nets. Concrete preparation may entail simple cleaning of the concrete surfaces to patching and resurfacing of areas where the trash nets are to be attached.
- Installation of net bracing – net bracing is typically installed with anchor bolts.
- Attachment of the net to the bracing – simple mechanical devices is used to attach the flexible netting to the metal bracing.

Tools required to install trash netting include: hand power tools, hand tools, backhoe, and light duty truck. Impacts to air quality from installation equipment is expected to be minimal and of a short duration, particularly if equipment is tuned and maintained in good working condition to minimize emissions of criteria pollutants and particulates. Noise impacts are expected to also be short term and are expected to be minimized through installation practices, such as using noise barriers and modified work hours.

5.3.2 Maintenance of Treatment Controls and BMPs

Maintenance activities expected to occur for compliance with the final Trash Amendments would include removing trash from catch basins, Gross Solids Removal Devices, and trash nets and providing any mechanical service and repair that may be required. Because each device is limited in the volume of trash that can be collected, it is likely that relatively light-duty trucks can be used. Additionally, there is opportunity to

consolidate the trash collected from catch basins, Gross Solids Removal Devices, and trash nets with other trash to lessen the impacts associated with transport and disposal of trash collected from storm drain improvements.

The impacts from maintenance activities associated with the final Trash Amendments are expected to be minimized through modified work hours and dust suppression methods. Spoils resulting from installation of storm drain improvements are expected to be in relatively small in quantity. These spoils are expected to be disposed of in licensed facilities.

5.4 Low-Impact Development Controls and Multi-Benefit Projects

The Storm Water Program at the Water Boards encourages the management of storm water as a resource as identified in the California Water Code section 10562. The main objective of treating storm water as a resource is to protect and restore those watershed processes that are critical to watershed health. Multi-benefit projects that infiltrate and treat storm water runoff are encouraged within MS4 Phase I and Phase II permits.

The final Trash Amendments would allow for the use of LID as part of Track 2 implementation. LID approaches attempt to mimic a site's predevelopment hydrology through a series of practices including filtering storm water with natural media, detaining storm water for infiltration into the ground, and retaining water onsite for reuse. LID is often implemented through BMPs, including conservation designs, low impact landscaping, and practices promoting improved infiltration, runoff storage, runoff conveyance, and filtration (Metres 2013).

The final Trash Amendments would also allow for the use of multi-benefit projects as part of Track 2 implementation. Multi-benefit projects should be designed to maximize water supply, water quality, and environmental and other community benefits (Wat. Code § 10562(b)(2)). Multi-benefit projects lead to collaborations with other agencies and stakeholders to develop storm water infrastructure that improves storm water, urban runoff quality, and improve wildlife habitat. Multi-benefit projects should focus on regional and watershed-wide benefits.

While LID and multi-benefit projects have not directly addressed trash as a traditional pollutant in the past, additional measures can be included so that such projects specifically address trash. For example, the City of Anaheim, as part of the Brookhurst Street Improvement Project, converted impervious surfaces into a greenbelt area with an earthen swale that accepts storm flows from the street, acts as a natural treatment system, allows for limited infiltration, and drains to an existing storm drain inlet (City of Anaheim 2010). Trash can get captured within the bioswales, which infiltrates the storm water. A multi-benefit project should separate the storm water from the trash, thus removing the ability for trash to be transported to a receiving water body via storm water. The trash that accumulates within the bioswale should still be removed. To capture the remaining trash in storm water, an insert could be placed in the storm drain inlet to prevent trash from entering the storm water system. Another example of a multi-benefit project could be a retention basin, where the primary function is to recharge the local groundwater aquifer. To capture trash in the retention basin, a trash net at the retention basin overflow could be installed to capture any trash leaving the retention

basin when storm water inflow exceeds the capacity of the retention basin. LID and multi-benefit projects provided many environmental benefits from improved water quality, reduced number of flooding events, restored aquatic habitat, improved groundwater recharge, and enhanced urban aesthetics. By incorporating trash controls into LID and multi-benefit projects, a permittee can address numerous water quality pollutants within the urban and storm water landscape.

6 ENVIRONMENTAL EFFECTS OF TRASH AMENDMENTS

6.1 Introduction

The Water Quality Control/208 Planning Program, found in title 23, California Code of regulations sections 3775-3781 has been certified as an exempt regulatory program by the Secretary for Resources (Cal. Code Regs., tit. 14,§ 15251, subd. (g)) and, therefore, the State Water Board is exempt from the requirements of preparing separate documents in compliance with CEQA. However, the State Water Board must conduct an environmental analysis of its actions in a draft SED as part of its approval or adoption according to California Code of Regulations, title 23, section 3777 (see also, Pub. Res. Code § 21159). This Final Staff Report is being used to satisfy this requirement.

CEQA's "certified regulatory program" exemption is limited, however, and the State Water Board in the SED must still comply with CEQA's overall objectives to: inform the decision makers and the public about the potentially significant environmental effects of a proposed project; identify ways that significant adverse environmental impacts may be mitigated; and prevent significant, avoidable adverse environmental impacts by changing the proposed project or requiring mitigation measures. There are certain guiding principles that are contained in the CEQA Guidelines that help to inform the Water Board's certified regulatory process and preparation of the draft SED:

> Forecasting: Drafting an EIR or preparing a Negative Declaration necessarily involves some degree of forecasting. While foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can (Cal. Code Regs., tit. 14, § 15144).
>
> Speculation: If, after thorough investigation, a Lead Agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact (Cal. Code Regs., tit. 14, § 15145).
>
> Specificity: the degree of specificity required in an Environmental Impact Report [or an Environmental Impact Report – equivalent document, such as an SED] will correspond to the degree of specificity involved in the underlying activity which is described in the Environmental Impact Report" (Cal. Code Regs., tit. 14, § 15146)
>
> Standards for Adequacy: An EIR (or Negative Declaration) should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR (or Negative declaration) is to be reviewed in the light of what is reasonably feasible. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure (Cal. Code Regs., tit. 14, § 15151).

This section of the Final Staff Report, as well as the Environmental Checklist in Appendix B, identifies and evaluates the potential environmental impacts that may arise from final Trash Amendments and the reasonably foreseeable methods of compliance.

It also discusses mitigation, where applicable, for the identified potentially significant impacts (Cal. Code Regs., tit. 23, § 3777(b)). The implementation alternatives for achieving compliance with the final Trash Amendments are described in detail in Section 8 of this document. Impacts believed to be potentially significant are described in this section, while impacts that are considered less than significant or where there is no effect are described in Environmental Checklist contained in Appendix B. The following resource areas are included in this section, each of which includes a description of potential impacts, and mitigations.

- Section 6.2 Air Quality
- Section 6.3 Biological Resources
- Section 6.4 Cultural Resources
- Section 6.5 Geology/Soils
- Section 6.6 Greenhouse Gas Emissions
- Section 6.7 Hazards and Hazardous Materials
- Section 6.8 Hydrology/Water Quality
- Section 6.9 Land Use/Planning
- Section 6.10 Noise and Vibration
- Section 6.11 Public Services
- Section 6.12 Transportation/Traffic
- Section 6.13 Utilities/Service Systems

6.1.1 Impact Methodology

Any potential environmental impacts associated with the final Trash Amendments depend upon the specific compliance methods selected by the complying permittee, most of whom will be public agencies subject to their own CEQA obligations (see Pub. Res. Code § 21159.2). This document identifies broad mitigation approaches that could be considered at a statewide level. Consistent with Public Resources Code section 21159 and the State Water Board's certified regulatory program, the document does not engage in speculation or conjecture, but rather considers the potential environmental impacts of the final Trash Amendments and reasonably foreseeable methods of compliance, the feasible mitigation measures, and feasible alternatives (including alternative means of compliance) which would meet the project objectives and avoid or reduce the potentially significant impacts of the proposed project.

Within each of the subsections listed above, this document evaluates the potentially significant impacts of the proposed project and each implementation alternative relative to the subject resource area. The implementation alternatives evaluated in this document are evaluated on a statewide level for impacts for each resource area. Project-level analysis is expected to be conducted by the appropriate public agencies prior to implementation of project specific methods of compliance with the final Trash Amendments. The environmental analysis in this document assumes that the project specific methods of compliance with the final Trash Amendments would be designed, installed, and maintained following all applicable state and local laws, regulations, and ordinances. Several handbooks are available and currently used by municipal agencies

that provide guidance for the selection and implementation of BMPs (CASQA 2003a; 2003b, Water Environment Research Foundation 2005, Caltrans 2010).

6.1.2 Level of Analysis

The State Water Board is the lead agency for the final Trash Amendments, while the responsible agencies identified in Section 2.11 (Agencies Expected to use this Staff Report in their Decision Making and Permits) may be the lead agency for CEQA compliance for approval and implementation of a project specific method of compliance with the final Trash Amendments.

The State Water Board does not specify the actual means of compliance by which permittees choose to comply with the final Trash Amendments. However, as required by the State Water Board's certified regulatory program, this draft SED analyzes the potential environmental impacts of the final Trash Amendments and the reasonably foreseeable methods of compliance on a statewide level. The specificity of the "activity" described in this draft SED related to the reasonably foreseeable methods of compliance is of a general nature and the level of analysis of the potentially significant adverse environmental effects is commensurate with that level of detail. At the time of approval of a project-specific compliance project where the detail of the method of compliance is known, a project-level environmental analysis may be performed by the local approval agency.

Project-level impacts of the reasonably foreseeable methods of compliance will necessarily vary depending on the choice of compliance and the size, location, and type of discharger and the environmental resources in and around the project site. It would be speculative to estimate the specific impacts of the final Trash Amendments caused by implementation of a project-specific compliance method. It is possible that, at a specific site with particularly sensitive environmental resources, implementation with compliance measures in either in Track 1 or 2 could cause potentially significant impacts as compared to baseline conditions. Since it is speculative to estimate the type, size, and location of any particular compliance method (e.g., type of construction activities and type of resources adversely affected by those activities), this evaluation makes no attempt to quantify the impacts associated with implementation or maintenance of a particular compliance method.

Per the requirements of the State Water Board's environmental regulations, the resource analysis in this section includes:

- An identification of any significant or potentially significant adverse environmental impacts of the proposed project;
- An analysis of reasonable alternatives to the project and mitigation measures to avoid or reduce any significant or potentially significant adverse environmental impacts; and
- An environmental analysis of the reasonably foreseeable methods of compliance, including:
    - An identification of the reasonably foreseeable methods of compliance with the project;

- An analysis of any reasonably foreseeable significant adverse environmental impacts associated with those methods of compliance;
- An analysis of reasonably foreseeable alternative methods of compliance that would have less significant adverse environmental impacts; and
- An analysis of reasonably foreseeable mitigation measures that would minimize any unavoidable significant adverse environmental impacts of the reasonably foreseeable methods of compliance. (23 CCR § 3777)

6.1.3 Environmental Setting

CEQA directs that the environmental setting normally be used as the baseline for determining significant impacts of a proposed project (Cal. Code Regs., tit.14, § 15125, subd. (a)). Section 3 presents a broad overview of the environmental setting for the state of California related to the final Trash Amendments. As such, the environmental setting and baseline for determining impacts is presented at a general level as each regional water board and permittee may address trash with a range of treatment and institutional controls. The following resource sections present additional specific setting information relevant to the assessment of environmental impacts of the final Trash Amendments.

6.2 Air Quality

Daily emissions and pollutant concentrations are two ways to quantify air pollution. The term “emissions” means the quantity of pollutant released into the air and has unit of pounds per day (lbs /day). The term “concentrations” means the amount of pollutant material per volumetric unit of air and has unit of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$).

Criteria Pollutants

The Air Resources Board has established state ambient air quality standards (state standards) to identify outdoor pollutant levels considered safe for the public. After state standards are established, state law requires Air Resources Board to designate each area as attainment, nonattainment, or unclassified for each state standard. The area designations, which are based on the most recent available data, indicate the healthfulness of air quality throughout the state. In addition to state standards, the federal Clean Air Act requires U.S. EPA to set national ambient air quality standards (federal standards or national standards). The Air Resources Board makes area designations for ten pollutants: ozone, suspended particulate matter (PM10 and PM2.5), carbon monoxide, nitrogen dioxide, sulfur dioxide, sulfates, lead, hydrogen sulfide, and visibility reducing particles. Ambient air quality standards define clean air, and are established to protect even the most sensitive individuals in our communities. An air quality standard defines the maximum amount of a pollutant that can be present in outdoor air without harm to the public's health.

The gaseous criteria pollutants, particulate matter, and toxic air contaminants, and the associated adverse health effects of these air quality contaminants are summarized below.

Carbon Monoxide

Exposure to high concentrations of carbon monoxide, a colorless and odorless gas, reduces the oxygen-carrying capacity of the blood, and therefore can cause dizziness and fatigue, impair central nervous system functions, and induce angina in persons with serious heart disease. Carbon monoxide is emitted almost exclusively from the incomplete combustion of fossil fuels. In urban areas, motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains emit carbon monoxide. Motor vehicle exhaust releases most of the carbon monoxide in urban areas. Vehicle exhaust contributes approximately 56 percent of all carbon monoxide emissions nationwide and up to 95 percent in cities. Carbon monoxide is a non-reactive air pollutant that dissipates relatively quickly. As a result, ambient carbon monoxide concentrations generally follow the spatial and temporal distributions of vehicular traffic. Carbon monoxide concentrations are influenced by local meteorological conditions; primarily wind speed, topography, and atmospheric stability. Carbon monoxide from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions combine with calm atmospheric conditions.

Ozone

While ozone serves a beneficial purpose in the upper atmosphere (stratosphere) by reducing potentially harmful ultraviolet radiation, when it reaches elevated concentrations in the lower atmosphere it can be harmful to the human and to sensitive species of plants. Short-term ozone exposure can reduce lung function and increase an individual's susceptibility to respiratory infection. Long-term exposure can impair lung defense mechanisms and lead to emphysema and/or chronic bronchitis. Ozone concentrations build to peak levels during periods of light winds or stagnant air, bright sunshine, and high temperatures. Ideal conditions occur during summer and early autumn. Sensitivity to ozone varies among individuals. About 20 percent of the population is sensitive to ozone, with exercising children being particularly vulnerable. Ozone is formed in the atmosphere by a complex series of chemical reactions under sunlight that involve "ozone precursors." Ozone precursors are categorized into two families of pollutants: oxides of nitrogen and reactive organic compounds. Oxides of nitrogen and reactive organic compounds are emitted from a variety of stationary and mobile sources. While oxides of nitrogen are considered a criteria pollutant, reactive organic compounds are not in this category, but are included in this discussion as ozone precursors. Ozone is the chief component of urban smog and the damaging effects of photochemical smog generally relate to the concentration of ozone. Meteorology and terrain play major roles in ozone formation. The greatest source of smog producing gases is the automobile.

Nitrogen Dioxide

The major health effect from exposure to high levels of nitrogen dioxide is the risk of acute and chronic respiratory disease. Like ozone, nitrogen dioxide typically is not directly emitted, but it is formed through a rapid reaction between nitric oxide and atmospheric oxygen. Nitric oxide and nitrogen dioxide are collectively called oxides of nitrogen and are major contributors to ozone formation. Nitrogen dioxide also contributes to the formation of respirable particulate matter (see discussion of respirable particulate matter below) and fine particulate matter through the formation of nitrate compounds. At atmospheric

concentrations, nitrogen dioxide is only potentially irritating. In high concentrations, the result is a brownish-red cast to the atmosphere and reduced visibility.

Sulfur Dioxide

The major health effect from exposure to sulfur dioxide is acute and chronic respiratory disease. Exposure may cause narrowing of the airways, which may cause wheezing, chest tightness, and shortness of breath. Sulfur dioxide can also react with water in the atmosphere to form acids (or "acid rain"), which can cause damage to vegetation and man-made materials. The main source of sulfur dioxide is coal and fuel oil combustion in power plants and industries, as well as diesel fuel combustion in motor vehicles. Generally, the highest levels of sulfur dioxide are found near large industrial complexes. In recent years, sulfur dioxide concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of sulfur dioxide and by limiting the sulfur content in fuel. Sulfur dioxide concentrations in southern California have been reduced to levels well below the state and national ambient air quality standards, but further reductions in emissions are needed to attain compliance with ambient air quality standards for sulfates, respirable particulate matter, and fine particulate matter, to which sulfur dioxide is a contributor.

Particulate Matter

Particulate matter pollution consists of very small liquid and solid particles in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. Particulate matter is regulated as respirable particulate matter (inhalable particulate matter less than ten micrometers in diameter). More recently it has been subdivided into coarse and fine fractions, with particulate matter less than 2.5 micrometers in diameter constituting the fine fraction. Major sources of respirable particulate matter include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Fine particulate matter results from fuel combustion (e.g., from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, fine particulate matter can be formed in the atmosphere from gases such as sulfur dioxide, oxides of nitrogen, reactive organic compounds, and ammonia, and elemental carbon. Fine particulate matter is a subset of respirable particulate matter.

The health effects from long-term exposure to high concentrations of particulate matter are increased risk of chronic respiratory disease like asthma and altered lung function in children. Particles with 2.5 to 10 microns in diameter tend to collect in the upper portion of the respiratory system. Particles that are 2.5 microns or less are so tiny that they can penetrate deeper into the lungs and damage lung tissues. These substances can be absorbed into the bloodstream and cause damage elsewhere in the body. Short-term exposure to high levels of particulate matter has been shown to increase the number of people seeking medical treatment for respiratory distress, and to increase mortality among those with severe respiratory problems. Particulate matter also results in reduced visibility. Ambient particulate matter has many sources. It is emitted directly by combustion sources

like motor vehicles, industrial facilities, and residential wood burning, and in the form of dust from ground-disturbing activities such as construction and farming. It also forms in the atmosphere from the chemical reaction of precursor gases.

Toxic Air Contaminants

Toxic air contaminants include air pollutants that can produce adverse public health effects, including carcinogenic effects, after long-term (chronic) or short-term (acute) exposure. One source of toxic air contaminants is combustion of fossil fuels or digester gas. Human exposure occurs primarily through inhalation, although non-inhalation exposure can also occur when toxic air contaminants in particulate form deposit onto soil and drinking water sources and enter the food chain or are directly ingested by humans. Many pollutants are identified as toxic air contaminants because of their potential to increase the risk of developing cancer. For toxic air contaminants that are known or suspected carcinogens, it has been found that there are no levels or thresholds below which exposure is risk free. No ambient air quality standards exist for toxic air contaminants, except that standards for lead, hydrogen sulfide, and vinyl chloride are provided in California Ambient Air Quality Standards. Instead, numerous national, state, and local rules that affect both stationary and mobile emission sources regulate toxic air contaminants emissions. Individual toxic air contaminants vary greatly in the risk they present; at a given level of exposure one toxic air contaminants may pose a hazard that is many times greater than another. Where data are sufficient to do so, a "unit risk factor" can be developed for cancer risk. The unit risk factor expresses assumed risk to a hypothetical population, the estimated number of individuals in a million who may develop cancer as the result of continuous, lifetime (70-year) exposure to 1 $\mu g/m^3$ of the toxic air contaminants. Unit risk factors provide a standard that can be used to establish regulatory thresholds for permitting purposes. This is, however, not a measure of actual health risk because actual populations do not experience the extent and duration of exposure that the hypothetical population is assumed to experience. For non-cancer health effects, a similar factor called a Hazard Index is used.

Areas with monitored pollutant concentrations that are lower than ambient air quality standards are designated as "attainment areas" on a pollutant-by-pollutant basis. When monitored concentrations exceed ambient standards, areas are designated as "nonattainment areas." An area that recently exceeded ambient standards, but is now in attainment, is designated as a "maintenance area." Nonattainment areas are further classified based on the severity and persistence of the air quality problem as "moderate" "severe" or "serious." Classifications determine the applicability and minimum stringency of pollution control requirements.

6.2.1 Regulatory Setting

Federal

The U.S. EPA is the federal agency charged with administering the federal Clean Air Act Amendments of 1990, which established a number of requirements. The U.S. EPA oversees state and local implementation of federal Clean Air Act requirements. The Clean Air Act Amendments require the U.S. EPA to approve State Implementation Plans to meet and/or maintain the national ambient standards. The federal (and California) ambient air quality standards are shown in Table 8.

Table 8. Federal and California Ambient Air Quality Standards.

Pollutant	Averaging Time	California Standards	Federal Standards	
			Primary	Secondary
Ozone	1 Hour	0.09 ppm (180 µg/m^3)	-	Same as Primary Standard
	8 Hour	0.070 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)	
Respirable Particulate Matter	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m^3	-	
Fine Particulate Matter	24 Hour	No Separate State Standard	35 µg/m^3	35 µg/m^3
	Annual Arithmetic Mean	12 µg/m^3	12.0 µg/m^3	15.0 µg/m^3
Carbon Monoxide	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	-
	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	-	-
Nitrogen Dioxide	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary Standard
	1 Hour	0.18 ppm (339 µg/m^3)	100 ppm (188 µg/m^3)	-
Sulfur Dioxide	Annual Arithmetic Mean	-	0.030 ppm	-
	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)	-
	3 Hour	-	-	0.5 ppm (1300 µg/m^3)
	1 Hour	0.25 ppm (655 µg/m^3)	75 ppb (195 µg/m^3)	-
Lead	30 Day Average	1.5 µg/m^3	-	-
	Calendar Quarter	-	1.5 µg/m^3	Same as Primary Standard

State

The California Air Resources Board is the state agency responsible for coordinating both state and federal air pollution control programs in California. In 1988, the State Legislature adopted the California Clean Air Act, which established a statewide air pollution control program. The California Clean Air Act's requirements include annual emission reductions, increased development and use of low emission vehicles, and submittal of air quality attainment plans by air districts. The California Air Resources Board has established state

ambient air quality standards, shown in Table 8. Additionally, the California Air Resources Board has established state standards for pollutants that have no federal ambient air quality standard, including sulfate, visibility, hydrogen sulfide, and vinyl chloride.

Local

There are 35 local air districts within the state. Each district (referred to as either an Air Pollution Control District or an Air Quality Management District) is responsible for controlling emissions, primarily from stationary sources of air pollution, within their area. Each district develops and adopts an Air Quality Management Plan, which serves as the blueprint to bring their respective areas into compliance with federal and state clean air standards. Rules are adopted to reduce emissions from various sources.

6.2.2 Thresholds of Significance

Air quality impacts would be considered significant if the final Trash Amendments or reasonably foreseeable methods of compliance would:

- Conflict with or obstruct the implementation of the applicable air quality plan (although there are many applicable air quality plans in the state, this analysis utilized the South Coast Air Quality Management District Plan as the representative air quality plan for assessing impacts).

- Violate any air quality standards or contribute substantially to an existing or projected air quality violation (although there are many applicable air quality standards, depending on the air basin in the state, this analysis utilized the South Coast Air Quality Management District's standards as the representative air quality standards for assessing impacts).

- Expose sensitive receptors to substantial pollutant concentrations.

- Create objectionable odors affecting a substantial number of people.

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under any applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors). This impact threshold is addressed in Section 7.2.

6.2.3 Impacts and Mitigation

The Los Angeles Water Board conducted an analysis of potential air quality impacts of the identified alternatives for compliance with the Los Angeles River Trash TMDL (Trash TMDL) (Los Angeles Water Board 2007f). This analysis is incorporated by reference and summarized here. Staff has reviewed this analysis and has concluded that it is an appropriate representation of the potential impacts that could occur in other areas of the state with implementation of the final Trash Amendments, including the reasonably foreseeable methods of compliance.

The South Coast Air Basin (which includes the area covered by the Trash TMDL) is home to more than 42 percent of California's population. Pollutant concentrations in parts of the South Coast Air Basin are among the highest in the nation. South Coast Air Basin

emissions improved between 2005 and 2010 and are expected to further improve and become somewhat constant through 2035 (ARB 2013). With its high population and pollutant concentrations, potential impacts to air quality are likely to be greater in the South Coast Air Basin than in other parts of the state and serves as a maximum possible impact related to air quality. Therefore, potential impacts identified in this analysis would likely be less in all other air basins.

Impact Assessment Methodology

This evaluation addresses impacts that have the potential to occur from the final Trash Amendments, including the reasonably foreseeable methods of compliance, including both short -and long-term activities. The evaluation is based on a calculation of the total emissions from travel of construction and maintenance vehicles that might be affected by implementation of the final Trash Amendments. This comparative evaluation was done instead of examining the emissions from each individual source alone and comparing them to a threshold level.

Vehicle Emissions

Vehicle emissions were calculated in the Trash TMDL analysis using forecasts of total vehicle miles traveled based on data provided in MOBILE6, which is a vehicle emission software developed by U.S. EPA (U.S. EPA 2003; 2004; 2006). MOBILE6 is used for predicting gram per mile emissions of hydrocarbons, carbon monoxide, oxides of nitrogen, carbon dioxide, PM, and toxics from cars, trucks, and motorcycles under various conditions. The data which this calculation is based on are from technical documents of MOBILE6 (U.S. EPA 2003). Considering the type of work involved in implementation of the final Trash Amendments, the calculation assumed that non-tampered heavy-duty diesel vehicles (HDDV Class 6) would be used for installation/construction/maintenance activities. The mileage was assumed to be 50,000 miles, which is the median mileage for HDDVs. The year of vehicle was assumed to be 2001+ for hydrocarbons, carbon monoxide, oxides of nitrogen, and sulfur dioxide and 1994+ for particulate matter.

Based on assumptions above, the exhaust emission rates were found to be 2.1, 9.92, and 6.49 grams per mile for hydrocarbons, carbon monoxide, and oxides of nitrogen, respectively. The particulate matter standard for HDDVs is 0.1 g/bhp-hr. By applying a conversion factor of 1.942 bhp-hr/mi (from Update Heavy-Duty Engine Emission Conversion Factors for Mobile6 – Analysis of BSFCs and Calculation of Heavy-Duty Engine Emission Conversion Factors), the exhaust emission rate for particulate matter was found to be 0.1942 grams per mile. There was no exhaust emission rate information available for SO_x in MOBILE6. Instead by using diesel fuel sulfur level of eight ppm (from MOBILE6 for years after 2006), diesel fuel economy of 8.71 miles per gallon (from Update Heavy-Duty Engine Emission Conversion Factors for Mobile6 – Analysis of BSFCs and Calculation of Heavy-Duty Engine Emission Conversion Factors), and diesel fuel density of 7.099 pounds per gallon (from Update Heavy-Duty Engine Emission Conversion Factors for MOBILE6 – Analysis of Fuel Economy, Non-Engine Fuel Economy Improvements and Fuel Densities), the exhaust emission rate for sulfur dioxide could be 0.00592 grams per mile, assuming all sulfur in fuel would be transformed to sulfur dioxide.

Catch Basin Inserts

Long-term increases in traffic caused by ongoing maintenance of catch basin inserts (e.g., delivery of materials, street sweeping) are potential sources of increased air pollutant emissions.

As an example, the Trash TMDL analysis estimated that approximately 150,000 catch basins could be retrofitted with inserts in the urban portion of watershed. As discussed previously, the Los Angeles River Watershed has 474 square miles highly developed with commercial, industrial, or residential uses. Assuming that 150,000 catch basin inserts were placed evenly in the 474 square miles developed area, each catch basin insert covered 0.00316 square miles. The distance between two catch basin inserts was about 0.056 mile. The total distance for a truck to travel through all 150,000 catch basin inserts units was about 8,342 miles. Assuming catch basins need to be cleaned twice a year. This translated to approximately 822 vehicle trips per day in the watershed. Assuming the 822 trips were arranged at shortest distance, which is reasonable by arranging a round trip, the total travel distance for 822 trips was about 52 miles (9497 miles divided by 183 days, or 822 trips times 0.063 mile). The vehicle emissions for traveling 52 miles are listed in Table 9. Emission levels for all the pollutants were well below the South Coast Air Quality Management District Air Quality Significance thresholds. If all trips were arranged in one day, emission levels for HC, CO, PM, and sulfur dioxide were still well below the significance thresholds. The maximum potential impact of the proposed project for level for oxides of nitrogen was about twice the significance threshold level of 55 lbs/day.

Measures are available to alleviate any potential impacts to air quality due to increased traffic due to catch basin cleanings. Such measures could include: (1) use of construction, maintenance, and street sweeper vehicles with lower-emission engines; (2) use of soot reduction traps or diesel particulate filters; (3) use of emulsified diesel fuel; (4) use of vacuum-assisted street sweepers to eliminate potential re-suspension of sediments during sweeping activity; and (5) the design of trash removal devices to minimize the frequency of maintenance trips (e.g., design for smaller drainage areas).

Toxic Air Contaminants Because the emission levels of criteria pollutants during installation and maintenance of catch basin inserts can be below the South Coast Air Quality Management District Air Quality Significance thresholds, the emission of toxic air contaminants is expected to be below the other Air Quality Management District thresholds as well. With its high population and pollutant concentrations, South Coast Air Quality Management District's thresholds are likely to be the most stringent of other Districts in other parts of the state and serves as a maximum threshold related to Toxic Air Contaminants. Therefore, a significant increase in toxic air contaminants is not expected in other areas of the state due to implementation of the final Trash Amendments.

Odor Impacts To the extent improper disposal of, for instance, household hazardous wastes result in them being kept on the street or in inserts, and potentially allowing a release of chemical odors, local residents could be exposed to those effects. Those effects are already occurring in watersheds, however, and should be considered baseline impacts. Nevertheless, to the extent the locality that originated the risk would become newly potentially exposed instead of downstream receptors, those impacts could be potentially significant in those locales. Such impacts could be avoided or mitigated by

educating the local community of the effects of improper disposal of such wastes, enforcing litter ordinances, and timely cleaning out inserts.

Vortex Separation Systems

Criteria Pollutants Short term increases in traffic during the construction and installation of vortex separation systems and long-term increases in traffic caused by ongoing maintenance of these devices (e.g., delivery of materials and deployment of vacuum trucks) are potential sources of increased air pollutant emissions. For example, the Trash TMDL analysis estimated that approximately 3700 large capacity vortex separation systems could be installed to collect all the trash generated in the urban portion of the Los Angeles River watershed. Maintenance requirements for trash removal devices demonstrate that devices should be emptied when they reach 85 percent capacity. Vortex separation systems can be designed so that they need be cleaned only once per storm season.

As an example of truck travel within a particular watershed used as a representative maximum possible effect of the proposed project, the Los Angeles River Watershed covers a land area of over 834 square miles, of which 599 square miles are highly developed with commercial, industrial, or residential uses. The remaining area is covered by forest or open space. Assuming that 3700 vortex separation systems were placed evenly in the 599 square miles developed area, each vortex separation system would cover 0.162 square miles. The distance between two vortex separation system units was about 0.40 mile. The total distance for a truck to travel through all 3700 vortex separation system units was about 1489 miles. A vortex separation system would need to be cleaned at minimum once per storm season, i.e., once per year.[15] There are about 247 business days a year. This translated to approximately 15 vehicle trips per business day in the watershed. Assuming the 15 trips were arranged at shortest distance, the total travel distance for 15 trips was about six miles (1489 miles divided by 247 days, or 15 trips times 0.40 mile). The vehicle emissions for traveling six miles are listed in Table 9. Emission levels for all the pollutants are far below the South Coast Air Quality Management District Air Quality Significance thresholds. If all trips are conducted in one day, emission levels for all the pollutants are still well below the significance thresholds (Table 9).

[15] Annual frequency of the cleaning the vortex separation systems may vary across California in response to rain events. However, this variation would not substantially change the conclusions of this analysis.

Table 9. Vehicle Emissions within the Los Angeles River Watershed Example.

Device	Trips per day	HC (lbs/day)	CO (lbs/day)	NO_x (lbs/day)	PM (lbs/day)	SO_2 (lbs/day)
Vortex Separation System	15*	0.029	0.132	0.086	0.0026	0.000079
Vortex Separation Systems	3700**	6.9	32.5	21.3	0.64	0.019
Catch Basin Insert	21,429*	0.2	1.1	0.7	0.0	0.00068
Catch Basin Insert	150,000**	43.7	206.5	135.1	4.0	0.12
SCAQMD significance threshold		55	550	55	150	150
*trips conducted over 247 business days, **trips conducted in a single day						

Using the South Coast Air Quality Management District daily construction emissions thresholds as a representative of air quality standards for assessing impacts, the emissions generated by construction equipment for the proposed project are expected to be lower than the daily construction emissions thresholds. However, detailed analysis can only be done at project level. In case daily construction emissions exceed significance thresholds, which are unlikely, construction projects for different vortex separation system units can be conducted on different days to reduce emissions rates.

Measures to decrease air emissions from increased vehicle trips or increased use of construction equipment include: (1) use of construction, and maintenance vehicles with lower-emission engines; (2) use of soot reduction traps or diesel particulate filters; and (3) use of emulsified diesel fuel.

Toxic Air Contaminants The emission levels of criteria pollutants during installation and maintenance of vortex separation system units are far below the South Coast Air Quality Management District Air Quality Significance thresholds, the emissions of toxic air contaminants are expected to be far below the other Air Quality Management District thresholds as well. With its high population and pollutant concentrations, South Coast Air Quality Management District's thresholds are likely to be the most stringent of other Air Quality Management Districts in other parts of the state and serves as a maximum threshold related to Toxic Air Contaminants. Therefore, a significant increase in toxic air contaminants is not expected in other areas of the state due to implementation of the final Trash Amendments.

Odor Impacts During construction of the vortex separation system units, it is possible that foul air could be temporarily released to the atmosphere while enclosed sources are uncovered or piping is reconfigured. These releases could create objectionable odors at the nearest receptors. These impacts are temporary and unpleasant odors, if any, would be at minimum with completion of the installation.

Vortex separation system units may be a source of objectionable odors if design allows for water stagnation or collection of water with sulfur-containing compounds. Storm water runoff is not likely to contain sulfur-containing compounds, but stagnant water could create objectionable odors. Measures to eliminate odors caused by stagnation could include covers, aeration, filters, barriers, and/or odor suppressing chemical additives. Devices could be inspected to ensure that intake structures are not clogged or pooling water. During maintenance, odorous sources could be uncovered for as short of a time period as possible. To the extent possible, trash removal devices could be designed to minimize stagnation of water (e.g., allow for complete drainage within 48 hours) and installed to increase the distance to sensitive receptors in the event of any stagnation.

The potential re-suspension of sediments and associated pollutants during construction could also impact air quality. An operations plan for the specific construction and/or maintenance activities could be completed to address the variety of available measures to limit the air quality impacts. These could include vapor barriers and moisture control to reduce transfer of small sediments to air.

To the extent improper disposal of, for instance, household hazardous wastes result in them being trapped in structural compliance measures, potentially allowing a release of such chemicals, local residents could be exposed to those effects. On balance, however, it is not unfair that the residents of the localities where improper disposal of such materials occurs should suffer those risks rather than allowing the wastes to be conveyed through the water body, to expose downstream citizens to risk instead. Those effects are already occurring in the watershed and should be considered baseline impacts. Nevertheless, to the extent the locality that originated the risk would become newly potentially exposed instead of downstream receptors, those impacts could be potentially significant in those locales. Such impacts could be avoided or mitigated by educating the local community of the effects of improper disposal of such wastes, enforcing litter ordinances, and timely cleaning out vortex separation systems.

Trash Nets

Trash nets are end-of-pipe devices. The number of end-of-pipe trash nets installed would be limited by the number of suitable locations within a watershed. Short term increases in traffic during the construction and installation of trash nets and long-term increases in traffic caused by ongoing maintenance of these devices (e.g., replacement of nets) are potential sources of increased air pollutant emissions. After installation, trash nets can be replaced once per year. It is not clear how many trash nets are going to be installed at this point. If the responsible parties make decisions on the numbers of trash nets that are going to be installed, the impacts on air quality caused by installation and maintenance of trash nets should be analyzed at project level. Nevertheless, many fewer trash nets are currently being installed than catch basin inserts, and, anticipating this trend to continue, the impacts of installation and maintenance of trash nets on air quality are expected to be much less than those of catch basin inserts.

Measures to lessen the impacts of increased air emissions caused by increased vehicle trips or construction equipment due to the installation of trash nets include: (1) use of construction, and maintenance vehicles with lower-emission engines; (2) use of soot reduction traps or diesel particulate filters; and (3) use of emulsified diesel fuel.

Trash trapped in trash nets may be a source of objectionable odors. Measures to eliminate odors could include covers, aeration, filters, barriers, and/or odor suppressing chemical additives. During maintenance, odorous sources could be uncovered for as short of a time period as possible. Notably, the current conditions result in significant impacts from odor. The impacts from odor could be alleviated by employing alternative structural devices, such as in-line trash nets, or by employing non-structural controls, for instance, increased litter enforcement.

Gross Solids Removal Devices

Short term increases in traffic during the construction and installation of Gross Solids Removal Devices and long-term increases in traffic caused by ongoing maintenance of these devices (e.g., replacement of nets) are potential sources of increased air pollutant emissions. Each Gross Solids Removal Device was designed to capture annual load of gross solids, which would result in one cleaning per year. It is not clear how many Gross Solids Removal Devices are going to be installed at this point. If the responsible parties determine that Gross Solids Removal Devices should be installed, the impacts on air quality caused by installation and maintenance Gross Solids Removal Devices should be analyzed at project level. Nevertheless, many fewer Gross Solids Removal Devices are currently being installed than catch basin inserts, and, anticipating these trends to continue, the impacts of installation and maintenance of Gross Solids Removal Devices on air quality are expected to be much less than those of catch basin inserts.

Measures to lessen the increase of air emissions caused by increased vehicle trips or construction equipment due to the installation of Gross Solids Removal Devices include: (1) use of construction, and maintenance vehicles with lower-emission engines; (2) use of soot reduction traps or diesel particulate filters; and (3) use of emulsified diesel fuel.

Trash trapped in Gross Solids Removal Devices may be a source of objectionable odors. Measures to eliminate odors could include covers, aeration, filters, barriers, and/or odor suppressing chemical additives. During maintenance, odorous sources could be uncovered for as short of a time period as possible. By employing nonstructural controls, for instance, increased litter enforcement, the impacts from odor could be alleviated.

Enforcement of Litter Laws

It is possible that the final Trash Amendments may require more workers and vehicles to enforce litter laws. Air pollutant emissions might be increased due to increased driving to enforce litter laws. The increase in traffic due to enforcement of litter laws, however, is expected to be very limited and would not have a noticeable impact on air quality.

Increased Street Sweeping

Increased street sweeping would increase traffic and therefore increase air pollutant emissions. Increased street sweeping would not foreseeably be implemented alone for the final Trash Amendments. It is not clear how often street sweeping would be increased to comply with the final Trash Amendments at this point. If the responsible parties determine that a given frequency of street sweeping is necessary, the impacts on air quality caused by increased street sweeping should be analyzed at project level.

Increased street sweeping may increase objectionable odors on street. Nonetheless, measures are available to reduce any potential impacts to air quality due to increased

street sweeping. Such measures could include: (1) use of street sweeper vehicles with lower-emission engines; (2) use of soot reduction traps or diesel particulate filters, (3) use of emulsified diesel fuel; (4) use of vacuum-assisted street sweepers to eliminate potential re-suspension of sediments during sweeping activity.

Public Education

Similar to enforcement of litter laws, public education is not expected to have noticeable impact on air quality.

Ordinances

Similar to enforcement of litter laws and public education, ordinances are expected to have no impact or less-than-significant impact on air quality.

Exposure of sensitive receptors to substantial pollutant concentrations

Implementation of the final Trash Amendments is expected to cause a minor amount of construction activities, causing impacts to air quality over baseline conditions. This construction is expected to take place within a short timeframe of several days, spread out over many urban and suburban sites. Due to the short term and dispersed nature of the implementation of the final Trash Amendments, there is no expectation that sensitive receptors will be exposed to substantial pollutant concentrations. In addition, the reasonably foreseeable methods of compliance will be conditioned with standard procedures requiring that the general population not have access to construction areas. Further, maintenance activities would be intermittent and are not expected to create substantial pollutant concentrations. Therefore, potential impacts due to exposure of sensitive receptors to substantial pollutant concentrations are expected to be less than significant for the reasonably foreseeable methods of compliance with the final Trash Amendments.

6.2.4 Summary

Installation and maintenance of full capture systems and treatment controls could result in potentially significant environmental effects with regard to air quality. Measures, however, can be applied to reduce and/or eliminate these impacts, as described above. These measures are within the responsibility and jurisdiction of the responsible agencies subject to the final Trash Amendments and can or should be adopted by them. The State Water Board does not direct which compliance measures responsible agencies choose to adopt or the mitigation measures they employ. The State Water Board does, however, recommend that appropriate measures be applied to reduce or avoid potential environmental impacts. Although this analysis concludes that, based on substantial evidence on the record, on a statewide level analysis, all impacts would be less than significant with mitigation; it is foreseeable that these measures may not always be capable of reducing these impacts to levels that are less than significant in every conceivable instance. Although there is no information on the record that this would occur, in the event that a specific measure or alternative may not reduce impacts to levels that are less than significant, the project proponent may need to consider an alternative strategy or combination of strategies to comply with the final Trash Amendments. All foreseeable methods of compliance listed above would not be of the size or scale to result

in alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally.

6.3 Biological Resources

A general description of the environmental setting is presented in Section 3 of this document. Those portions of the state where the final Trash Amendments would be implemented are densely urbanized and the presence of fish and wildlife species and their supporting habitat severely limited. Any watercourses, riparian habitat or wetlands downstream from the implementation areas would not be adversely impacted by implementation measures. Rather, these areas would be improved by the reduction in trash entering these habitats from upstream sources.

6.3.1 Regulatory Setting

Federal Regulatory Setting

Federal Endangered Species Act

Pursuant to the federal Endangered Species Act, the U. S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration Fisheries Service, formerly National Marine Fisheries Service, have regulatory authority over federally listed species. Under the Endangered Species Act, a permit is required for any federal action that may result in "take" of a listed species. Section 9 of the Endangered Species Act defines take as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Under federal regulations, take is further defined to include the modification or degradation of habitat where such activity results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Clean Water Act

Section 404 of the CWA requires project proponents to obtain a permit from the U.S. Army Corps of Engineers before performing any activity that involves discharge of dredged or fill material into "waters of the United States," including wetlands. Dredge and fill activities involve any activity, such as construction, that results in direct modification (e.g., alteration of the banks, deposition of soils) of an eligible waterway. Waters of the United States include navigable waters, interstate waters, and other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries. Many surface waters and wetlands in California meet the criteria for waters of the United States.

In accordance with section 401 of the CWA, projects that apply for a U.S. Army Corps of Engineers permit for discharge of dredged or fill material must obtain water quality certification from the Water Boards indicating that the project would uphold state water quality standards.

State Regulatory Setting

California Endangered Species Act

Pursuant to the California Endangered Species Act, a permit from the California Department of Fish and Wildlife is required for projects that could result in take of a plant or animal species that is state listed as threatened or endangered. Under California Endangered Species Act, "take" is defined as an activity that would directly or indirectly kill an individual of a species. Authorization for take of state-listed species can be obtained through a California Fish and Wildlife Code section 2080.1 consistency determination or a section 2081 incidental take permit.

Section 1600 of the California Fish and Wildlife Code

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream or lake in California that supports wildlife resources is subject to regulation by the California Department of Fish and Wildlife, under sections 1600–1603 of the California Fish and Wildlife Code. Section 1601 states that it is unlawful for any agency to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake designated by California Department of Fish and Wildlife, or use any material from the streambeds, without first notifying California Department of Fish and Wildlife of such activity. The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. California Department of Fish and Wildlife's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife. Accordingly, a California Department of Fish and Wildlife Streambed Alteration Agreement must be obtained for any project that would result in diversions of surface flow or other alterations to the bed or bank of a river, stream, or lake.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne, "waters of the state" fall under the jurisdiction of the appropriate regional water board. The regional water board must prepare and periodically update Basin Plans. Each Basin Plan establishes numerical or narrative water quality objectives to protect established beneficial uses, which include wildlife, fisheries and their habitats. Projects that affect wetlands or waters of the state must meet discharge requirements of the regional water board, which may be issued in addition to a water quality certification or waiver under section 401 of the CWA.

Local Regulations

Numerous California cities and counties have adopted ordinances regulations and policies for the protection and enhancement of natural resources, including heritage trees, important natural features, habitat alteration, and common and special status species.

6.3.2 Thresholds of Significance

A project would normally have a significant effect on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on a species identified as a candidate, sensitive, or special status species in local or

regional plans, policies or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service;

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Fish and Wildlife or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on federally protected wetlands as defined by section 404 of the CWA (including, but not limited to marsh, riparian scrub, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provision of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan.

6.3.3 Impacts and Mitigation

This is a statewide analysis of the potential impacts from each implementation measure. The specific location of each implementation measure would be determined during the implementation of the final Trash Amendments. In general, the activities that would take place with the implementation of the full capture and/or partial capture trash capture systems would be similar in nature to current urban activities that are already occurring in the watersheds. The implementation of additional trash control measures would not foreseeably:

- Cause a substantial reduction of the overall habitat of a wildlife species.
- Produce a drop in a wildlife population below self-sustaining levels.
- Eliminate a plant or animal community.
- Have a substantial adverse effect on federally protected wetlands.
- Conflict with any local policies or ordinances protecting biological resources.

It is not reasonably foreseeable that either the construction/implementation or maintenance phase of potential projects would result in a significant long-term impact to general wildlife species adapted to developed environments.

An objective of the final Trash Amendments is to improve conditions for aquatic life. Removing trash from the State's rivers, streams, and lakes would have an overall positive impact on biological resources.

Catch Basins

Catch basin inserts fit directly into curbside catch basins, requiring no expansion of footprint or additional excavation, in urbanized areas where native habitat or special-status species usually are absent. As such, impacts to biological resources would likely not occur, including impacts to species diversity, impacts to special-status species, impacts to habitat, or impacts to wildlife migration. Furthermore, because installation of catch basin inserts requires no construction or ground disturbance and is accomplished within the existing footprint of the facility, the installation of catch basin inserts would not impact biological resources. Implementation of the Trash Amendments and the use of catch basin inserts would considerably improve habitat for biological resources by removing trash from water bodies, as well as surrounding beaches. No mitigation is required since no potentially significant impacts are anticipated.

Vortex Separation Systems

Vortex separation systems would be implemented in currently urbanized areas. Since these areas are already fully urbanized, it is unlikely that the installation of vortex separation systems would cause the removal, disturbance or change in diversity of any plant species or cause a change or reduction in the number of any unique, rare or endangered species of plants. Depending on the final location of facilities, however, potential impacts to biological resources including special-status species and habitat, wetlands, and trees protected under local ordinances or policies could occur.

It is not reasonably foreseeable that implementation of vortex separation systems would result in the introduction of exotic or invasive plant species into an area. Nor would it result in a barrier to the normal replenishment of existing species. In the case that landscaping is incorporated into the specific project design, however, there is a possibility of disruption of resident native species.

It is possible that direct or indirect impacts to special-status animal species may occur at the project level. Because these animal species are protected by state and/or federal Endangered Species Acts, impacts to them would be considered potentially significant. Even though it is expected that potential projects would occur in previously developed areas it is possible for special-status species to occur in what would generally be described as urban areas. If these species are present during activities such as ground disturbance, construction, and operation and maintenance activities associated with the potential projects, it could conceivably result in direct impacts to special status species including the following:

- Direct loss of a sensitive species.
- Increased human disturbance in previously undisturbed habitats.
- Mortality by construction or other human-related activity.
- Impairing essential behavioral activities, such as breeding, feeding or shelter/refugia.
- Destruction or abandonment of active nest(s)/den sites.
- Direct loss of occupied habitat.

In addition, potential indirect impacts may include but are not limited to, the following:

- Displacement of wildlife by construction activities.
- Disturbance in essential behavioral activities due to an increase in ambient noise levels and/or artificial light from outdoor lighting around facilities.

It is not reasonably foreseeable that implementation of vortex separation systems would result in the introduction of new species. In addition, because potential projects would be established in previously heavily developed areas it is not expected that potential project sites would act as a travel route or regional wildlife corridor. Construction of these facilities would not considerably restrict wildlife movement. A travel route is generally described as a landscape feature (such as a ridgeline, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and provide access to necessary resources (e.g. water, food, and den sites). Wildlife corridors are generally an area of habitat, usually linear in nature, which connect two or more habitat patches that would otherwise be fragmented or isolated from one another. It is considered unlikely that vortex separation systems would be constructed in areas such as these.

Constructed vortex separation systems, however, may potentially impact wildlife crossings. A wildlife crossing is a small narrow area relatively short and constricted, which allows wildlife to pass under or through obstacles that would otherwise hinder movement. Crossings are typically manmade and include culverts, underpasses, and drainage pipes to provide access across or under roads, highways, or other physical obstacles.

Construction activities associated with the implementation of vortex separation systems may impact migratory avian species. These avian species may use portions of potential project sites, including ornamental vegetation, during breeding season and may be protected under the Migratory Bird Treaty Act while nesting. The Migratory Bird Treaty Act includes provisions for protection of migratory birds under the authority of the U.S. Fish and Wildlife Service and California Fish and Wildlife. The Migratory Bird Treaty Act protects over 800 species including, geese, ducks, shorebirds, raptors, songbirds, and many other relatively common species.

It is not reasonably foreseeable that the implementation of vortex separation systems would result in the deterioration of existing fish and or wildlife habitat. Potential vortex separation systems would be located in previously developed areas and would not result in the removal of sensitive biological habitats.

Vortex separation systems would not be located within the river channel, but rather in the storm drain itself. As such, a foreseeable deterioration of existing fish habitat is not anticipated. It is foreseeable, however, that the implementation of the final Trash Amendments would considerably improve fish habitat by removing trash from water bodies, as well as surrounding beaches.

The following measures should be implemented to reduce or avoid potential project-level impacts to biological resources:

Assuming any unique species are present, plant number and species diversity could be maintained by either preserving them prior, during, and after the construction of vortex separation systems or by re-establishing and maintaining the plant communities post construction.

When the specific projects are developed and sites identified, a search of the California Natural Diversity Database could be employed to confirm that any potentially sensitive plant species or biological habitats in the site area are properly identified and protected as necessary. Focused protocol plant surveys for special-status-plant species could be conducted at each site location, if appropriate. If sensitive plant species occur on the project site mitigation would be required consistent with appropriate expert analysis. Mitigation measures shall be developed in coordination with U.S. Fish and Wildlife Service and California Department of Fish and Wildlife. Responsible agencies should endeavor to avoid compliance measures that could result in reduction of the numbers of any unique, rare or endangered species of plants, and instead opt for such measures as enforcing litter ordinances in sensitive habitat areas, or siting physical compliance measures sufficiently upstream or downstream of sensitive areas to avoid any impacts.

In the case that landscaping is incorporated into the specific project design, the possibility of disruption of resident native species could be avoided or minimized by using only plants native to the area. Use of exotic invasive species or other plants listed in the Exotic Pest Plant of Greatest Ecological Concern in California should be prohibited (California Exotic Pest Plant Council 1999).

Responsible agencies should endeavor to avoid compliance measures that could result in significant impacts to unique, rare or endangered (special-status) species, should any such species be present at locations where such compliance measures might otherwise be performed, and instead opt for such measures as enforcing litter ordinances in sensitive habitat areas. Mitigation measures, however, could be implemented to ensure that potentially significant impacts to special status animal species are less than significant. When the specific projects are developed and sites identified a search of the California Natural Diversity Database could be employed to confirm that any potentially special-status animal species in the site area are properly identified and protected as necessary. Focused protocol animal surveys for special-status animal species should be conducted at each site location.

If special-status animal species are potentially near the project site area two weeks prior to grading or the construction of facilities and per applicable U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife protocols, pre-construction surveys to determine the presence or absence of special-status species would be conducted. The surveys should extend off site to determine the presence or absence of any special-status species adjacent to the project site. If special-status species are found to be present on the project site or within the buffer area, mitigation should be required consistent with appropriate expert analysis. To this extent, mitigation measures would be developed in coordination with the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife to reduce potential impacts.

If vortex separation systems are implemented at locations where they would foreseeably adversely impact species migration or movement patters, mitigation measures previously described could be implemented to ensure that impacts which may result in a barrier to the migration or movement of animal is less than significant. Any site-specific wildlife crossings should be evaluated in consultation with California Department of Fish and Wildlife. If a wildlife crossing would be significantly impacted in an adverse manner, then the design of the project should include a new wildlife crossing in the same general location.

If construction occurs during the avian breeding season for special status species and/or Migratory Bird Treaty Act -covered species, generally February through August, then prior (within two weeks) to the onset of construction activities, surveys for nesting migratory avian species would be conducted on the project site following U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife guidelines. If no active avian nests are identified on or within 200 feet of construction areas, no further mitigation would be necessary.

Alternatively, to avoid impacts, the agencies implementing the final Trash Amendments may begin construction after the previous breeding season for covered avian species and before the next breeding season begins. If a protected avian species was to establish an active nest after construction was initiated and outside of the typical breeding season (February – August), the project sponsor, would be required to establish a buffer of 200 feet or other measure that would result in equivalent mitigation between the construction activities and the nest site.

If active nest for protected avian species are found within the construction footprint or within the 200-foot buffer zone, construction would be required to be delayed within the construction footprint and buffer zone until the young have fledged or appropriate mitigation measures responding to the specific situation are developed in coordination with U.S. Fish and Wildlife Service or California Department of Fish and Wildlife. These impacts are highly site specific, and assuming they are foreseeable, they would require a project-level analysis and mitigation plan.

Finally, to the extent feasible, responsible agencies should endeavor to avoid compliance measures that could result in significant barriers to the beneficial migration or movement of animals, and instead opt for such measures as enforcing litter ordinances in sensitive areas. No significant impact is anticipated after mitigation.

Trash Nets

Trash nets are installed within the storm drain systems either inline or at the end of pipe in urbanized areas where native habitat or special-status species usually are absent. As such, impacts to biological resources would likely not occur, including impacts to species diversity, impacts to special-status species, impacts to habitat, or impacts to wildlife migration. Trash nets used for the purposes of compliance with the final Trash Amendments would not be located within a stream channel, but rather in the storm drain itself and would not result in a foreseeable deterioration of existing fish habitat. Furthermore, because installation of trash nets requires minimal construction and ground disturbance and is accomplished within the existing pipeline, the installation of trash nets does not have the potential to cause a significant impact on biological resources. No mitigation is required since no impact is anticipated.

Gross Solids Removal Devices

Like vortex separation systems, Gross Solids Removal Devices are inline structural trash removal devices that are implemented in urbanized areas. As such, the project-level impacts on biological resources due to implementation of Gross Solids Removal Devices would be similar to the project-level impacts associated with vortex separation systems.

The proposed measures to lessen impacts from Gross Solids Removal Devices would be similar to the proposed measures for vortex separation systems. No potentially significant impact is anticipated after measures are applied.

Enforcement of Litter Laws

Enforcement of litter laws would involve no relative change to the baseline physical environment related to biological resources, either directly or indirectly and would have no impact on biological resources. Complying with existing statewide and local litter laws and ordinances would eliminate the substantial adverse environmental impacts from the litter, and the need for additional controls that could potentially generate their own nominal biological impacts. No mitigation is required since no impact is anticipated.

Increased Street Sweeping

Increased street sweeping and storm drain cleaning would involve no direct change to the physical environment related to biological objectives. Indirect impacts could include an increase in ambient noise levels, but this would not result in a significant impact to general wildlife species adapted to developed environments. No mitigation is required since no significant impact is anticipated.

Public Education

Public education would involve no change to the physical environment related to biological resources, either directly or indirectly and would have no impact on biological resources. Successful public education strategies would eliminate the substantial adverse environmental impacts from the litter, and the need for additional structural controls that generate their own nominal biological impacts. No mitigation is required since no impact is anticipated.

Ordinances

Similar to enforcement of litter laws and public education, ordinances are expected to have no impact or less-than-significant impact on biological conditions. Successful ordinances would eliminate the substantial adverse environmental impacts from the litter. No mitigation is required since no impact is anticipated.

6.3.4 Summary

Adverse impacts to biological resources are not expected to occur due to the nature of the areas where potential implementation measures used to comply with the final Trash Amendments would be located. Most areas are already extensively developed and the presence of significant biological resources is unlikely. In the event that specific compliance projects do encounter biological resources, measures have been identified to avoid or reduce potential impacts to less than significant levels, and these projects would need to have an independent environmental review done by the agency conducting the work.

6.4 Cultural Resources

6.4.1 Historic Resources

An historical resource includes resources listed in or eligible for listing in the California Register of Historical Resources. The California Register includes resources on the National Register of Historic Places, as well as California State Landmarks and Points of Historical Interest. Properties that meet the criteria for listing also include districts which reflect California's history and culture, or properties which represent an important period or work of an individual, or yield important historical information. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified as local historical resources are also considered a historical resource (California Office of Historical Preservation 2006). Based on substantial evidence within the administrative record, any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may also be considered to be an historical resource (CEQA Guidelines 15064.5(a)).

6.4.2 Archeological Resources

An archeological site may be considered an historical resource if it is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military or cultural annals of California (PRC § 5020.1(j)) or if it meets the criteria for listing on the California Register (14 CCR § 4850).

If an archeological site is not an historical resource, but meets the definition of a "unique archeological resource" as defined in PRC Section 21083.2, then it should be treated in accordance with the provisions of that section.

6.4.3 Thresholds of Significance

A project would normally have a significant effect on cultural resources if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in section 15064.5 of the CEQA Guidelines.
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to section 15064.5 of the CEQA Guidelines.
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.
- Disturb any human remains, including those interred outside of formal cemeteries.

6.4.4 Impacts and Mitigation

This is a statewide level analysis of the potential impacts from the final Trash Amendments. The specific location of potential impacts would be determined during the implementation of the final Trash Amendments.

Catch Basin Inserts

Catch basin inserts fit directly into curbside catch basins in urbanized areas and require no construction or ground disturbance. There is therefore no potential to impact cultural

resources from this alternative means of compliance. No mitigation is required since no impact is anticipated.

Vortex Separation Systems

Vortex separation systems would be installed in currently urbanized areas where ground disturbance has previously occurred. Because these areas are already fully urbanized it is unlikely that their implementation would cause a substantial adverse change to historical or archeological resources, destroy paleontological resources, or disturb human remains. Depending, however, on the final location of facilities, potential impacts to cultural resources could occur. Paleontological resources can be found in areas containing fossil-bearing formations. Archaeological resources have been found within urbanized areas. Historic and architectural resources have also been found within urbanized areas. The site-specific presence or absence of these resources is unknown because the specific locations for vortex separation systems would be determined by responsible agencies at the project level. Installation of these systems could result in minor ground disturbances, which could impact cultural resources if they are sited in locations containing these resources and where disturbances have not previously occurred.

Upon determination of specific locations for vortex separation systems, responsible agencies should complete further investigation, including consultation with Native American tribes, to make an accurate assessment of the potential to affect historic, archaeological, or historic resources or to impact any human remains. If potential impacts are identified, measures to reduce impact could include project redesign, such as the relocation of facilities outside the boundaries of archeological or historical sites. According to the California Office of Historic Preservation, avoidance and preservation in place are the preferable forms of mitigation for archeological sites. When avoidance is infeasible, a data recovery plan should be prepared which adequately provides for recovering scientifically consequential information from the site. Studies and reports resulting from excavations must be deposited with the California Historical Resources Regional Information Center. No potentially significant impact is anticipated after these measures are taken.

Trash Nets

Trash nets are installed within the storm drain system either inline or at the end of pipe. Installation requires no ground disturbance which might impact cultural resources. No mitigation is required since no impact is anticipated.

Gross Solids Removal Devices

Like vortex separation systems, Gross Solids Removal Devices are inline structural trash removal devices that are implemented in urbanized areas. As such, the project-level impacts on cultural resources due to implementation of Gross Solids Removal Devices would be similar to the project-level impacts associated with vortex separation systems.

The proposed measures to lessen the impacts from Gross Solids Removal Devices would be similar to the proposed measures for vortex separation systems. No potentially significant impact is anticipated after these measures are applied.

Enforcement of Litter Laws

Enforcement of litter laws would involve no change to the physical environment related to cultural resources, either directly or indirectly and would have no impact on cultural resources. No mitigation is required since no impact is anticipated.

Increased Street Sweeping

Increased street sweeping and storm drain cleaning would occur in urbanized areas along public rights of way and would have no potential to impact cultural resources. No mitigation is required since no impact is anticipated.

Public Education

Public education would involve no change to the physical environment related to cultural resources, either directly or indirectly and would have no impact on cultural resources. No mitigation is required since no impact is anticipated.

Ordinances

Ordinances would involve no change to the physical environment related to cultural resources, either directly or indirectly, and would have no impact on cultural resources. No mitigation is required since no impact or less-than significant is anticipated.

6.4.5 Summary

While the potential for adverse impacts to cultural resources is low, there still exists a chance that cultural resources may occur at specific locations where implementation measures could be installed. Measures have been identified that could reduce potential impacts to less than significant levels and should be incorporated into site-specific projects carried out by the local agency.

6.5 Geology/Soils

6.5.1 Thresholds of Significance

A project would normally have a significant effect on the environment if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
    - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42);
    - Strong seismic ground shaking;
    - Seismic-related ground failure, including liquefaction; and/or
    - Landslides.
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property; or

- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water.

6.5.2 Impacts and Mitigation

This is a statewide level analysis of the potential impacts from each compliance measure. The specific location of each compliance measure would be determined during the implementation of the final Trash Amendments.

Catch Basin Inserts

Catch basin inserts fit directly into curbside catch basins in urbanized areas and require no construction or ground disturbance. There is, therefore, no potential to impact geology or soils resources from this alternative means of compliance. No mitigation is required since no impact is anticipated.

Vortex Separation Systems

No impact due to exposure of people to, or property to, geologic hazards such as rupture of a known earthquake fault, strong seismic ground shaking, liquefaction, or landslides is expected from the implementation of vortex separation systems. Although areas of the state are subject to geologic hazards, compliance with standard design and construction specifications and the recommendations of geotechnical studies prepared at the project level would reduce the risk of damage from seismic-related hazards. Furthermore, it is not reasonably foreseeable that responsible agencies would choose to comply with the final Trash Amendments through structural means in areas where doing so would result in exposure of people or property to geologic hazards. Rather, it is foreseeable that localities would avoid such compliance measures in lieu of other compliance measures, such as enforcing litter ordinances in sensitive areas.

Wind or water erosion of soils may occur as a short-term impact during installation of vortex separation systems. Siltation or deposition within the vortex separation systems may occur, resulting in reduction in siltation or deposition in downstream areas. Reduction in siltation and deposition in downstream areas may be considered a positive impact as fine sediments may contain toxic pollutants. Little or no impact on erosion of affected watercourses is expected since the flow rate in the watercourses is not impacted by foreseeable methods of compliance.

Installation and operation of vortex separation systems would not cause or accelerate instability due to on- or off-site landslides, lateral spreading, subsidence, expansive soils, liquefaction, or collapse. Vortex separation systems would not be of the size or scale to result in unstable earth conditions, changes in geologic substructures, topography or ground surface relief features, or destruction, covering or modification of any unique geologic or physical features. Typical units occupy about 4-1/2 square feet of plan view area for each cubic foot per second that they treat. Implementation of the final Trash Amendments may result in minor surface soil excavation during installation of vortex separation systems and result in temporarily unstable soil but would not, due to small size, however, lead to landslides, lateral spreading, subsidence, expansive soils, liquefaction, or collapse. Most of the relevant areas are already urbanized, and

have already suffered soil compaction and hardscaping. Installation of vortex separation systems would occur within the existing storm drain systems.

Compliance with the final Trash Amendments would not require the use of septic tanks or alternative wastewater disposal systems. The presence or absence of soils incapable of adequately supporting their use is not relevant.

To the extent that vortex separation systems are installed in areas subject to geologic hazards, such as, ground shaking, liquefaction, liquefaction-induced hazards, or landslides, geotechnical studies prepared as part of the pre-design process would identify site-specific soil and subsurface conditions and specify design features would keep potential seismic related impacts within acceptable levels. Compliance with existing regulations, building codes, and standards specifications would also keep potential impacts within acceptable levels. The most appropriate measure for potential fault rupture hazards is avoidance (e.g., building setbacks), as most surface faulting is confined to a relatively narrow zone a few feet to tens of feet wide (California Geological Survey 2002).

To the extent that the installation of vortex separation systems causes an increase in erosion, typical established best management practices would be used during implementation to minimize offsite sediment runoff or deposition. Construction sites are required to retain sediments on site, either under a CGP permit or through the construction program of the applicable MS4 Phase I and II permit, which are already designed to minimize or eliminate erosion impacts on receiving water. No potentially significant impact is anticipated after these measures are taken.

To the extent that installation and operation of vortex separation systems could result in ground instability, potential impacts could be avoided or mitigated through mapping to site facilities away areas with unsuitable soils or steep slopes; design and installation in compliance with existing regulations; standard specifications and building codes; ground improvements such as soil compaction; and groundwater level monitoring to ensure stable conditions. No potentially significant impact is anticipated after these measures are taken.

To the extent that any soil is disturbed during installation of vortex separation systems, standard construction techniques, including but not limited to, shoring, piling, and soil stabilization can alleviate any potential impacts. Prior to earthwork, a geotechnical study would be conducted to evaluate geology and soil conditions. No potentially significant impact is anticipated after these measures are taken.

Trash Nets

Trash nets are installed within the storm drain system either inline or at the end of pipe. Installation requires no ground disturbance which might impact geology or soils resources. No mitigation is required since no impact is anticipated.

Gross Solids Removal Devices

Like vortex separation systems, Gross Solids Removal Devices are inline structural trash removal devices that are implemented in urbanized areas. As such, the project-level impacts on geology and soils resources due to implementation of Gross Solids

Removal Devices would be similar to the project-level impacts associated with vortex separation systems.

The proposed measures to lessen the impacts from Gross Solids Removal Devices would be similar to the proposed measures for vortex separation systems. No potentially significant impact is anticipated after these measures are taken.

Enforcement of Litter Laws

Enforcement of litter laws would involve no change to the physical environment related to geologic and soil resources either directly or indirectly and would have no impact on geology and soils resources. No mitigation is required since no impact is anticipated.

Increased Street Sweeping

Increased street sweeping and storm drain cleaning would occur in urbanized areas along public rights of way and would have no potential to impact geology and soils resources. No mitigation is required since no impact is anticipated.

Ordinances

Ordinances would involve no change to the physical environment related to geologic and soil resources, either directly or indirectly, and would have no impact on geologic and soil resources. No mitigation is required since no impact to less-than-significant impact is anticipated.

6.5.3 Summary

Installation and maintenance of some full capture devices and treatment controls are not expected to result in potentially significant environmental effects with regard to geology and soils, because municipalities would not reasonably site BMPs where they would risk such impacts. Further, in the unlikely occurrence of such an impact, mitigation measures, which can be applied to reduce and/or eliminate these impacts, are available as described above. These mitigation measures are within the responsibility and jurisdiction of the responsible agencies subject to the final Trash Amendments and can or should be adopted by them (CCR, title 14, § 15091(a)(2)). The State Water Board does not direct which compliance measures responsible agencies choose to adopt or the mitigation measures they employ. The State Water Board does, however, recommend that appropriate measures be applied to reduce or avoid potential environmental impacts. Although this analysis concludes that, based on substantial evidence on the record, on a statewide level analysis, all impacts would be less than significant with mitigation; it is foreseeable that these measures may not always be capable of reducing these impacts to levels that are less than significant in every conceivable instance. Although there is no information on the record that this would occur, in the event that a specific measure or alternative may not reduce impacts to levels that are less than significant, the project proponent may need to consider an alternative strategy or combination of strategies to comply with the final Trash Amendments.

6.6 Greenhouse Gas Emissions

General scientific consensus and increasing public awareness regarding global warming and climate change have placed new focus on the CEQA review process as a means to address the effects of greenhouse gas emissions from proposed projects on climate change.

Global warming refers to the recent and ongoing rise in global average temperature near Earth's surface. It is caused mostly by increasing concentrations of greenhouse gases in the atmosphere. Global warming is causing climate patterns to change. Global warming itself, however, represents only one aspect of climate change.

Climate change refers to any significant change in the measures of climate lasting for an extended period of time. In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among other effects, that occur over several decades or longer.

Increases in the concentrations of greenhouse gases in the Earth's atmosphere are thought to be the main cause of human-induced climate change. Greenhouse gases naturally trap heat by impeding the exit of infrared radiation that results when incoming ultraviolet solar radiation is absorbed by the Earth and re-radiated as infrared radiation. The principal greenhouse gases associated with anthropogenic emissions are carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, perfluorocarbon, nitrogen trifluoride, and hydrofluorocarbon (Health and Safety Code, § 38505, subdivision (g); CEQA Guidelines, § 15364.5). Water vapor is also an important greenhouse gas, in that it is responsible for trapping more heat than any of the other greenhouse gases. Water vapor, however, is not a greenhouse gas of concern with respect to anthropogenic activities and emissions. Each of the principal greenhouse gases associated with anthropogenic climate warming has a long atmospheric lifetime (one year to several thousand years). In addition, the potential heat trapping ability of each of these gases vary significantly from one another. Methane for instance is 23 times more potent than carbon dioxide, while sulfur hexaflouride is 22,200 times more potent than carbon dioxide (Intergovernmental Panel on Climate Change 2001). Conventionally, greenhouse gases have been reported as "carbon dioxide equivalents." Carbon dioxide equivalents take into account the relative potency of non-carbon dioxide greenhouse gases and convert their quantities to an equivalent amount of carbon dioxide so that all emissions can be reported as a single quantity.

The primary man-made processes that release these greenhouse gases include: (1) burning of fossil fuels for transportation, heating and electricity generation, which release primarily carbon dioxide; (2) agricultural practices, such as livestock grazing and crop residue decomposition and application of nitrogen fertilizers, that release methane and nitrous oxide; and (3) industrial processes that release smaller amounts of high global warming potential gases.

In 2005, Executive Order S-3-05 proclaimed that California is vulnerable to the effects of climate change. To combat those concerns, the Executive Order established a long-range greenhouse gas reduction target of 80percent below 1990 levels by 2050.

Subsequently, Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006 (Chapter 488, Statutes of 2006, enacting § 38500-38599 of the Health and Safety Code) was signed. AB 32 requires California to reduce statewide greenhouse gas emissions to 1990 levels by 2020. AB 32 directed the California Air Resources Board to develop and implement regulations that reduce statewide greenhouse gas emissions.

The Climate Change Scoping Plan approved by the California Air Resources Board in December 2008, outlines the State's plan to achieve the greenhouse gas reductions required in AB 32.

Senate Bill (SB) 97, signed in August 2007 (Chapter 185, Statutes of 2007, enacting § 21083.05 and 21097 of the Public Resources Code), acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. This bill directed the Office of Planning and Research to prepare, develop, and transmit guidelines for the feasible mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions to the California Resources Agency. Office of Planning and Research developed a technical advisory suggesting relevant ways to address climate change in CEQA analyses. The technical advisory also lists potential mitigation measures, describes useful computer models, and points to other important resources. In addition, amendments to CEQA guidelines implementing SB 97 became effective on March 18, 2010.

6.6.1 Thresholds of Significance

A project would normally have a significant effect on the environment if it would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

- Conflict with an applicable plan, amendment or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

6.6.2 Impacts and Mitigation

The operation of construction equipment for the installation of trash collection devices and the operation of new or increase in maintenance equipment and street sweepers would generate greenhouse gas emissions over baseline conditions. Consistent with the air quality analysis in Section 6.2, greenhouse gas emissions due to construction equipment would be short-term and limited to minor amounts of construction equipment and therefore would not significantly increase greenhouse gas levels in the environment. Greenhouse gas levels are not expected to rise significantly since mitigation measures are available to reduce greenhouse gas emissions due to construction, maintenance and street sweeping activities.

The California Department of Water Resources has developed a set of BMPs to reduce greenhouse gas emissions from California Department of Water Resources construction and maintenance activities (California Department of Water Resources 2012). These BMPs can be used and/or modified to fit specific situations by the implementing agencies to reduce greenhouse gas emissions from their activities:

BMP 1. Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high efficiency technologies are appropriate and feasible for the project or specific elements of the project.

BMP 2. Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines.

BMP 3. Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible.

BMP 4. Evaluate the feasibility and efficacy of producing concrete on-site and specify that batch plants be set up on-site or as close to the site as possible.

BMP 5. Evaluate the performance requirements for concrete used on the project and specify concrete mix designs that minimize greenhouse gas emissions from cement production and curing while preserving all required performance characteristics.

BMP 6. Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by the State airborne toxics control measure [Title 13, § 2485 of the CCR]). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.

BMP 7. Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an Air Quality Control Plan prior to commencement of construction.

BMP 8. Implement tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an Air Quality Management Plan prior to commencement of construction.

BMP 9. Develop a project specific ride share program to encourage carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.

BMP 10. Reduce electricity use in temporary construction offices by using high efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement

procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business.

BMP 11. For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty class 7 or class 8 semi-truck or 53-foot or longer box type trailer is used for hauling, a SmartWay[16] certified truck would be used to the maximum extent feasible.

The final Trash Amendments would not conflict with any plan, amendment, or regulation adopted for the purpose of reducing greenhouse gas emissions. Most greenhouse gas reduction plans include replacing government owned vehicles with low or zero-emission vehicles (Marin County 2006, City of Pasadena 2009, City of Citrus Heights 2011, California Department of Water Resources 2012). Implementation of greenhouse gas reduction plans would reduce greenhouse gas emissions from activities undertaken to comply with the final Trash Amendments.

In 2007, the California Air Resources Board adopted the Off-Road Diesel Vehicle Regulation (CCR, title 13, article 4.8, chapter 9) which, when fully implemented, would significantly reduce emissions from off-road, non-agricultural, diesel vehicles with engines greater than 25 horsepower—the types of vehicles typically used in construction activities. The regulation required owners to replace the engines in their vehicles, apply exhaust retrofits, or replace the vehicles with new vehicles equipped with cleaner engines. The regulation also limited vehicle idling, required sales disclosure requirements, and reporting and labeling requirements. The first compliance date for large fleets was March 1, 2010; however, amendments have been made several times to extend the deadlines. When the regulation is fully implemented, owners of fleets of construction, mining, and industrial vehicles would have to upgrade the performance of their vehicle fleets to comply with the regulation.

The California Air Resources Board Scoping Plan (California Air Resources Board 2008) proposes a comprehensive set of actions designed to achieve the 2020 greenhouse gas emissions reductions required under AB 32. While some of the regulations would not be implemented until later, when they do take effect, they would likely result in reduced emissions from construction and maintenance activities. Specific actions in the Scoping Plan that would impact construction and maintenance activities include: low carbon fuel standard (Measure Transportation-2), tire inflation regulation (Measure Transportation-4), the heavy-duty tractor truck regulation (Measure Transporation-7), and commercial recycling (Measure Recycling and Waste-3).

In addition, other efforts by the California Air Resources Board would reduce air pollutant emissions through 2020, including the Diesel Risk Reduction Plan (California Air Resources Board 2000) and the 2007 State Implementation Plan. Measures in these plans would result in the accelerated phase-in of cleaner technology for virtually

[16] The U.S EPA has developed the SmartWay truck and trailer certification program to set voluntary standards for trucks and trailers that exhibit the highest fuel efficiency and emissions reductions. These tractors and trailers are outfitted at point of sale or retrofitted with equipment that significantly reduces fuel use and emissions including idle reduction technologies, improved aerodynamics, automatic tire inflation systems, advanced lubricants, advanced powertrain technologies, and low rolling resistance tires.

all of California's diesel engine fleets including trucks, buses, construction equipment, and cargo handling equipment at ports.

6.6.3 Summary

With the incorporation of BMPs and compliance with any plans, amendments, or regulations adopted for the purpose of reducing greenhouse gas emissions, projects undertaken to comply with the final Trash Amendments would not have a significant impact on the environment due to greenhouse gas emissions.

6.7 Hazards and Hazardous Materials

Hazards and hazardous materials are located throughout the urbanized portion of the state either as naturally occurring or man-made hazards. Contaminated soil and groundwater from commercial and industrial sites such as gas stations, dry cleaners, and manufacturing facilities are located throughout the state. Aboveground and underground storage tanks contain vast quantities of hazardous substances. Thousands of these tanks have leaked or are leaking, discharging petroleum fuels, solvents, and other hazardous substances into the subsurface. These leaks as well as other discharges to the subsurface that result from inadequate handling, storage, and disposal practices can seep into the subsurface and pollute soils and groundwater.

Both naturally occurring hazards and anthropogenic contaminated soils and groundwater could be encountered during the installation of structural treatment alternatives for implementation of the reasonably foreseeable compliance methods for the final Trash Amendments.

Individual projects also may generate hazardous emissions, as the full capture system would, by design, trap substances which could become hazardous to the public or to maintenance workers if not handled in a timely manner and disposed of appropriately. To the extent improper disposal of, for instance, household hazardous wastes result in them being trapped in structural compliance measures, and potentially allowing a release of such chemicals, local residents could be exposed to those effects. To a large extent, those effects are already occurring in the watershed (but further downstream) and should be considered baseline impacts. Nevertheless, the locality that originated the risk would become newly potentially exposed instead of downstream receptors, those impacts could be potentially significant in those locales. Such impacts could be avoided or diminished by educating the local community of the effects of improper disposal of such wastes, enforcing litter ordinances, and timely cleaning out inserts and structural controls.

There is also the potential for public health hazards associated with the installation, operation, and maintenance of structural trash removal devices. Use of heavy equipment during installation and maintenance of structural trash removal devices may add to the potential for construction accidents. Unprotected sites may also result in accidental health hazards for people. In addition, certain structural devices may become a source of standing water. Any source of standing water can potentially become a source of vector production.

6.7.1 Thresholds of Significance

A project would normally have a significant effect on the environment if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.
- Reasonably be anticipated to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- The project is located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area.
- For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Expose people or structures to the risk of loss, injury or death involving wild land fires, including where wild lands are adjacent to urbanized areas or where residences are intermixed with wild lands.

6.7.2 Impacts and Mitigation

Catch Basin Inserts

Catch basin inserts fit directly into curbside catch basins in urbanized areas and require no construction or ground disturbance. There is, therefore, no potential to encounter contaminated soils or groundwater or other hazards from this alternative means of compliance. Since no construction is required, the use of hazardous materials or potential for construction accidents is unlikely during installation. Catch basin cleaning and maintenance, however, could pose risks to maintenance workers.

To the extent that catch basin cleaning and maintenance could pose risks to maintenance workers, measures to avoid these risks include requiring workers to obtain hazardous materials maintenance, record keeping, and disposal activities training, California Occupational Health and Safety Administration -required Health and Safety Training, and California Occupational Health and Safety Administration Confined Space Entry training.

Vortex Separation Systems

It is reasonably foreseeable that hazards or hazardous materials could be encountered during the installation of vortex separation systems. Contamination could exist depending on the current and historical land uses of the area. Depending on their location, vortex separation systems could be proposed in areas of existing oil fields and/or methane zones or in areas with contaminated soils or groundwater. The use of hazardous materials (e.g., paint, oil, gasoline) and potential for accidents is also likely during installation.

Trash that is trapped by vortex separation systems could become hazardous to the public or to maintenance workers who collect and transport the trash if it is not handled in a timely manner and disposed of appropriately.

Installation of vortex separation systems could result in the temporary interference of emergency response or evacuation plans if construction equipment, road closures, or traffic interfered with emergency vehicles traveling through the installation area.

As vortex separation systems would be located in urbanized areas, it is not reasonably foreseeable that their installation would expose people to wildland fires. Furthermore, these are structural trash removal devices that would not serve as residences or places of employment. They would not result in a safety hazard for people residing or working within two miles of public airport or public use airport.

To the extent that installation of vortex separation systems could involve work with or near hazards or hazardous materials, potential risks of exposure can be alleviated with proper handling and storage procedures. The health and safety plan prepared for any project should address potential effects from cross contamination and worker exposure to contaminated soils and water and should include a plan for temporary storage, transportation and disposal of contaminated soils and water. Compliance with the requirements of California Occupational Health and Safety Administration and local safety regulations during installation, operation, and maintenance of these systems would prevent any worksite accidents or accidents involving the release of hazardous materials into the environment, which could harm the public, nearby residents and sensitive receptors such as schools. Systems can be redesigned and sites can be properly protected with fencing and signs to prevent accidental health hazards.

To the extent that trash trapped by vortex separation systems could become hazardous, impacts to maintenance workers and the public could be avoided or alleviated by educating the local community of the effects of improper disposal of such wastes, enforcing litter ordinances, and timely cleaning out inserts and structural controls.

To the extent that installation of vortex separation systems could interfere with emergency response or evacuation plans, traffic control plans should be used to manage traffic through installation zones.

To the extent that vortex separation systems become a source of standing water and vector production, design at the project-level can help reduce vector production from standing water. Netting can be installed over devices to further mitigate vector production. Vector control agencies may also be employed as another source of mitigation. Systems that are prone to standing water can be selectively installed away from high-density areas and away

from residential housing and/or by requiring oversight and treatment of those systems by vector control agencies.

Trash Nets

Trash nets are installed within the storm drain system either inline or at the end of pipe. There is therefore no potential to encounter contaminated soils or groundwater or other hazards from this alternative means of compliance. Since no construction is required, the use of hazardous materials or potential for construction accidents is unlikely during installation. No mitigation is required since no impact is anticipated.

To the extent that trash net cleaning and maintenance could pose risks to maintenance workers, measures to avoid these risks include requiring workers to obtain hazardous materials maintenance, record keeping, and disposal activities training, California Occupational Health and Safety Administration -required Health and Safety Training, and California Occupational Health and Safety Administration Confined Space Entry training.

Gross Solids Removal Devices

Like vortex separation systems, Gross Solids Removal Devices are inline structural trash removal devices that are implemented in urbanized areas. As such, the project-level impacts related to hazards and hazardous materials due to implementation of Gross Solids Removal Devices would be similar to the project-level impacts associated with vortex separation systems.

The proposed measures to decrease impacts from Gross Solids Removal Devices would be similar to the proposed measures for vortex separation systems.

Enforcement of Litter Laws

Enforcement of litter laws would involve no change to the physical environment related to hazards and hazardous materials, either directly or indirectly and would have no impact related to hazards, hazardous materials, or public health. No mitigation is required since no impact is anticipated.

Increased Street Sweeping

Increased street sweeping and storm drain cleaning would occur in urbanized areas along public rights of way and would have no potential impact related to hazards, hazardous materials, or public health. No mitigation is required since no impact is anticipated.

Public Education

Public education would involve no change to the physical environment related to hazards and hazardous materials, either directly or indirectly and would have no impact related to hazards, hazardous materials, or public health. No mitigation is required since no impact is anticipated.

Ordinances

Ordinances would involve no change to the physical environment related to hazards and hazardous materials, either directly or indirectly, and would have no impact on hazards

and hazardous materials, or public health. No mitigation is required since no impact to less-than-significant impact is anticipated.

6.7.3 Summary

Installation and maintenance of some treatment trash-reduction BMPs could result in potentially significant environmental effects with regard to hazards, hazardous materials, and public health. Measures can be applied, however, to reduce and/or eliminate these impacts, as described above. These measures are within the responsibility and jurisdiction of the responsible agencies subject to the final Trash Amendments and can or should be adopted by them (CCR, title 14, § 15091(a)(2)). The State Water Board does not direct which compliance measures responsible agencies choose to adopt or the mitigation measures they employ. The State Water Board does, however, recommend that appropriate measures be applied to reduce or avoid potential environmental impacts. Although this analysis concludes that, based on substantial evidence on the record, on a statewide level analysis, all impacts would be less than significant with mitigation; it is foreseeable that these measures may not always be capable of reducing these impacts to levels that are less than significant in every conceivable instance. Although there is no information on the record that this would occur, in the event that a specific measure or alternative may not reduce impacts to levels that are less than significant, the project proponent may need to consider an alternative strategy or combination of strategies to comply with the final Trash Amendments.

6.8 Hydrology/Water Quality

6.8.1 Thresholds of Significance

The proposed project would result in a significant impact on hydrology or water quality if it would:

- Violate any water quality standards or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate of surface runoff in a manner that causes flooding on- or off-site, creating or contributing to an existing local or regional flooding problem;
- Create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;

- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures that would impede or redirect floodflows; or
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam;
- Contribute to inundation by seiche, tsunami, or mudflow.

6.8.2 Impacts and Mitigation

The final Trash Amendments would not violate any water quality standards or waste discharge requirements; in fact, they are designed to improve water quality. Several reasonably foreseeable methods of compliance may have the potential to cause localized flooding and are described below. It is not reasonably foreseeable that increased street sweeping, enforcement of litter laws, or public education would negatively impact hydrology or water quality.

The installation, operation, and maintenance of full capture systems do not entail the use of groundwater resources, nor would it interfere with groundwater recharge. Multi-purpose projects may include a groundwater recharge component which would be beneficial for groundwater resources. No impacts to groundwater resources are anticipated.

The installation, operation, and maintenance of full capture systems would not alter the drainage pattern of the target areas nor increase the amount of runoff within those areas. Full capture systems are placed at the inlet (catch basin inserts) or outlet (trash nets) of the storm drain system, or inline (vortex separation systems) and do not require any type of re-contouring of the surrounding area nor alteration of any stream courses. The main concern is localized flooding caused by clogging of the trash capture devices, which is discussed below. No other impacts are anticipated.

Compliance with the final Trash Amendments would not place housing or other structures within a 100-year flood hazard area, nor would it expose people and structures to a significant risk of loss, injury, or death by flooding, seiche, tsunami, or mudflow. No impacts are anticipated.

Catch Basin Inserts

Catch basin inserts are manufactured frames that typically incorporate filters or fabric and placed in a curb opening or drop inlet to remove trash, sediment, or debris. They can also be perforated metal screens placed horizontally or vertically within a catch basin. These devices have less hydraulic effect than the vortex separation systems or the Gross Solids Removal Devices, however, flooding is still a potential hazard if the filters or screens became blocked by trash and debris and prevents the discharge of storm water into the drain causing localized flooding. This would be of particular concern in areas susceptible to high leaf-litter rates. This potential impact can be diminished through the use of inserts that are designed with automatic release

mechanisms or retractable screens that allow flow-through during wet-weather and by performing regular maintenance to prevent the buildup of trash and debris. Therefore, the exposure of people and property to flooding hazards after mitigation is considered less than significant.

Vortex Separation Systems

Vortex separation systems are devices designed to allow the incoming flow of urban runoff or storm water to pass through the device while capturing trash and other debris within the unit. These types of devices may result in a potentially significant impact due to flooding if the screens became blocked by trash and debris and prevent the discharge of storm water or if the vortex separation systems are not properly designed and constructed to allow for bypass of storm water during storm events that exceed the design capacity. This potential impact can be alleviated through the design of the vortex separation systems with overflow/bypass structures and by performing regular maintenance to prevent the build-up of trash and debris. Therefore, the exposure of people and property to flooding hazards after mitigation is considered less than significant.

The vortex separation systems would not alter the direction or slope of the stream channels in the lower watershed, therefore, no change in the direction of surface water flow would occur.

Trash Nets

Trash nets are devices that use the natural energy of the flow to trap trash, floatables and solids in disposable mesh nets. Trash nets can be installed at or below grade within existing storm water conveyance structures or retrofitted to an existing outfall structure with only minor modifications. These devices have less hydraulic effect than the vortex separation systems or the Gross Solids Removal Devices; however, flooding is still a potential hazard if the nets became blocked by trash and debris. This potential impact can be alleviated through sizing and designing trash nets to allow for bypass when storm events exceed the design capacity and by performing regular maintenance to prevent the buildup of trash and debris. Therefore, the exposure of people and property to flooding hazards after mitigation is considered less than significant.

Gross Solids Removal Devices

Gross Solids Removal Devices are devices designed to allow the incoming flow of urban runoff or storm water to pass through the device while capturing trash and other debris within the unit. These types of devices may result in a potentially significant impact due to flooding hazards if the screens became blocked by trash and debris and prevent the discharge of storm water or if the Gross Solids Removal Devices are not properly designed and constructed to allow for bypass of storm water during storm events that exceed the design capacity. This potential impact can be diminished through the design of the Gross Solids Removal Devices with overflow/bypass structures and by performing regular maintenance to prevent the buildup of trash and debris. Therefore, the exposure of people and property to flooding hazards after mitigation is considered less than significant.

The Gross Solids Removal Devices units would not alter the direction or slope of the stream channels in the lower watershed, therefore, no change in the direction of surface water flows would occur.

6.8.3 Summary

Installation and maintenance of some treatment trash-reduction BMPs could result in potentially significant environmental effects with regard to hydrology. Measures, however, can be applied to reduce and/or eliminate these impacts, as described above. These measures are within the responsibility and jurisdiction of the responsible agencies subject to the final Trash Amendments and can or should be adopted by them (CCR, title 14, § 15091(a)(2)). The State Water Board does not direct which compliance measures responsible agencies choose to adopt or the mitigation measures they employ. The State Water Board does, however, recommend that appropriate measures be applied to reduced or avoid potential environmental impacts. It is foreseeable that these measures may not always be capable of reducing these impacts to levels that are less than significant in every conceivable instance. In the event that a specific measure or alternative may not reduce impacts to levels that are less than significant, the project proponent may need to consider an alternative strategy or combination of strategies to comply with the final Trash Amendments.

6.9 Land Use/Planning

6.9.1 Thresholds of Significance

The proposed project would have a significant environmental impact on land use if it would:

- Physically divide an established community.
- Conflict with any applicable land use plan, policy, or regulation to an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

6.9.2 Impacts and Mitigation

Due to where they are currently located or would be planned for implementation, it is not expected that the final Trash Amendments and the reasonably foreseeable methods of compliance would either physically divide an established community or conflict with any applicable habitat conservation plan or natural community conservation plan.

Catch Basin Inserts

Since, catch basin inserts can be installed at or below grade within existing storm water catch basins with minor modifications to the storm water conveyance structure no adverse impacts are expected on present or planned land use.

Vortex Separation Systems

Vortex separation systems (i.e., Continuous Deflective Separation units) are installed below grade and are appropriate for highly urbanized areas where space is limited. In general, a vortex separation system occupies about 4-1/2 square feet of plan view area for each treated cubic feet per second of runoff, with the bulk of the plan view area being well below grade. Maintenance of the Continuous Deflective Separation unit involves the removal of the solids either by using a vactor truck, a removable basket or a clamshell excavator depending on the design and size of the unit.

The installation of vortex separation systems may require modification of storm water conveyance structures; however, these units would generally be sited below grade and within existing storm drain infrastructure. The installation of vortex separation systems is not expected to result in substantial alterations or adverse impacts to a present or planned land use. To the extent that there could be land use impacts at a specific location, these potential land use conflicts are best addressed at the project level. Since the State Water Board cannot specify the manner of compliance with the final Trash Amendments, the State Water Board cannot specify the exact location of trash removal devices. The various municipalities that might install these devices would need to identify local land use plans as part of a project-level analysis to ensure that projects comply with the final Trash Amendments as well as permitted land-use regulations and are consistent with land use plans, general plans, specific plans, conditional uses, or subdivisions.

Trash Nets

Since, trash nets can be installed at or below grade within existing storm water conveyance structures or retrofitted to an existing outfall structure with only minor modifications no adverse impacts are expected on present or planned land use.

Gross Solid Removal Devices

Gross Solids Removal Devices were developed by Caltrans to be retrofitted below grade into existing highway drainage systems or installed in future highway drainage systems. These devices are appropriate for highly urbanized areas where space is limited. The Gross Solids Removal Devices s can be designed to accommodate vehicular loading. Maintenance of the devices involves the removal of the solids either by using a vactor truck or other equipment.

The installation of Gross Solids Removal Devices may require modification of storm water conveyance structures; however, these units would generally be sited below grade and within existing storm drain infrastructure. The installation of Gross Solids Removal Devices is not expected to result in substantial alterations or adverse impacts to present or planned land use. To the extent that there could be land use impacts at a specific location, these potential land use conflicts are best addressed at the project level. Since the State Water Board cannot specify the manner of compliance with the final Trash Amendments, the State Water Board cannot specify the exact location of trash removal devices. The various municipalities that might install these devices would need to identify local land use plans as part of a project-level analysis to ensure that projects comply with permitted land-use regulations and are consistent with land use

plans, general plans, specific plans, conditional uses, or subdivisions.

Institutional Controls

It is not reasonably foreseeable that increased street sweeping, enforcement of litter laws, ordinances, or public education would alter present or planned land use.

6.9.3 Summary

Construction of vortex separation systems and Gross Solids Removal Devices would not result in permanent features such as aboveground infrastructure that would disrupt, divide, or isolate existing communities or land uses.

6.10 Noise and Vibration

6.10.1 Background

Noise

California Health and Safety Code section 46022 defines noise as “excessive undesirable sound, including that produced by persons, pets and livestock, industrial equipment, construction, motor vehicles, boats, aircraft, home appliances, electric motors, combustion engines, and any other noise-producing objects”. The degree to which noise can affect the human environment range from levels that interfere with speech and sleep (annoyance and nuisance) to levels that cause adverse health effects (hearing loss and psychological effects). Human response to noise is subjective and can vary greatly from person to person. Factors that influence individual response include the intensity, frequency, and pattern of noise; the amount of background noise present before the intruding noise; and the nature of work or human activity that is exposed to the noise source.

Sound results from small and rapid changes in atmospheric pressure. These cyclical changes in pressure propagate through the atmosphere and are often referred to as sound waves. The greater the amount of variation in atmospheric pressure (amplitude) leads to a greater loudness (sound level). Sound levels are most often measured on a logarithmic scale of decibels (dB). The decibel scale compresses the audible acoustic pressure levels which can vary from 20 micropascals (μPa), the threshold of hearing and reference pressure (0 dB), to 20 million μPa, the threshold of pain (120 dB) (Air & Noise Compliance 2006).

Table 10 provides examples of noise levels from common sounds.

Table 10. Common Sound Levels.

Outdoor Sound Levels	Sound Pressure (μPa)	Sound Level (dBA)	Indoor Sound Level
	6,324,555	110	Rock Band at 5m
Jet Over-flight at 300m		105	
	2,000,000	100	Inside NY Subway Train
Gas Lawn Mower at 1m		95	
	632,456	90	Food Blender at 1m
Diesel Truck at 15 m		85	
Noisy Urban Area (daytime)	200,000	80	Garbage Disposal at 1m
		75	Shouting at 1m
Gas Lawn Mower at 30m	63,246	70	Vacuum Cleaner at 3m
Suburban Commercial Area		65	Normal Speech at 1m
	20,000	60	
Quiet Urban Area (daytime)		55	Quiet Conversation at 1m
	6,325	50	Dishwasher in Adjacent Room
Quiet Urban Area (nighttime)		45	
	2,000	40	Empty Theater of Library
Quiet Suburb (nighttime)		35	
	632	30	Quiet Bedroom at Night
Quiet Rural Area (nighttime)		25	Empty Concert Hall
Rustling Leaves	200	20	
		15	Broadcast and Recording Studios
	63	10	
		5	
Reference Pressure Level	20	0	Threshold of Hearing

Source: Air & Noise Compliance 2006.

To determine ambient (existing) noise levels, noise measurements are usually taken using various noise descriptors. The following are brief definitions of typical noise measurements:

Community Noise Equivalent Level

The community noise equivalent level is an average sound level during a 24-hour day. The community noise equivalent level noise measurement scale accounts for noise source, distance, single-event duration, single-event occurrence, frequency, and time of day. Humans react to sound between 7:00 p.m. and 10:00 p.m. as if the sound were actually 5 decibels higher than if it occurred from 7:00 a.m. to 7:00 p.m. From 10:00 p.m. to 7:00 a.m., humans perceive sound as if it were 10 dBA higher than if it occurred from 7:00 a.m. to 7:00 p.m. due to the lower background noise level. Hence, the community noise equivalent level noise measurement scale is obtained by adding an additional 5 decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m., and 10 dBA to sound levels in the night after 10:00 p.m. and before 7:00 a.m. Because community noise equivalent level accounts for human sensitivity to sound, the community noise equivalent level 24-hour figure is always a higher number than the actual 24-hour average.

Equivalent Noise Level

Equivalent noise level is the average noise level on an energy basis for any specific time period. The equivalent noise level for 1 hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. Equivalent noise level can be thought of as the level of a continuous noise that has the same energy content as the fluctuating noise level. The equivalent noise level is expressed in units of dBA.

Sound Exposure Level

Sound exposure level is a measure of the cumulative sound energy of a single event. This means that louder events have greater sound exposure level than quieter events. Additionally, events that last longer have greater sound exposure level than shorter events.

Audible Noise Changes

Studies have shown that the smallest perceptible change in sound level for a person with normal hearing sensitivity is approximately 3 decibels. A change of at least 5 decibels would be noticeable and likely would evoke a community reaction. A 10-decibel increase is subjectively heard as a doubling in loudness and would most certainly cause a community response. Noise levels decrease as the distance from the noise source to the receiver increases. Noise generated by a stationary noise source, or “point source,” would decrease by approximately 6 decibels over hard surfaces and 9 decibels over soft surfaces for each doubling of the distance. For example, if a noise source produces a noise level of 89 dBA at a reference distance of 50 feet, then the noise level would be 83 dBA at a distance of 100 feet from the noise source, 77 dBA at a distance of 200 feet, and so on over hard surfaces. Generally, noise is most audible when traveling along direct line-of-sight. Barriers, such as walls, berms, or buildings that break the line-of-sight between the source and the receiver greatly reduce noise

levels from the source because sound can reach the receiver only by bending over the top of the barrier (diffraction). Sound barriers can reduce sound levels by up to 20 dBA. If a barrier, however, is not high or long enough to break the line-of-sight from the source to the receiver, its effectiveness is greatly reduced.

Sensitive Receptors

Land uses that are considered sensitive to noise impacts are referred to as "sensitive receptors." Noise-sensitive receptors consist of, but are not limited to, schools, religious institutions, residences, libraries, parks, hospitals, and other care facilities.

Vibration

In contrast to airborne noise, ground-borne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of groundborne vibration are trains, buses on rough roads, and construction activities such as blasting, pile-driving and operating heavy earth-moving equipment. The effects of ground-borne vibration include feelable movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. A vibration level that causes annoyance would be well below the damage threshold for normal buildings.

The background vibration velocity level in residential areas is usually 50 VdB or lower, well below the threshold of perception for humans which is around 65 VdB. Most perceptible indoor vibration is caused by sources within buildings such as operation of mechanical equipment, movement of people or slamming of doors. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible. The range of interest is from approximately 50 VdB to 100 VdB. Background vibration is usually well below the threshold of human perception and is of concern only when the vibration affects very sensitive manufacturing or research equipment. Electron microscopes and high-resolution lithography equipment are typical of equipment that is highly sensitive to vibration.

6.10.2 General Setting

Noise

Existing noise environments will vary considerably based on the diversity of land uses and densities. In most urban environments automobile, truck, and bus traffic is the major source of noise. Traffic generally produces background sound levels that remain fairly constant with time. Individual high-noise-level events that can occur from time to time include honking horns, sirens, operation of construction equipment, and travel of noisy vehicles like trucks or buses. Air and rail traffic and commercial and industrial activities are also major sources of noise in some areas. In addition, air conditioning and ventilating systems contribute to the noise levels in residential areas, particularly during the summer months.

Regulatory Framework

The no longer extant California Office of Noise Control, California Department of Health Services developed guidelines showing a range of noise standards for various land use categories in the *1976 Noise Element Guidelines*. These guidelines are now found in Appendix C of the State of California General Plan Guidelines (Governor's Office of Planning and Research 2003). Cities within the state have generally incorporated this compatibility matrix into their General Plan noise elements. These guidelines are meant to maintain acceptable noise levels in a community setting based on the type of land use. Noise compatibility by different types of land uses is a range from "Normally Acceptable" to "Clearly Unacceptable" levels. The guidelines are used by cities within the state to help determine the appropriate land uses that could be located within an existing or anticipated ambient noise level.

Some of the reasonably foreseeable methods of compliance have the potential to affect noise levels. Noise within counties and cities are regulated by noise ordinances, which are found in the municipal code of the jurisdiction These noise ordinances limit intrusive noise and establish sound measurements and criteria, minimum ambient noise levels for different land use zoning classifications, sound emission levels for specific uses, hours of operation for certain activities (such as construction and trash collection), standards for determining noise deemed a disturbance of the peace, and legal remedies for violations.

Vibration

Major sources of groundborne vibration would typically include trucks and buses operating on surface streets, and freight and passenger train operations. The most significant sources of construction-induced groundborne vibrations are pile driving and blasting – neither of which would be involved in the installation or maintenance of structural implementation alternatives. Currently, the state of California has no vibration regulations or guidelines.

6.10.3 Thresholds of Significance

A project would normally have a significant effect on the environment if it would result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

- Exposure of persons residing or working in the project area, for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, to excessive noise levels.

- Exposure of persons residing or working in the project area to excessive noise levels, for a project within the vicinity of a private airstrip.

6.10.4 Impacts and Mitigation

Implementation of the final Trash Amendments would not cause a permanent increase in ambient noise levels. All construction and maintenance activities would be intermittent. The remaining thresholds may be exceeded for limited durations depending on the location and ambient noise levels at sites selected for installation of trash removal devices.

Increases in noise levels during installation and/or maintenance of some of the implementation alternatives would vary depending on the existing ambient levels at each site. Once a site has been selected, project-level analysis to determine noise impacts would involve: (i) identifying sensitive receptors within a quarter-mile vicinity of the site, (ii) characterizing existing ambient noise levels at these sensitive receptors, (iii) determining noise levels of any and all installation and maintenance equipment, and (iv) adjusting values for distance between noise source and sensitive receptor. In addition, the potential for increased noise levels due to installation of trash reduction structural controls is limited and short-term. Given the size of the individual projects and the fact that installation would occur in small discrete locations, noise impacts during installation would not foreseeably be greater, and would likely be less onerous than, other types of typical construction activities in urbanized areas, such as ordinary road and infrastructure maintenance activities, building activities, etc. These short-term noise impacts can be mitigated by implementing commonly-used noise abatement procedures, standard construction techniques such as sound barriers, mufflers and employing restricted hours of operation. Applicable and appropriate mitigation measures could be evaluated when specific projects are determined, depending upon proximity of construction activities to receptors.

Overall, noise levels for installation of several of the reasonably foreseeable methods of compliance are governed primarily by the noisiest pieces of equipment. For most construction equipment the engine is the dominant noise source. Typical maximum noise emission levels (Lmax) are summarized, based on construction equipment operating at full power at a reference distance of 50 feet, and an estimated equipment usage factor based on experience with other similar installation projects. The usage factor is a fraction that accounts for the total time during an eight-hour day in which a piece of installation equipment is producing noise under full power. Although the noise levels in Table 11 represent typical values, there can be wide fluctuations in the noise emissions of similar equipment based on two important factors: (1) the operating condition of the equipment (e.g., age, presence of mufflers and engine cowlings); and (2) the technique used by the equipment operator (aggressive vs. conservative).

Table 11. Typical Installation Equipment Noise Emission Levels.

Equipment	Maximum Noise Level, (dBA) 50 feet from source	Equipment Usage Factor	Total 8-hr Leq exposure (dBA) at various distances	
			50ft	100ft
Foundation Installation			83	77
Concrete Truck	82	0.25	76	70
Front Loader	80	0.3	75	69
Dump Truck	71	0.25	65	59
Generator to vibrate concrete	82	0.15	74	68
Vibratory Hammer	86	0.25	80	74
Equipment Installation			83	77
Flatbed Truck	78	0.15	70	64
Forklift	80	0.27	74	69
Large Crane	85	0.5	82	76

Source: Los Angeles Water Board 2007f.

Vortex Separation Systems

Installation of vortex separation systems would potentially involve removal of asphalt and concrete from streets and sidewalks, excavation and shoring, installation of reinforced concrete pipe, installation of the unit, and repaving of the streets and sidewalks. It is anticipated that installation activities would occur in limited, discrete, and discontinuous areas over a short duration. No major long term or geographically extensive construction activities are anticipated. It is anticipated that excavation, for the purpose of installation, and repaving would result in the greatest increase in noise levels during the period of installation. Table 11 provides noise levels generated by different machinery that may be used in installing the vortex separation systems. The manufacturer of the Continuous Deflective Separation unit (described in detail in Section 5) recommends that the unit receive maintenance 2 to 4 times a year depending on amount and frequency of precipitation. Maintenance involves cleaning using vacuum trucks, which would increase ambient noise levels. The increase in noise levels would be dependent on the proximity of sensitive receptors to the site. Maintenance is also expected to generate 2-4 vehicle trips per year, which is not expected to increase ambient noise levels noticeably.

Contractors and equipment manufacturers have been addressing noise problems for many years, and through design improvements, technological advances, and a better understanding of how to minimize exposures to noise, noise effects can be minimized. An operations plan for the specific construction and/or maintenance activities could be

developed to address the variety of available measures to limit the impacts from noise to adjacent homes and businesses. To minimize noise and vibration impacts at nearby sensitive sites, installation activities should be conducted during daytime hours to the extent feasible. There are a number of measures that can be taken to reduce intrusion without placing unreasonable constraints on the installation process or substantially increasing costs. These include noise and vibration monitoring to ensure that contractors take all reasonable steps to minimize impacts when near sensitive areas; noise testing and inspections of equipment to ensure that all equipment on the site is in good condition and effectively muffled; and an active community liaison program. A community liaison program should keep residents informed about installation plans so they can plan around noise or vibration impacts; it should also provide a conduit for residents to express any concerns or complaints.

The following measures would minimize noise and vibration disturbances at sensitive areas during installation:

- Use newer equipment with improved noise muffling and ensure that all equipment items have the manufacturers' recommended noise abatement measures, such as mufflers, engine covers, and engine vibration isolators intact and operational. Newer equipment will generally be quieter in operation than older equipment. All installation equipment should be inspected at periodic intervals to ensure proper maintenance and presence of noise control devices (e.g., mufflers and shrouding).
- Perform all installation in a manner to minimize noise and vibration. Use installation methods or equipment that will provide the lowest level of noise and ground vibration impact near residences and consider alternative methods that are also suitable for the soil condition. The contractor should select installation processes and techniques that create the lowest noise levels.
- Perform noise and vibration monitoring to demonstrate compliance with the noise limits. Independent monitoring should be performed to check compliance in particularly sensitive areas. Require contractors to modify and/or reschedule their installation activities if monitoring determines that maximum limits are exceeded at residential land uses.
- Conduct truck loading, unloading and hauling operations so that noise and vibration are kept to a minimum by carefully selecting routes to avoid going through residential neighborhoods to the greatest possible extent. Ingress and egress to and from the staging area should be on collector streets or higher street designations (preferred).
- Turn off idling equipment.
- Temporary noise barriers shall be used and relocated, as practicable, to protect sensitive receptors against excessive noise from installation activities. Consider mitigation measures such as partial enclosures around continuously operating equipment or temporary barriers along installation boundaries.

- The installation contractor should be required by contract specification to comply with all local noise and vibration ordinances and obtain all necessary permits and variances.

These and other measures can be classified into three distinct approaches as outlined in Table 12.

Table 12. Noise Abatement Measures**.**

Type of Control	Description
Source Control	*Time Constraints* – Prohibiting work during sensitive nighttime hours *Scheduling* – performing noisy work during less sensitive time periods *Equipment Restrictions* – restricting the type of equipment used *Substitute Methods* –using quieter equipment when possible *Exhaust Mufflers* – ensuring equipment have quality mufflers installed *Lubrication and Maintenance* – well maintained equipment is quieter *Reduced Power Operation* – use only necessary power and size *Limit equipment on-site* – only have necessary equipment onsite *Noise Compliance Monitoring* – technician on-site to ensure compliance
Path Control	*Noise barriers* – semi-portable or portable concrete or wooden barriers *Noise curtains* – flexible intervening curtain systems hung from supports Increased distance – perform noisy activities further away from receptors
Receptor Control	*Community participation* –open dialog to involve affected parties *Noise complaint process* – ability to log and respond to noise complaints

Source: Adapted from Thalheimer 2000.

Increases in ambient noise levels are expected to be less than significant once measures have been properly applied to reduce potential impacts.

Catch Basin Inserts

Installation of catch basin inserts should not involve any construction activity or the use of major equipment therefore no significant increase in ambient noise levels is anticipated.

Catch basins need to be cleaned regularly. Frequency of cleaning depends on the amount of trash flowing into the insert. Increased street sweeping can decrease the amount of trash, caught by catch basin inserts. Catch basins are cleaned out on varying schedules at a minimum frequency of once a year as a requirement of the MS4 Phase I or Phase II permit. This implementation measure does not require an increase in cleaning frequency above what is already required for existing permits, therefore no significant increase in noise levels over baseline are anticipated. It is not anticipated that ambient noise levels will be increased by the use of catch basin inserts. To the contrary it is expected that since the design of many of these inserts act to prevent trash from entering the catch basins, the frequency of cleanouts of these basins may be reduced as a result of reduced trash loading. In the unlikely event, however, that there should be an increase in noise levels generated by current clean-out practices, the

source, path and receptor control measures presented in Table 12 should be applied. Therefore, increases in ambient noise levels are expected to be less than significant once measures have been properly applied to reduce potential impacts.

Trash Nets

Installation of trash nets should not involve any construction activity or the use of major equipment therefore no significant increase in ambient noise levels is anticipated. Maintenance of the trash nets involves replacing the nets when full or after each major storm event as necessary. Frequency of maintenance would depend on the trash volumes generated in the catchment area of the net. Equipment used to detach and haul away the trash nets may result in temporary increases in ambient noise levels. In the unlikely event that there should be an increase in noise levels generated by the equipment used to detach and haul away nets, the source, path and receptor control measures presented in Table 12 should be applied. Therefore, increases in ambient noise levels are expected to be less than significant once measures have been properly applied to reduce potential impacts.

Gross Solid Removal Devices

Gross Solids Removal Devices are the full capture systems being used by Caltrans for highway drainage systems and as such would be located adjacent to freeways and major highways under Caltrans' jurisdiction. Installation of Gross Solids Removal Devices would involve activities similar to those for vortex separation system installation. Clean-outs of Gross Solids Removal Devices are expected to occur only once per year. Equipment and/or machinery employed in this exercise may not significantly increase ambient noise levels as the potential sites for these units would already be subject to high traffic noise levels. In addition, increase in noise levels due to clean-outs would be of low frequency and short duration. Therefore, the installation of Gross Solids Removal Device is not expected to cause any potentially significant impacts.

Increased Street Sweeping

Increased street sweeping would involve an increase in current street sweeping frequencies in order to reduce the amount of trash accumulating on streets between cleanings. Any increases in street sweeping frequencies would be geared towards high trash generation areas such as those with commercial and industrial land-uses. The increase in ambient noise levels is expected to be limited in duration. Therefore, any increase in ambient noise levels over baseline conditions are expected to be less than significant.

Other Institutional Controls

Litter enforcement, ordinances, and public education are not expected to create any increases in ambient noise levels, and no mitigation would be required.

6.10.6 Summary

Installation and maintenance of some structural trash-reduction BMPs could result in potentially significant environmental effects with regard to noise. Measures, however, can be applied to reduce and/or eliminate these impacts are available as described

above. These mitigation measures are within the responsibility and jurisdiction of the responsible agencies subject to the final Trash Amendments and can or should be adopted by them. The State Water Board does not direct which compliance measures responsible agencies choose to adopt or the mitigation measures they employ. The State Water Board does, however, recommend that appropriate measures be applied to reduced or avoid potential environmental impacts. It is foreseeable that these measures may not always be capable of reducing these impacts to levels that are less than significant in every conceivable instance. Although there is no information on the record that this would occur, in the event that a specific mitigation measure or alternative may not reduce impacts to levels that are less than significant, the project proponent may need to consider an alternative strategy or combination of strategies to comply with the final Trash Amendments.

6.11 Public Services

6.11.1 Thresholds of Significance

A project would normally have a significant effect on the environment if it would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: (a) Fire protection, (b) Police protection, (c) School, (d) Parks, and (e) Other public facilities. (See Environmental Checklist in Appendix B for discussion).

6.11.2 Impacts and Mitigation

While, implementation of the final Trash Amendments may require some activities at or in the vicinity of public service facilities, the final Trash Amendments would not require the establishment of new or altered government facilities to provide the services outlined above. However, response times for fire and police protection may be temporarily affect during installation of trash collection devices and are discussed below.

Catch Basin Inserts

Although the delays due to installations would be more localized and of shorter duration than installation of vortex separation systems, since the installation of catch basin inserts is not as complicated as the other structural BMPs, more maintenance may be required depending on the design of these units, since the capacity for trash collection may be limited to the size of the unit. However, the environmental impacts, and mitigation for those impacts, associated with the installation, maintenance and monitoring of catch basin inserts are expected to be similar to those for the vortex separation systems. Therefore, the potential delays in response times for fire and police vehicles due to installation of catch basin inserts after mitigation are less then significant.

Vortex Separation Systems

There is potential for temporary delays in response times of fire and police vehicles due to road closure/traffic congestion during installation of the vortex separation systems. To mitigate potential delays the responsible agencies could notify local emergency and police service providers of construction activities and road closures, if any, and coordinate with the local fire and police providers to establish alternative routes and traffic control during the installation activities. Most jurisdictions have in place established procedures to ensure safe passage of emergency and police vehicles during periods of road maintenance, construction, or other attention to physical infrastructure, and there is no evidence to suggest that installation of these structural devices would create any more significant impediments than other such typical activities. Any construction activity would be subject to applicable building and safety codes and permits. Therefore, the potential delays in response times for fire and police vehicles after mitigation are less then significant.

Since the installation of vortex separation systems would not result in development of land uses for residential, commercial, and/or industrial uses nor would the these units result in an increase of growth, it is reasonably foreseeable that the vortex separation systems would not result in a need for new or altered fire or police protection services. In addition, Emergency Preparedness Plans could be developed in consultation with local emergency providers to ensure that the new vortex separation systems would not contribute to an increase in the cumulative demand for fire and police emergency services.

Once the vortex separation systems are installed and operating, maintenance and monitoring of the devices would be required to verify that the structural BMP is performing properly and as expected. Maintenance and monitoring activities may also cause road closures and/or traffic congestion, but the same measures can be implemented as those for installation of the structures.

Trash Nets

The environmental impacts associated with the installation, maintenance and monitoring of trash nets are similar to those for the catch basin inserts. As with the catch basin inserts, more maintenance may be required depending on the design of these units since, the capacity for trash collection may be limited to the size of the trash net. With implementation of the mitigation presented for the vortex separation systems, this impact would be less than significant.

Gross Solids Removal Devices

There is potential for temporary delays in response times of fire and police vehicles due to road closure/traffic congestion during installation of the Gross Solids Removal Devices. To mitigate potential delays the responsible agencies could notify local emergency and police service providers of construction activities and road closures, if any, and coordinate with the local fire and police providers to establish alternative routes and traffic control during the installation activities. Most jurisdictions have in place established procedures to ensure safe passage of emergency and police vehicles during periods of road maintenance, construction, or other attention to physical

infrastructure, and there is no evidence to suggest that installation of these structural devices would create any more significant impediments than other such typical activities. Any construction activity would be subject to applicable building and safety codes and permits. Therefore, the potential delays in response times for fire and police vehicles after mitigation are less then significant.

Since, the installation of Gross Solids Removal Devices would not result in development of land uses for residential, commercial, and/or industrial uses nor would the these units result in increased growth, it is reasonable foreseeable that the vortex separation system units would not result in a need for new or altered fire or police protection services. In addition, Emergency Preparedness Plans could be developed in consultation with local emergency providers to ensure that the new Gross Solids Removal Devices would not contribute to an increase in the cumulative demand for fire and police emergency services.

Once the Gross Solids Removal Devices are installed and operating, maintenance and monitoring of the devices would be required to verify that the structural BMP is performing properly and as expected. Maintenance and monitoring activities may also cause road closures and/or traffic congestion, but the same measures can be implemented as those for installation of the structures.

Increased Street Sweeping

Non-structural BMPs may include increased street sweeping. The impacts of these increases can be minimized by efficient timing of the increased street sweeping, for example, prior to storm events. By identifying land uses where trash production is high (e.g., commercial retail), an increase in street sweeping would yield the greatest results.

Ordinances

Ordinances are not expected to create any impacts to public services, and no mitigation would be required.

6.11.3 Summary

Installation and maintenance of structural trash-reduction BMPs could result in less than significant environmental effects with regard to public services. Measures, however, can be applied to reduce and/or eliminate these impacts, as described above. These mitigation measures are within the responsibility and jurisdiction of the responsible agencies subject to the final Trash Amendments and can or should be adopted by them. The State Water Board does not direct which compliance measures responsible agencies choose to adopt or the mitigation measures they employ. The State Water Board does, however, recommend that appropriate measures be applied to reduced or avoid potential environmental impacts. It is foreseeable that these measures may not always be capable of reducing these impacts to levels that are less than significant in every conceivable instance. Although there is no information on the record that this would occur, in the event that a specific mitigation measure or alternative may not reduce impacts to levels that are less than significant, the project proponent may need to consider an alternative strategy or combination of strategies to comply with the final Trash Amendments.

6.12 Transportation/Traffic

6.12.1 Thresholds of Significance

A project would normally have a significant effect on the environment if it would:

- Conflict with an applicable plan, ordinance or amendment establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.

- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks.

- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). Result in inadequate emergency access.

- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

6.12.2 Impacts and Mitigation

Implementation of the final Trash Amendments would not result in a change in air traffic patterns or substantially increase hazards due to design features or incompatible uses.

Vortex Separation Systems

The installation of vortex separation systems may result in additional vehicular movement. These impacts would be temporary and limited in duration to the period of installation. Maintenance requirements for trash removal devices demonstrate that devices could be emptied when they reach 85 percent capacity. Trash removal devices, however, can be designed so that they need be cleaned only once per storm season.

For example, the Los Angeles Water Board staff estimated that 3700 vortex separation systems would be needed in the Los Angeles River watershed. Assuming that these devices are cleaned once per storm season (November 1 to March 31, or 150 days), this translates to approximately 25 vehicle trips per day in the Los Angeles River watershed. An additional 25 trips per day, watershed-wide, would not foreseeably result in a substantial or significant change to traffic flow, other than short-term congestion on limited roadway segments. The approximately 25 trips per day are fewer than the number of trips that would trigger the requirement of a traffic impact analysis per the Los Angeles County Congestion Management Plan (Metropolitan Transit Authority 2004).

Consequently, the proposed project would be in conformance with the existing Los Angeles County Congestion Management Plan, and this impact would be less than significant (Los Angeles Water Board 2007f). As traffic in Los Angeles County represents the maximum impacts related to traffic congestion, impacts of the final Trash Amendments to traffic circulation are expected to be less than or similar to these results throughout the state.

To the extent that site-specific projects entail excavation in roadways, such excavations should be marked, barricaded, and traffic flow controlled with signals or traffic control personnel in compliance with authorized local police or California Highway Patrol requirements. These methods would be selected and implemented by responsible local agencies considering project level concerns. Standard safety measures should be employed including fencing, other physical safety structures, signage, and other physical impediments designed to promote safety and minimize pedestrian/bicyclists accidents. It is not foreseeable that this proposal would result in significant increases in traffic hazards to motor vehicles, bicyclists or pedestrians, especially when considered in light of those hazards currently endured in an ordinary urbanized environment.

In order to reduce the impact of construction traffic, implementation of a construction management plan for specified facilities could be developed to minimize traffic impacts upon the local circulation system. A construction traffic management plan could address traffic control for any street closure, detour, or other disruption to traffic circulation. The plan could identify the routes that construction vehicles would use to access the site, hours of construction traffic, and traffic controls and detours. The plan could also include plans for temporary traffic control, temporary signage, location points for ingress and egress of construction vehicles, staging areas, and timing of construction activity which appropriately limits hours during which large construction equipment may be brought on or off site. Potential impacts could also be reduced by limiting or restricting hours of construction so as to avoid peak traffic times and by providing temporary traffic signals and flagging to facilitate traffic movement. It is anticipated that impacts after mitigation would be less than significant.

Catch Basin Inserts

No construction activity or use of heavy equipment is anticipated for catch basin insert installation. Therefore additional vehicular movement during installation of the catch basin inserts to control trash is unlikely to be significant. Also, it is not anticipated that any such increase would have an adverse effect on traffic and transportation, as they would be limited and short-term. With respect to maintenance, catch basins need to be cleaned regularly. Frequency of cleaning depends on the amount of trash flowing in through the insert. This implementation measure does not require an increase in cleaning frequency above baseline conditions for what is already required for existing permits, therefore no significant increase in traffic is anticipated. Impacts from other maintenance activities, such as street sweeping, are not expected to be significant.

Trash Nets

The number of end-of-pipe trash nets installed would be limited by the number of suitable locations. Installation and maintenance of trash nets would create environmental impacts similar to those of the vortex separation systems.

Mitigation measures to be applied would be the same as those for the vortex separation systems. It is anticipated that impacts after mitigation would be less than significant.

Gross Solids Removal Devices

Gross Solids Removal Devices are the implementation alternatives developed by Caltrans for trash reduction from roadways. Hence their installation would foreseeably be limited to rights of way over which Caltrans has jurisdiction. Clean-outs of Gross Solids Removal Devices are expected to occur only once per year. Therefore, fewer Gross Solids Removal Devices would be installed than vortex separation systems within a given jurisdiction and, cleanout would be less frequent, so the impacts of installation and maintenance of Gross Solids Removal Devices on traffic are expected to be much less than those of vortex separation systems. Consequently, this impact would be a less than significant impact.

Increased Street Sweeping

The number of trips generated by increased street sweeping would depend of the magnitude of increase in sweeping frequency determined by any responsible agency choosing to use this implementation alternative. Increased street sweeping would not foreseeably be implemented alone for the final Trash Amendments. It is not clear how often street sweeping would be increased to comply with the final Trash Amendments at this point. If the stakeholders make decisions on the frequency of street sweeping, the impacts on traffic and transportation caused by increased street sweeping could be analyzed at the project level. Nevertheless, the impacts of increased street sweeping have been included in the reasonably foreseeable methods of compliance, such as catch basin inserts, that may also include increased street sweeping. It is not anticipated that such increases would have a significant impact on traffic and transportation.

Ordinances

Ordinances are not expected to create any impacts to transportation/traffic, and no mitigation would be required.

6.12.3 Summary

The foreseeable methods of compliance may entail short-term disturbances during installation of treatment controls to control trash. The specific project impacts can be mitigated by appropriate mitigation methods during installation. To the extent that significant adverse traffic impacts occur in a given locality, those effects are already occurring and should be considered baseline impacts. Nevertheless, to the extent the locality that originated the trash would become newly exposed to increased traffic from the need to properly dispose of trash generated locally instead of downstream jurisdictions; those impacts could be potentially significant in those locales. Under the final Trash Amendments, municipalities would abate locally generated trash, rather than causing the downstream cities and other stakeholders to suffer the effect of the trash or the cost of cleaning up the trash.

Installation and maintenance of full capture systems and treatment controls could result in potentially significant environmental effects with regard to transportation/traffic. Mitigation measures are available to be applied to reduce and/or eliminate these

impacts; these are described above. These mitigation measures are within the responsibility and jurisdiction of the responsible agencies and can or should be adopted by them. The State Water Board does not direct which compliance measures responsible agencies choose to adopt or which mitigation measures they employ. The State Water Board does, however, recommend that appropriate mitigation measures be applied in order that potential environmental impacts be reduced or avoided. It is foreseeable that these mitigation measures may not always be capable of reducing these impacts to levels that are less than significant in every conceivable instance. Although there is no information on the record that this would occur, in the event that a specific mitigation measure or alternative may not reduce impacts to levels that are less than significant, the project proponent may need to consider an alternative strategy or combination of strategies to comply with the final Trash Amendments.

6.13 Utilities/Service Systems

6.13.1 Thresholds of Significance

A project would normally have a significant effect on the environment if it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Board. (See Environmental Checklist in Appendix B for discussion).

- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. (See Environmental Checklist in Appendix B for discussion).

- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

- Have insufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed. (See Environmental Checklist in Appendix B for discussion).

- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments. (See Environmental Checklist in Appendix B for discussion).

- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs. (See Environmental Checklist in Appendix B for discussion).

- Fail to comply with federal, state, and local statutes and regulations related to solid waste. (See Environmental Checklist in Appendix B for discussion).

6.13.2 Impacts and Mitigation

Potential projects undertaken to comply with the final Trash Amendments would not result in the need for a new or substantial alteration to water supply utilities. The implementation of the final Trash Amendments would not result in the development of any large residential, retail, industrial or any other development projects that would significantly increase the demand on the current water supply facilities or require new water supply facilities. There would be no impacts related to water supply and no mitigation is required.

Implementation of the final Trash Amendments involves a progressive reduction in trash discharges to the water bodies of the State through structural BMPs, enforcement of existing litter laws, and institutional controls. These strategies to reduce trash are not related to sewer systems[17] and would not affect Publicly Owned Treatment Works nor would they impact any septic tank systems. The implementation of the final Trash Amendments would not result in the need for a new or alterations to existing sewer or septic tank systems. The structural BMPs that may be implemented such as catch basin inserts would be implemented to update the storm drain system and reduce trash entering state waters. Except as otherwise noted, storm drain systems in California are completely separate from the sewer systems and septic tank systems. Thus, there would be no impacts related to sewer and septic tank systems and no mitigation is required.

Compliance with the final Trash Amendments would require that significant amounts of solid waste that would otherwise enter storm drains, be collected by institutional controls and structural methods for collecting trash, or by source control and proper litter disposal by citizens. To the extent that decreases in available landfill space may occur in a local upstream region, those effects are likely already occurring in downstream communities as a result of the improper disposal of trash by the upstream communities; such effects should be considered baseline impacts, as they are presently carried by downstream communities.

For example, the City of Long Beach uses “clam shell” tractors, other heavy duty equipment, and many, many truck trips to cart away the tons of trash generated from all the upstream cities. So while upstream communities may see an increase in the amount of solid waste delivered to their landfill as a result of the final Trash Amendments, downstream communities would see a proportionate decrease. The overall capacity of landfills throughout the state would not be affected. Furthermore, it is reasonably foreseeable that the final Trash Amendments would precipitate education about the environmental and economic effects of litter, and thereby stimulate greater

[17] The City of Sacramento (downtown area) and the City and County of San Francisco have combined sewer and storm water systems where storm water is conveyed to the Publicly Owned Treatment Works. (The City of Fresno also has a combined system, but its wastewater is discharged to infiltration basins, not to surface water.) Since any trash carried by storm water to the Publicly Owned Treatment Works would be collected at the Publicly Owned Treatment Works and not discharged to surface waters, these systems would not be subject to the final Trash Amendments. However, the Publicly Owned Treatment Works owners may want to implement the controls identified for the proposed Trash Amendments to reduce the amount of trash entering their facilities.

efforts to use less disposable materials, and to recycle more, thus reducing the use of resources and the amount of trash entering the landfills. Increased recycling would be considered a positive environmental impact.

In addition, to trash collected as part of compliance with the final Trash Amendments, there would be nominal amounts of construction debris generated by the installation of structural BMPs. Existing landfills should have adequate capacity to accommodate this limited amount of construction debris. In addition, many municipalities have construction and demolition debris recycling and reuse programs. Recycling and reuse of construction and demolition material has been shown to considerably reduce the amount of debris sent to landfills. For example, according to the County of Los Angeles, except under unusual circumstances, it is feasible to recycle or reuse at least 50% of construction and demolition debris (Los Angeles County Department of Public Works 2005). Impacts on the disposal of solid waste would be less than significant and no mitigation is required.

Storm Water Drainage

In order to achieve compliance with the final Trash Amendments, the storm water drainage systems may need to be retrofitted with structural BMPs such as catch basin inserts and or full capture systems. These structural BMPs have the potential to significantly impact the storm water drainage system. Impacts to the storm drains may range from potentially significant to less than significant with mitigation depending on the specific structural BMP implemented. The agencies implementing and complying with the final Trash Amendments would plan and implement the best full capture systems for their municipality. Overall, the installation of full and partial capture systems may substantially alter storm drain systems.

The most critical potential impact related to implementation of full or partial capture systems is the risk of increased flooding due to improperly designed or maintained structural controls. The trash collected by these devices (not the devices themselves) has the potential to impede the course and flow of flood waters through the storm drain system. This risk is considerably lower with properly designed and maintained full capture systems that include a flood event bypass system. Under large storm conditions, the trash capture unit would be bypassed and the storm water flows and the trash would be directly discharged to the receiving waters. The risk of increased street flooding is greater for the catch basin inserts. In general, the inserts are simple screens that are placed inside the catch basin to prevent large pieces of trash from being discharged into water bodies. If under storm conditions these screens were to become clogged with trash it would impede the flow of the storm water and could possibly cause flooding and adversely affect the operation of the public service facility (also discussed in Section 6.8 Hydrology/Water Quality).

The potential risk of increased flooding can be mitigated by proper design and maintenance. For example, the screens can be engineered to be removable and or retractable; the screens could be removed prior to forecasted large storm events to reduce the risk of flooding and adversely affect the operation of the public service facility (also discussed in Section 6.8 Hydrology/Water Quality).

The prevention and removal of trash from state waters through structural BMPs of catch basin inserts and full capture systems ultimately would lead to improved water quality and protection of aquatic life and habitat; expansion of opportunities for public recreational access; enhancement of public interest in our rivers, lakes, and ocean; public participation in restoration activities; and enhancement of the quality of life of riparian and shoreline residents. These improvements outweigh the risk of potentially increased flooding and adversely affect the operation of the public service facility (also discussed in Section 6.8 Hydrology/Water Quality); furthermore, proper design and maintenance of structural BMPs, as discussed above, would mitigate this risk. This impact is considered potentially significant and mitigation should be incorporated.

Recommended mitigation measures: (i) Design and install full capture systems by a licensed civil engineer or environmental engineer in consultation with a hydrologist to ensure there would be adequate capacity for storm water flows and or a storm water bypass system; and, (ii) Regularly maintain full capture systems to remove trash and to prevent the accumulation of trash -- especially prior to forecasted storm events.

Installation and maintenance of full capture systems and treatment controls would result in potentially significant environmental effects with regard to storm water drainage. Mitigation measures, which can be applied to reduce and/or eliminate these impacts, however, are available as described above. These mitigation measures are within the responsibility and jurisdiction of the agencies responsible for implementing the final Trash Amendments and can or should be adopted by them. The State Water Board directs neither the compliance measures responsible agencies choose to adopt, nor the mitigation measures they employ. The State Water Board does, however, recommend that appropriate mitigation measures be applied in order that potential environmental impacts be reduced or avoided. It is foreseeable that these mitigation measures may not always be capable of reducing these impacts to levels that are less than significant in every conceivable instance. Although there is no information on the record that this would occur, in the event that a specific mitigation measure or alternative may not reduce impacts to levels that are less than significant, the project proponent may need to consider an alternative strategy or combination of strategies to comply with the final Trash Amendments.

6.14 Other Dischargers

The final Trash Amendments would apply to discharges of trash not covered by a NPDES permit. The Water Boards may require the implementation of trash controls in areas or facilities that may generate trash, such as, high usage campgrounds, picnic areas, beach recreation areas, marinas, etc. The discharge of trash into water bodies from these areas usually occurs by direct deposition into the water or wind-borne deposition of trash from nearby areas.

The most likely means of compliance for these areas would be institutional controls including public education (e.g., signage to dispose of trash properly) and providing an appropriate level of trash collection (e.g., the frequency of trash collection is appropriate to prevent the overflow and spillage of trash from trash bins, which can then make its way to nearby waterways). Potential environmental impacts from these activities are

similar to those discussed for institutional controls in the previous sections. The implementation of institutional controls in these areas would not have a significant impact on the environment.

6.15 Time Extension

The proposed Trash Amendments provided a time extension to MS4 Phase I and II permittees with regulatory authority over land uses for each regulatory source control adopted by a MS4 Phase I or II permittee. Each regulatory source control adopted by a permittee could provide such permittee with a one-year time extension to achieve final compliance with either Track 1 or Track 2. The time extension option was proposed to receive public input on the potential advantages and disadvantages to this approach. However, subsequent to the State Water Board's public workshop and the public hearing on the proposed Trash Amendments, Senate Bill 270 (2014 Stats. Ch. 850) was enacted. That new law enacts a state-wide plastic bag carry-out ban pertaining to grocery stores and pharmacies that have a specified amount of sales in dollars or retail floor space, which goes into effect July 1, 2015, and imposes the same ban on convenience stores and liquor stores a year later. Such product ban was generally the type of regulatory source control contemplated and discussed with regard to consideration of the time extension option. Effectively enactment of Senate Bill 270 removed the need for regulatory source controls in the proposed Trash Amendments. With the enactment of Senate Bill 270, the final Trash Amendments omit "regulatory source controls" from a method to comply with Track 2. As a result, the final Trash Amendments omit any allowance of time extensions and will not be evaluated further.

6.16 Low-Impact Development Controls and Multi-Benefit Projects

The final Trash Amendments include compliance options referred to as LID controls and multi-benefit projects. Examples of LID controls are treatment controls that employ natural and constructed features that reduce the rate of storm water runoff, filter out pollutants, facilitate storm water storage onsite, infiltrate storm water into the ground to replenish groundwater supplies, or improve the quality of receiving groundwater and surface water. Examples of multi-benefit projects include projects that are designed to infiltrate, recharge or store storm water for beneficial reuse, develop or enhance habitat and open space through storm water and non-storm water management, prevent water pollution, and/or reduce storm water and non-storm water runoff volume.

Because LID controls and multi-benefit projects are part of a larger suite of compliance options and because these types of projects are highly site specific, the array of potential LID and multi-benefit projects is too vast to discuss within this statewide analysis. The range of potential environmental impacts can vary greatly between projects. For example, the City of Anaheim prepared a Mitigated Negative Declaration for its Brookhurst Street Improvement Project and found potential significant impacts to air quality, biological resources, and cultural resources unless mitigation measures were incorporated into the project (City of Anaheim 2010). The City of Pasadena is preparing an EIR for its Hahamongna Multi-Benefit/Multi-Use Project (City of Pasadena 2012). It has tentatively identified potential impacts to aesthetics, air quality, biological resources,

cultural resources, greenhouse gas emissions, hydrology and water quality, noise, and transportation/traffic.

Potential environmental impacts from LID or multi-benefit projects would depend on the size and location of the project. It is foreseeable that the overall project could have a significant effect on the environment. It would be speculation, however, as to what those impacts might be at this level of review. Furthermore, measures that may be incorporated into the project to account for trash issues would most likely be a minor part of the project as a whole. The final Trash Amendments would not affect what those impacts might be, and as such would not cause or increase the level of impact future LID or multi-benefit projects may or may not have. The permitting authority responsible for future LID and/or multi-benefit projects would need to conduct project-specific environmental reviews pursuant to CEQA, as appropriate.

6.17 Regulatory Source Controls (Ordinances)

"Regulatory source controls" was included in the proposed Trash Amendments as one of the several treatment controls that could be utilized by MS4 permittees with regulatory authority over priority land uses to comply with the prohibition of trash under Track 2. "Regulatory source controls" was defined in the proposed Trash Amendments as:

> Institutional controls that are enforced by an ordinance of the municipality to stop and/or reduce pollutants at their point of generation so that they do not come into contact with storm water. Regulatory source controls could consist of, but not be limited to, bans of single use consumer products.

Single use plastic bag bans are not anticipated to be enacted as ordinances in response to the Trash Amendments because (1) Senate Bill 270 has already enacted a mandatory statewide single use plastic bag ban, (2) the upcoming referendum on Senate Bill 270 won't succeed without a statewide majority vote, and (3) approximately 140 cities and counties have already adopted similar bans, which reflects a significant level of popular support for such bans. If, however, a permittee were to adopt a single use plastic bag ban or other ban as a means of complying with Track 2, it is expected that any such bans would be enacted in a manner similar to those previously adopted, in that they would not result in product substitutions or any significant environmental impacts. As with previously-adopted bans, the impacts of any new bans would be evaluated by the permittee. The courts have already upheld the use of negative declarations or categorical exemptions from CEQA for single use plastic bag bans. As a result, this Final Staff Report does not provide an environmental analysis of a ban on single use plastic bags.

Similar to the prior draft, however, the proposed Final Staff Report retains "institutional controls" as a permissible method an MS4 permittee could employ to comply with Track 2. The proposed final Trash Amendments' definition for "institutional controls" includes "ordinances":

> Institutional controls are non-structural best management practices (i.e., no structures are involved) that may include, but not be limited to, street sweeping, sidewalk trash bins, collection of the trash, anti-litter

educational and outreach programs, producer take-back for packaging, and ordinances.

Pursuant to that definition, a permittee's enactment of an ordinance remains an allowable type of institutional control which may be implemented to comply with Track 2, even though the proposed final Trash Amendments removed "regulatory source controls" as a permissible method. Contrary to ordinances or laws which prohibit distribution of plastic carry-out bags, which are typically accompanied with requirements and/or incentives to utilize reusable bags to avoid a product-substitution effect (such as Senate Bill 270), other types of product bans enacted by ordinance, such as take-out items, may involve a substitution of the banned item. Mere substitution would not result in reduced trash generation if such product substitution would be discarded in the same manner as the banned item. Any such product ban enacted by ordinance would not reduce trash and would not be an allowable Track 2 method to assist in achieving compliance. It is possible that an MS4 permittee's adoption of other types of ordinances (e.g., anti-litter laws or bans on smoking), may still be a reasonably foreseeable method of compliance, but those types of ordinances are not expected to cause potential environmental impacts through use of replacement products or through other indirect impacts.

The other types of institutional controls (e.g., street sweeping, sidewalk trash bins, collection of the trash, etc.) available for a permittee to comply with the trash prohibition under Track 2 are evaluated in the preceding sections under the resource potentially at issue.

7 OTHER ENVIRONMENTAL CONSIDERATIONS

This section of the Final Staff Report identifies and evaluates potential growth-inducing impacts[18] and cumulative impacts[19] that may arise from the final Trash Amendments.

7.1 Growth-Inducing Impacts

In compliance with the requirements to prepare a draft SED and meet the substantive requirements of CEQA, this section describes the potential for the final Trash Amendments to cause potential environmental impacts through the inducement of growth (see also Appendix B, Environmental Checklist, Population and Housing). Growth inducement occurs when projects affect the timing or location of either population or land use growth, or create a surplus in infrastructure capacity. Direct growth inducement occurs when, for example, a project accommodates populations in excess of those projected by local or regional planning agencies. Indirect growth inducement occurs when, for example, a project that accommodates unplanned growth consequently (i.e., indirectly) establishes substantial new permanent employment opportunities (for example, new commercial, industrial, or governmental enterprises). Another example of indirect growth is if a construction project generates substantial short-term employment opportunities that indirectly stimulate the need for additional housing and services.

7.1.1 Types of Growth

The primary types of growth that occur are: (1) development of land and (2) population growth. (Economic growth, such as the creation of additional job opportunities, also

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[18] The State CEQA Guidelines describe growth-inducing impacts as follows:

> …[T]he ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are impacts which would remove obstacles to population growth…Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects... [In addition,] the characteristics of some projects...may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment. (14 CCR § 15126.2(d).)

[19] The State CEQA Guidelines define cumulative impacts as follows:

> "Cumulative impacts" refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts:
>
> (a) The individual effects may be changes resulting from a single project or a number of separate projects.
>
> (b) The cumulative impact from several projects is the change in the environment, which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. (14 CCR § 15355.)

could occur; however, such growth generally would lead to population growth and, therefore, is included indirectly in population growth.)

Growth in Land Development

Growth in land development considered in this analysis is the possible physical development of residential, commercial, and industrial structures in and around where implementation of the final Trash Amendments and reasonably foreseeable methods of compliance may be located. Land use growth is subject to general plans, community plans, parcel zoning, and applicable entitlements and is dependent on adequate infrastructure to support development.

Population Growth

Possible population growth considered in this analysis is the possible growth in the number of persons that live and work in the areas in and around where implementation of the final Trash Amendments and reasonably foreseeable methods of compliance may be located. Population growth occurs from natural causes (births minus deaths) and net emigration from or immigration to other geographical areas. Emigration or immigration can occur in response to economic opportunities, life style choices, or for personal reasons. Although land use growth and population growth are interrelated, land use and population growth could occur independently from each other. This has occurred in the past where the housing growth is minimal, but population within the area continues to increase. Such a situation results in increasing population densities with a corresponding demand for services, despite minimal land use growth.

Overall development in the state is governed by local General Plans (developed by counties or cities), which are intended to plan for land use development consistent with California law. The General Plan is the framework under which development occurs, and, within this framework, other land use entitlements (such as variances and conditional use permits) can be obtained.

7.1.2 Existing Obstacles to Growth

The environmental analysis is required to discuss ways in which the proposed project could foster economic or population growth or the construction of additional housing. Included in this analysis is consideration as to whether the final Trash Amendments (or reasonably foreseeable methods of compliance) remove obstacles to population growth or may encourage and facilitate other activities that could significantly affect the environment. See 14 CCR section 15126.2(d). Obstacles to growth could include such things as inadequate infrastructure or public services, such as an inadequate water supply that results in rationing, or inadequate wastewater treatment capacity that results in restrictions in land use development. Policies that discourage either natural population growth or immigration also are considered to be obstacles to growth.

7.1.3 Potential for Compliance with the Trash Amendments to Induce Growth

Direct Growth Inducement

As some of the reasonably foreseeable methods of compliance of the final Trash Amendments focus on non-structural BMPs and improvements to storm drain systems located throughout urbanized portions of the watershed, the final Trash Amendments

would not result in the construction of new housing and, therefore, would not directly induce growth.

Indirect Growth Inducement

Two areas of potential indirect growth inducement are relevant to a discussion of the final Trash Amendments: (1) the potential for compliance with the final Trash Amendments to generate economic opportunities that could lead to additional immigration; and, (2) the potential for the final Trash Amendments to remove an obstacle to land use or population growth.

Installation of full capture systems or other methods of compliance within Track 2 to comply with the final Trash Amendments would occur over a ten-year time period. Installation and maintenance spending for compliance would generate jobs throughout the region and elsewhere where goods and services are purchased or used to install full capture systems. The alternatives would result in direct jobs and indirect jobs.

Although the construction activities associated with implementation of the final Trash Amendments would increase the economic opportunities in an area or region, this construction is not expected to result in or induce substantial or significant growth related to population increase or land use development. The majority of the new jobs that would be created by this construction are expected to be filled by persons already employed and residing in the area or region. The second area of potential indirect growth inducement is through the removal of obstacles to growth. The final Trash Amendments would require retrofit of existing public services or additional design requirements to new services (services that would occur without the final Trash Amendments). The drainage systems would not increase as a result of the final Trash Amendments. As discussed above, any obstacles that may exist to the location of public services and commensurate land use development or to population growth within an area affected by the final Trash Amendments would not be altered by the implementation of the final Trash Amendments.

7.2 Cumulative Impacts Analysis

In compliance with the requirements to prepare a draft SED and meet the substantive requirements of CEQA, this section describes the potential for the final Trash Amendments to cause a considerable contribution to a cumulatively significant impact (see also Appendix B, Environmental Checklist, Mandatory Findings of Significance).The fundamental purpose of the cumulative impacts analysis is to ensure that the potential environmental impacts of any individual project are not considered in isolation. Impacts that may be individually less than significant on a project specific basis, could pose a potentially significant impact when considered with the impacts of other past, present, and probable future projects.

The cumulative impact analysis need not be performed at the same level of detail as a “project level” analysis but must be sufficient to disclose potential combined effects that could constitute a cumulative significant adverse impact. The CEQA Guidelines direct that the cumulative impacts analysis either include a list of the past, present and probable future projects producing related or cumulative impacts or provide a summary

of projections and cumulative impact analysis contained in an applicable adopted plan or related planning document. (§ 15130, subd. (b)(1).)

This draft SED discusses whether the proposed Trash Amendments' incremental effect is cumulatively considerable and, where that is the case, describes the significant cumulative impacts of the proposed project in combination with past, present, and probable future projects. CEQA Guidelines direct that this cumulative impact analysis be either provided through the "list approach" of "projections approach". The cumulative impacts from implementation of the final Trash Amendments are discussed, for this statewide analysis, through analyzing the possible projects that could occur to cause impacts in combination of the final Trash Amendments in relation to existing land use planning throughout the state, in the following two sections: (1) the program level cumulative impacts, and (2) the project level cumulative impacts. On the program level, impacts from reasonably foreseeable statewide water quality actions and regional activities, including multiple TMDLs and permit requirements, are analyzed across the nine regional water boards, on a statewide basis. On the project level, it is not possible to provide an environmental analysis of individual probable future projects that could occur to cause impacts that would combine with impacts of the final Trash Amendments. The cumulative impacts analysis entails a general consideration of construction and other project-level activities that may occur in the vicinity of trash control implementation measures.

7.2.1 Program Cumulative Impacts

The State Water Board currently is developing a wide range of Statewide Policies and Significant General Permits. The entire list of Statewide Policies and Significant General Permits can be found in the State Water Board's Executive Director's report, which is updated on monthly basis.[20] In the April 22, 2014 Executive Director's Report, the active Statewide Policies and Significant General Permits are listed in Appendix B of the report (State Water Board 2014). The majority of these actions are not yet formally proposed but are considered reasonably foreseeable probable future projects, within the temporal scope of implementation of the final Trash Amendments.

Of the Statewide Polices and Significant General Permits actively being addressed by State Water Board, the following four projects have potential nexus to the scope of the final Trash Amendments thereby causing environmental impacts that may, in conjunction with impacts of the final Trash Amendments, cause a cumulative impact: (1) Proposed Toxicity Amendment to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California (Toxicity Provisions); (2) Water Quality Control Policy for Wetland Area Protection and Dredge or Fill Permitting (Wetlands Policy); (3) Proposed Amendment to the Statewide Water Quality Control Plan for Ocean Waters to Address Desalination Intakes and Discharges, and to Incorporate Non-Substantive Changes (Desalination Amendment); and (4) Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan).

[20] State Water Board Executive Director's Reports are accessible at: http://www.waterboards.ca.gov/board_info/exec_dir_rpts/

The State Water Board anticipates creating the ISWEBE Plan through the adoption of Toxicity Provisions. The goals of the Toxicity Provisions include: (a) a new method to determine the toxicity of discharges, (b) statewide numeric objectives, and (c) further standardization of toxicity provisions for NPDES dischargers and facilities subject to WDR and conditional waivers.

The Wetlands Policy has the goal of developing: (a) a wetland definition that would reliably define the diverse array of California wetlands based on the United States Army Corps of Engineers' wetland delineation methods to the extent feasible, (b) a regulatory mechanism for discharges of dredged or fill material into waters of the state, based on the 404 (b)(1) guidelines (40 C.F.R. parts 230-233) that includes a watershed focus, and (c) an assessment method for collecting wetland data to monitor progress toward wetland protection and to evaluate program development.

As with the Trash Amendments, the Desalination Amendment proposes to amend the Ocean Plan. The Desalination Amendment has four components: (a) implementation procedures for regional water boards to evaluate the best site, design, technology, and mitigation measures to minimize adverse impacts to aquatic life at new or expanding desalination facilities; (b) industry specific receiving water limits for salinity; (c) alternative implementation procedures for discharges of waste brine; and (d) provisions protecting sensitive habitats, species, Marine Protected Areas, and State Water Quality Protection Areas from degradation associated with desalination intakes and discharges.

The State Water Board is pursuing a four-phased process to develop and implement updates to the Bay-Delta Plan and flow objectives for priority tributaries to the Delta to protect beneficial uses in the Bay-Delta watershed. Phase 1 proposes to update the San Joaquin River flow and southern Delta water quality requirements included in the Bay-Delta Plan. Phase 2 proposes other comprehensive changes to the Bay-Delta Plan to protect beneficial uses not addressed in Phase 1. Phase 3 focuses on changes to water rights and other measures to implement changes to the Bay-Delta Plan from Phases 1 and 2. Phase 4 involves developing and implementing flow objectives for priority Delta tributaries outside of the Bay-Delta Plan updates.

In addition to the State Water Board actions, the regional water boards are in the process of developing a variety of basin plan amendments including TMDLs for different pollutants, as well as issuing various permits throughout the state. Examples include: Aquatic Ecosystem Restoration Policy (North Coast Water Board), Stream and Wetland Protection Policy (San Francisco Bay Water Board), TMDLs for Nitrogen Compounds and Orthophosphates in the Lower Salinas River Watershed (Central Coast Water Board), Implementation Plans for the TMDLs for Metals in the Los Cerritos Channel and for Metals and Selenium in the San Gabriel River and Impaired Tributaries (Los Angeles Water Board), Central Valley Salinity Alternatives for Long-Term Sustainability (Central Valley Water Board), Pesticide Prohibition Basin Plan Amendment (Lahontan Water Board), Revise Indicator Bacteria for a 17-Mile Reach of the Coachella Valley Storm Water Channel (Colorado River Water Board), Recreation Standards for Inland Fresh Surface Waters (Santa Ana Water Board), and Rainbow Creek Nitrogen and Phosphorus TMDLs (San Diego Water Board).

The goal of all of the Water Board's actions is to protect and improve the quality of the state's waters. Implementation measures identified during the development of these policies, amendments, and Basin Plan amendments, as well as the reasonably foreseeable methods of compliance for these actions, may have similar potential impacts as those identified for the final Trash Amendments. As such, there may be a cumulative impact to certain resources depending on the location and timing of the implementation measures. Potential cumulative impacts are discussed further in the following section.

7.2.2 Project Cumulative Impacts

Implementation of the final Trash Amendments would occur throughout the entire state and it would be speculative to attempt to estimate the specific project-level actions that could occur in and around the areas of implementation that would contribute to a cumulative effect of the final Trash Amendments and reasonably foreseeable methods of compliance. The reasonably foreseeable methods of compliance would typically occur in urban areas. The other types of actions that may occur in and around these urban areas are infrastructure maintenance, redevelopment projects, and infill projects. The impacts of these types of actions typically involve air quality, noise and traffic associated with construction and, depending on the timing of the implementation of the reasonably foreseeable methods of compliance, these impacts could combine with the potential impacts of the final Trash Amendments. The cumulative impacts of specific projects that will comply with the requirements of the final Trash Amendments should be considered by the implementing municipality or agency. Implementation of projects related to other nearby projects, however, may result in cumulative effects of the following nature:

1. Noise and Vibration - Local residents in the near vicinity of installation and maintenance activities related to compliance with the final Trash Amendments may be exposed to noise and possible vibration. The cumulative effects, both in terms of added noise and vibration at multiple implementation sites, and in the context of other unrelated projects, would most likely not be considered cumulatively significant due to the typically minor and temporary nature of the installation and maintenance activities that could cause the noise and possible vibration. However, if deemed a considerable contribution to a cumulative impact, mitigation methods include: (1) scheduling installation and maintenance activities during daytime hours; (2) noise and vibration monitoring; (3) noise testing and inspections of equipment; and (4) an active community liaison program.

2. Air Quality - Implementation of the final Trash Amendments, including the reasonably foreseeable methods of compliance, may cause additional emissions of criteria pollutants and slightly elevated levels of carbon monoxide during trash device installation activities and, to a lesser extent, possible maintenance activities. Implementation of the final Trash Amendments, in conjunction with all other activities within the area, may contribute to a region's nonattainment status during the installation period. Since installation and maintenance-related emissions are typically minor and temporary, compliance with the final Trash Amendments is not expected to not result in long-term significant cumulative air quality impacts. In the

short-term, cumulative impacts could be significant if the combined emissions from the individual projects exceed the threshold criteria for the individual pollutants. In this case, mitigation measures include: (1) use of construction, and maintenance vehicles with lower-emission engines; (2) use of soot reduction traps or diesel particulate filters; and (3) use of emulsified diesel fuel.

3. Transportation and Circulation - Compliance with the final Trash Amendments may involve contemporaneous installation activities at a number of sites. Further, installation of treatment controls may occur in the same general time and space as other related or unrelated projects. In these instances, construction activities from all projects could produce cumulative traffic effects which may be significant, depending upon a range of factors including the specific location involved and the precise nature of the conditions created by the dual construction activity. Mitigation to address this potentially significant cumulative impact would involve special coordination efforts by local, regional, and state entities regarding the timing of various construction and other activities adversely affecting traffic. Overall, with this mitigation, significant cumulative impacts are not anticipated since coordination can occur and, as appropriate, transportation mitigation methods are available as discussed previously.

4. Utilities and Service Systems – Compliance with the final Trash Amendments would involve the disposal of trash that is removed or prevented from entering state waters. The amount of trash collected as a result of the final Trash Amendments is not expected to increase substantially over baseline conditions. In addition, the final Trash Amendments are not expected to substantially affect other public services. Therefore, the cumulative effects of compliance activities, construction activities and other related projects on utilities such as land disposal sites is not a considerable contribution to the cumulative impact.

5. Greenhouse Gas Emissions - Compliance with the final Trash Amendments may involve contemporaneous installation activities at a number of sites. Further, installation of trash devices and other compliance measures, including maintenance activities and additional street sweeping, may occur in the same general time and space as other related or unrelated projects. In these instances, construction activities from all projects could produce greenhouse gas emissions which may have a significant cumulative impact, depending upon a range of factors (e.g., location, vehicular activity, machinery usage, etc.). As stated previously, the construction and maintenance activities associated with implementation of the final Trash Amendments would be short term and are not expected to cause substantial greenhouse gas emissions. However, the cumulative effect of greenhouse gases has been identified as a concern within California, the United States, and global climate and, therefore, this impact are considered potentially significant. With the incorporation of BMPs (see Section 6.6.2) and compliance with greenhouse gas reduction plans, amendments, or regulations, the cumulative effect of greenhouse gas emissions could be reduced to less-than-significant levels.

8 ALTERNATIVES ANALYSIS

State Water Board regulations require this SED to contain an analysis of range of reasonable alternatives to the project and reasonably foreseeable methods of compliance that could feasibly meet the project objectives and to avoid or substantially reduce any potentially significant adverse environmental impacts.[21] The State Water Board has identified the following six alternatives for analysis in the SED.

8.1 No Project Alternative

The purpose of assessing a No Project Alternative in an environmental document such as this SED is to allow decision makers and the public to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. The No Project Alternative would involve the State Water Board deciding not to approve any amendments to the Ocean Plan or the ISWEBE Plan.

Under the No Project Alternative, trash would continue to accumulate in state waters and the adverse effects identified in Section 1 and Appendix A would continue to occur. Consistent with baseline conditions, beneficial uses of water would not be protected. Additionally, the number of trash-related 303(d) listing and TMDLs would continue for an increasing number of water bodies with a lack of statewide consistency. The lack of consistency would continue from a lack of a water quality objective specific for trash and variability between existing trash-related water quality objectives among Basin Plans. For this reason, the State Water Board determines that this is not the preferred alternative.

8.2 Regional Water Board Alternative

In the Regional Water Board Alternative, each regional water board would either adopt a water quality objective for trash to the respective basin plan or adopt individual TMDLs for 303(d) listed water bodies for trash. If the individual amendments and TMDLs (as well as their respective implementation strategies) were similar to the final Trash Amendments, the potential environmental impacts would also be similar. There is, however, the potential that the individual regional water boards would develop different trash water quality objectives and implementation provisions, resulting in a continued lack of statewide consistency. Furthermore, it would be an inefficient use of staff time (and corresponding costs) to develop up to eight different approaches to trash-control in state waters. For these reasons, the State Water Board determines that this is not the preferred alternative.

8.3 Full Capture System Alternative

The Full Capture System Alternative would meet the goals of preventing trash from entering state waters, provide consistency statewide, and establish a water quality objective. In this alternative, NPDES permittees would have installation, operation and maintenance requirements across all land uses, regardless of trash generation rates,

[21] 23 CCR § 3777, subd. (b)(3).

and only have a single option for compliance. The potential, however, for environmental impacts to occur would increase due to the increase in the amount of required construction and maintenance. Furthermore, costs associated with implementing this alternative would be significantly higher than under the final Trash Amendments. The incremental improvement of this alternative over using the final Trash Amendments' targeted land-use approach with dual compliance track options, which include institutional controls in combination with treatment controls and multi-benefit projects, does not appear to provide substantial benefits related to trash removal versus potential impacts to the environment. For these reasons, the State Water Board determines that this is not the preferred alternative.

8.4 Institutional Control Alternative

The Institutional Control Alternative would meet the goal of preventing trash from entering state waters, provide consistency, and establish a water quality objective. In this alternative, NPDES storm water permits would contain requirements that permittees increase their use of institutional controls (such as street sweeping, clean-up events, education programs, additional public trash cans and increased collection frequency expanded recycling and composting efforts, and adoption of ordinances) in order to comply with the prohibition of discharge. This alternative's focus on the use of institutional controls rather than full capture systems could potentially decrease the environmental impacts from the installation of full capture systems and retrofitting of catch basins. The increase of institutional controls, such as street sweeping, collection of trash cans, and construction of recycling and composting facilities, however, could also result in environmental impacts, such as increased noise and vibration, or and poorer air quality caused by the increased frequency of street sweeping. Because street sweeping trucks move slowly, there may be an impact on transportation within high trash generating areas, which would require coordination with street parking rules. Nevertheless, the potential environmental impacts from this Institutional Control Alternative are not predicted to be significant. Permittees should have flexibility to determine the most effective means of controlling trash because of particular conditions within each jurisdiction, such as conditions of sites, types of trash, and the resources available for maintenance and operation. Therefore, the Trash Amendments propose the dual compliance options of Track 1 and Track 2.

8.5 Reduced Land Use Alternative

To reduce potential environmental impacts from trash control strategies, the Reduced Land Use Alternative would focus on a fewer number of land uses within a municipality. As a representative example, the City of Los Angeles monitored trash generation rates and found that the three highest trash generating land uses were residential (36 percent), commercial (33 percent), and industrial (19 percent) (City of Los Angeles 2002). The priority land uses for the Reduced Land Use Alternative would focus on the top two trash generating land uses: residential (high density and mixed urban) and commercial. Reducing the number of priority land uses would still reduce the discharge of trash from a municipality and reduce the number of treatment and institutional controls that would need to be implemented by permittees in California.

In addition, the Reduced Land Use Alternative would provide consistency statewide, establish a water quality objective, and prevent some trash from entering state waters; however it would not reduce the discharge of trash as much as the final Trash Amendments would. The final Trash Amendments focus on controlling the discharge of trash from more high trash generating areas than this alternative would, namely: high-density residential, commercial, industrial, mixed urban, and public transportation station land uses.

By reducing the number of implementation measures necessary for compliance, the potential environmental impacts of this approach would also be reduced. The reduction in impacts could include less noise and vibrations from installation and maintenance of full capture systems, comparatively fewer emissions of criteria pollutants, carbon monoxide, and greenhouse gases due to the reduced amount of construction and installation of full capture systems, and less impact to land disposal sites. This Alternative, however, would not be as protective of beneficial uses as the final Trash Amendments would be, because land uses such as industrial land uses, would not be captured. The goals of the project to protect beneficial uses and reduce the discharge of trash would only be partially achieved under this alternative. For these reasons, the State Water Board determines that this is not the preferred alternative.

8.6 Reduced NPDES Permittee Alternative

The Reduced NPDES Permittee Alternative would reduce the number of permits with specific trash-control requirements. While the Reduced NPDES Permittee Alternative would establish a water quality objective, and prevent some trash from entering State Waters, it would not reduce the discharge of trash as much as the final Trash Amendments. The final Trash Amendments focus on controlling the discharge of trash from the dominant transport pathway – storm water. Thus, the final Trash Amendments require implementation provisions to be incorporated into NPDES permits, namely the MS4 Phase I, MS4 Phase II, Caltrans, IGP, and CGP.

The potential for the transport of trash via storm water to receiving water bodies is highest among the MS4 Phase I, MS4 Phase II, and Caltrans permittees due to the combination of land use types, area of land, and number of people within these MS4 permittees' respective jurisdictions. At present, the IGP and CGP already contain components of the final Trash Amendments. Specifically, the IGP has a prohibition of discharge of preproduction plastics, and the CGP contains a prohibition of discharge of any debris from construction sites. Therefore, the Reduced NPDES Permittee Alternative would focus specific requirements for trash in MS4 Phase I, MS4 Phase II, and Caltrans permits.

In this alternative, comparatively fewer permittees would be required to institute increased trash controls. To this end, programmatically is it is possible that there would be reduced environmental impacts. The reduction in impacts may include less noise and vibrations from installation and maintenance of full capture systems, comparatively fewer emissions of criteria pollutants, carbon monoxide, and greenhouse gases due to the construction and installation of full capture systems, and less impact to land disposal sites. At a programmatic level, the potential environmental impacts may be slightly reduced with the Reduced NPDES Permittee Alternative. This Alternative, however,

would not be as protective of beneficial uses, as trash from light industrial facilities would not be removed from storm water. The goals of the project to protect beneficial uses and reduce the discharge of trash would only be partially achieved under this Alternative. For these reasons, the State Water Board determines that this is not the preferred alternative.

9 WATER CODE SECTIONS 13241 AND 13242 AND ANTIDEGRADATION

California Water Code section 13241 requires assessment of specific factors when adopting water quality objectives. These factors consist of:

- Past, present, and probable future beneficial uses of water.
- Environmental characteristics and water quality of the hydrographic unit under consideration.
- Water quality conditions that could be reasonably attained through coordinated control of all factors affecting water quality.
- Economic considerations.
- The need for developing new housing.
- The need to develop and use recycled water.

The final Trash Amendments would alter existing water quality objectives for state waters; therefore, CWC section 13241 does apply to these final Trash Amendments.

9.1 Past, Present and Future Beneficial Uses of Water

The presence of trash impairs the established beneficial uses present in basin plans and the Ocean Plan, as discussed in Section 1 and Appendix A.

The final Trash Amendments, including the water quality objective for trash, would protect all beneficial uses in state waters. The final Trash Amendments support the Water Boards' existing water quality control plans and policies, and provide a better means to ensure that any future beneficial uses are also protected from trash impairments.

9.2 Environmental Characteristics and Water Quality of the Hydrographic Unit Under Consideration

The final Trash Amendments apply to all waters of the state. More specifically, the final Trash Amendments are primarily focused on areas of high trash generation within the jurisdictions of NPDES MS4 Phase I and MS4 Phase II municipalities, Caltrans, and facilities and sites covered under the IGP and CGP. The environmental characteristics of all hydrographic units affected by the final Trash Amendments are described in Section 3.

9.3 Water Quality Conditions that Could Reasonable be Attained Through Coordinated Control of All Factors Affecting Water Quality

The Water Boards are required to ensure that all discharges, regardless of type, comply with all water quality control plans and policies. The proposed water quality objective for trash can be implemented through a prohibition of discharge to all surface waters of the state, with the exception of those waters within the jurisdiction of the Los Angeles Water Board with trash or debris TMDLs that are in effect prior to the effective date of the Trash Amendments. Compliance of the prohibition of discharge would be specified through NPDES permits issued pursuant to section 402(p) of the Federal Clean Water Act, WDRs, and waivers of WDRs.

9.4 Economic Considerations

Under the requirements of Water Code sections 13170 and 13241, subdivision (d) and 23 CCR section 3777, subdivisions (b)(4) and (c), the State Water Board must consider economics when establishing water quality objectives. This consideration of economics is not a cost-benefit analysis, but a consideration of potential costs of a suite of reasonably foreseeable measures to comply with the final Trash Amendments. This economic analysis utilized two basic methods to estimate the incremental cost of compliance for permitted storm water discharge: the first method was based on cost of compliance per capita, and the second method was based on land cover.

This economic analysis estimated the incremental annual cost to comply with the requirements of the final Trash Amendments ranged from $4 to $10.67 per year per capita for MS4 Phase I NPDES permittees and from $7.77 to $7.91 per year per capita for smaller communities regulated under MS4 Phase II permits. For IGP facilities, the estimated compliance cost is $33.9 million or $3,671 per facility. To comply with the final Trash Amendments, expenditures by Caltrans are estimated to increase by $34.5 million in total capital costs and $14.7 million per year for operation and maintenance of structural controls.

The full economic consideration is described in Appendix C.

9.5 The Need for Developing Housing

The adoption of the final Trash Amendments is not expected to constrain housing development in California. The implementation requirements of the final Trash Amendments would need to be incorporated into the CGP and requirements for new urban development within MS4 Phase I or MS4 Phase II Permits. The trash requirements are anticipated to be minimal in cost to the overall costs of development. Additionally, the incorporation of trash treatment controls during the construction and development of storm drain inlets in new housing developments would be lower in cost than retrofitting storm drains with trash treatment controls. As a result, the final Trash Amendments would not interfere with the need for developing new housing.

9.6 The Need to Develop and Use Recycled Water

The adoption of the final Trash Amendments is not expected to restrict the need to develop and use recycled water. Currently, there are no restrictions on recycling of water due to trash. Therefore, the final Trash Amendments and possible alternatives are consistent with the need to develop and use recycled water. Removing trash from the wastewater should be beneficial to the recycled water treatment process.

9.7 Water Code Section 13242

California Water Code section 13242 requires that the program of implementation for achieving the water quality objective within the final Trash Amendments include a description of the nature of the actions which are necessary to achieve the objective, time schedules for actions to be taken, and a description of surveillance to be undertaken to determine compliance with the water quality objective. In compliance with CWC section 13242, the final Trash Amendments include a prohibition of discharge

and program of implementation in order to achieve the objective, time schedules for compliance, and monitoring and reporting requirements - all as described in Section 2 as well as Appendix D for the Ocean Plan and Appendix E for the ISWEBE Plan.

9.8 Antidegradation

Federal and state antidegradation policies found at 40 CFR section 131.12 and in State Water Board Resolution No. 68-16, respectively, impose levels of protection for state waters depending on the highest quality of the receiving water at issue since 1968 – the year that the State Water Board adopted California's antidegradation policy. Where a receiving water is of higher quality than applicable water quality standards, that higher quality must be maintained unless certain conditions are met.

The State Water Board does not anticipate any degradation of water quality as a result of the adoption and implementation of the final Trash Amendments. Upon adoption of the final Trash Amendments, the state would, for the first time, have a water quality objective for trash and implementation provisions that would apply to all surface waters of the state, with the exception of those waters within the jurisdiction of the Los Angeles Water Board with trash or debris TMDLs that are in effect prior to the effective date of the final Trash Amendments. The final Trash Amendments would not result in a degradation of water quality standards in those waters, as the existing TMDL provisions are more stringent than the final Trash Amendments.

Furthermore, the San Francisco Water Board's San Francisco Bay MRP (Order No. R2-2009-0074) requires MS4 permittees to develop and implement "Short-Term Trash Load Reduction Plans". This includes implementation of a mandatory minimum level of trash capture; cleanup and abatement progress on a mandatory minimum number of trash hot spots; and implementation of other control measures and best management practices, such as trash reduction ordinances, to prevent or remove trash loads from MS4s to attain a 40% reduction in trash loads by July 1, 2014. The San Francisco Bay MRP has an existing set of annual monitoring and reporting requirements. The required trash load reduction through the Short-Term Trash Load Reduction Plans does not conflict with the implementation provisions set forth in the proposed final Trash Amendments. The San Francisco Water Board can determine a San Francisco Bay MRP permittee implementing controls substantially equivalent to Track 2 has a submitted an implementation plan that is equivalent to the implementation plan requirement in the Trash Amendments. As such, the proposed final Trash Amendments would not result in a degradation of water quality standards in waters regulated by the San Francisco Bay MRP, because the final Trash Amendments are at least as protective of water quality as the San Francisco Bay MRP.

As a result, the adoption and implementation of the final Trash Amendments would not lead to the degradation of any water quality standards, and would instead enhance water quality across the state.

10 SCIENTIFIC PEER REVIEW

California Health and Safety Code section 57004 requires external scientific peer review of the scientific basis for any rule proposed by any board, office or department within CalEPA. Scientific peer review is a mechanism for ensuring that regulatory decisions and initiatives are based on sound science. Scientific peer review also helps strengthen regulatory activities, establishes credibility with stakeholders, and ensures that public resources are managed effectively. Scientific peer review on the scientific elements of the proposed Trash Amendments and Draft Staff Report was conducted through an Interagency Agreement between CalEPA and the University of California. The Peer Review process commenced on March 10, 2014 with a Request for External Scientific Peer Review and concluded on July 14, 2014. Three peer reviewers were selected and participated in reviewing the scientific elements of the Draft Staff Report. Peer Review was overall supportive of the proposed Trash Amendments and Draft Staff Report with recommendations to strength the scientific basis of the analysis. The proposed Final Staff Report contains the additional scientific studies recommended following Peer Review.

The three peer reviewers are following:

- Tamara Galloway, Ph.D.
  Professor of Ecotoxicology
  College of Life & Environmental Sciences
  University of Exeter
- David Barnes, Ph.D.
  Professor, Civil & Environmental Engineering
  College of Engineering and Mines
  University of Alaska
- Detlef Knappe, Ph.D.
  Professor, Department of Civil, Construction, & Environmental Engineering
  North Carolina State University

The Peer Review response is available at:
http://www.waterboards.ca.gov/water_issues/programs/peer_review/trash_control/

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