Appendix J
Regulatory Requirements Technical Memorandum

Santa Monica Bay Beaches Wet Weather Bacteria TMDL Implementation Plan

Technical Memorandum Task 3: Regulatory Requirements

To: *Morad Sedrak, City of Los Angeles Watershed Protection Division*
Representing Jurisdiction 2 and 3 Agencies

From: *Michele M. Pla, CH:CDM*
Hampik Dekermenjian, CH:CDM
Dave Jones, CH:CDM

Date: *July 22, 2004*

1.0 Introduction

The purpose of this memorandum is to provide an understanding of the regulatory issues that need to be considered to determine the feasibility of treatment and management options currently being considered for compliance with the TMDL.

This memorandum defines the Clean Water Act criteria for compliance with the TMDL. In addition the memorandum also includes information about specific local applicable regulations including planning, public works and zoning codes which should be considered, and state and federal regulations which cover the planning, siting and development of facilities which are under consideration in order to comply with the TMDL.

The implementation options for management of the urban wet weather and for complying with the TMDL include institutional options, on-site options and regional options. In general the regulatory issues associated with these options can be categorized as regulations that govern the construction and/or the operations of a specific option or the regulations which govern the use or disposal of the product or effluent of a treatment process. The organization of the memorandum will first discuss compliance with the TMDL, outline the implementation options and then discuss the application of local, state and federal regulations as they apply to the implementation options. The memorandum contains several tables to help organize and categorize these many regulations. The local regulations that govern the options are shown on Table 2, the state and federal regulations are on Table 3. Table 1 provides the citations of the codes or ordinances for the three cities and the County.

In general the project proponents should approach permit and regulatory agencies as soon as they have a specific project in mind. Beginning to work early with permit agencies is critical, so that CEQA or project description documentation can take into account the specific regulator's concerns, and can address issues related to codes, ordinances, regulations and laws. Actually obtaining a permit can take anywhere from three to twelve months (not

including the time to plan, provide CEQA documentation, and design the facility). Therefore, to shorten the process it is important to have early and frequent communication with the regulator, depending on the degree of complexity of the project.

2.0 Background

The CH:CDM team is assisting Jurisdiction groups 2 and 3, which consist of the Cities of Los Angeles, Santa Monica, and El Segundo; the County of Los Angeles; and the California Department of Transportation (Caltrans) in developing an Implementation Plan to address the requirements of the Santa Monica Bay Beaches (SMBB) Wet Weather Bacteria Total Maximum Daily Load (TMDL). The Implementation Plan will incorporate input from multiple agencies, as well as other affected stakeholders; and will consider and build on other planning efforts that are currently in progress under the City of Los Angeles' Integrated Resources Plan (IRP). The Implementation Plan will use an integrated water resources management approach that will address multiple pollutants, identify beneficial use opportunities, and integrate multiple agencies in its overall solution. There are seven jurisdictions, organized by watersheds, that are impacted by this TMDL. Of these seven jurisdictions, the City of Los Angeles is the lead agency for Jurisdiction 2 and is a participant in three other Jurisdictions (1, 3 and 7). The City of Santa Monica is the lead agency in Jurisdiction 3 and is a participant in Jurisdiction 2. This technical memorandum (TM) pertains to the joint implementation planning effort for Jurisdictions 2 and 3 (see Figure 1).

In support of the City of Los Angeles' efforts to prepare the Implementation Plan, the CH:CDM team is under contract with the City of Los Angeles to provide the following 11 tasks:

- Task 1: Assist with TMDL Development Planning
- Task 2: Provide Staff Support for the Development of an Integrated Implementation Plan
- Task 3: Regulatory Requirements
- Task 4: Detailed Hydrologic Study
- Task 5: Beneficial Use Evaluation
- Task 6: Treatment and Management Options Evaluation
- Task 7: Coastal Collection System Evaluation and Conceptual Alternatives
- Task 8: Research Potential Sites for Collection, Treatment and Diversion Facilities
- Task 9: Analysis of Implementation Alternatives
- Task 10: Prepare TMDL Implementation Plan
- Task 11: Task Management

Currently, the CH:CDM team is also involved in the preparation of the City of Los Angeles' IRP. As part of the IRP, the CH:CDM team and the City of Los Angeles developed a number of Interim Deliverable reports. This TM builds upon Volume 3, Runoff Management, which was prepared by the CH:CDM team and the City of Los Angeles and released in August 2003.

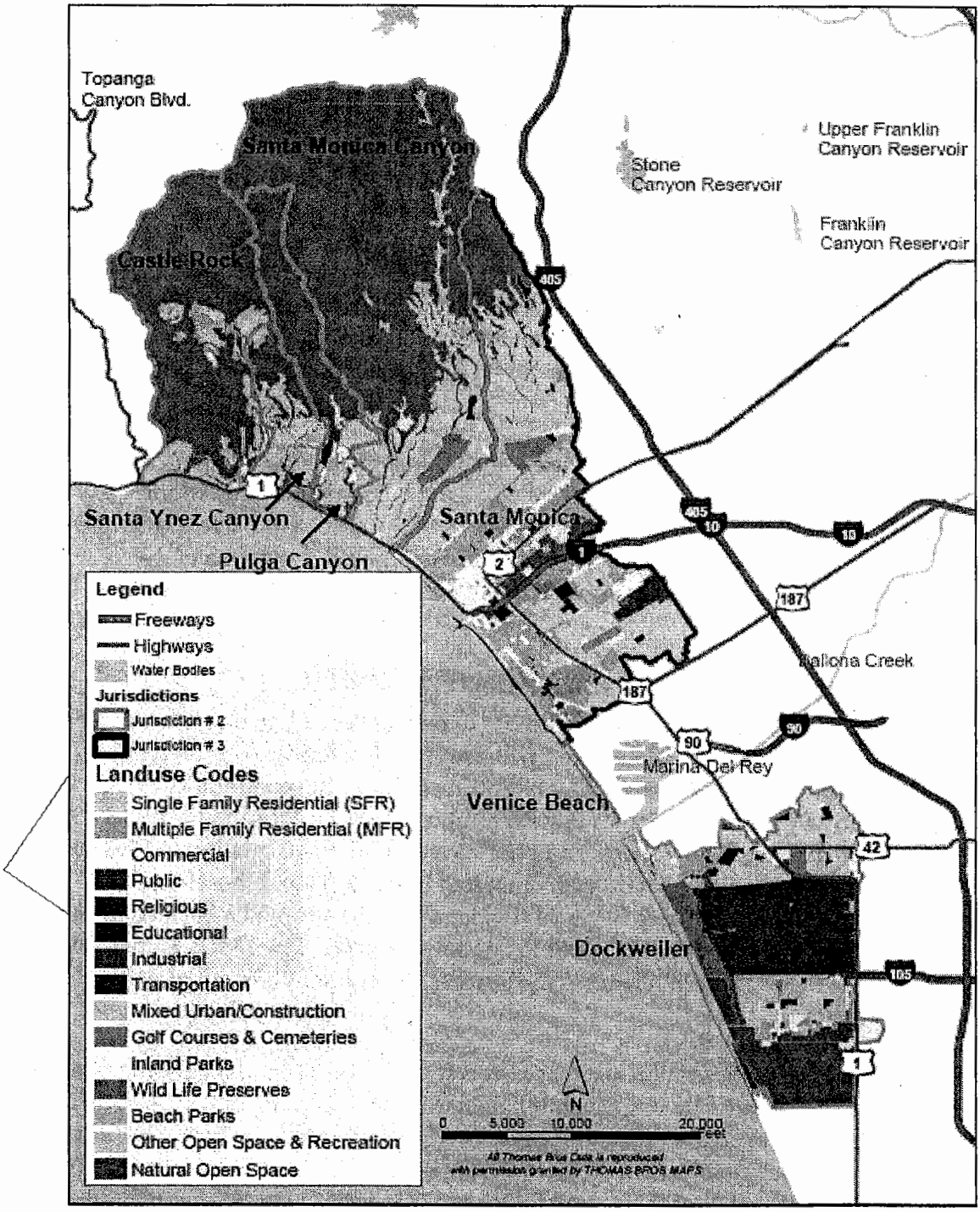

Figure 1. Jurisdictions 2 and 3 Subwatersheds and Land Use

General Objectives of a TMDL

A TMDL is an allotted pollution budget for a waterbody. A TMDL is prepared for a specific waterbody or segment of a water body when a pollutant or stressor is impairing the designated uses of that waterbody or causing it to exceed water quality objectives. If a waterbody is impaired for a specific pollutant or stressor, it is then listed on an impaired waters list. The impaired waters list, also known as the 303(d) List for the section of the Clean Water Act that requires it, is developed by the State and accepted by the United States Environmental Protection Agency (USEPA). The 303(d) List includes the waters, the impairing pollutants or stressors, and the probable sources of these pollutants.

A TMDL, in the most basic sense, allocates the amount of a specific pollutant load that a water body can receive while meeting water quality objectives and protecting designated uses of the water body. The TMDL consists of the acceptable pollutant load from point and non-point sources (load and wasteload allocations respectively) plus a margin of safety to account for uncertainty in data.

The TMDL allocation does not have to be a "daily" load but is often a mass load or total concentration of pollutants allowed in the water body. In the case of the Santa Monica Bay Bacteria TMDL, the numeric target is based on adopted concentrations of bacteria which meet the public health levels of acceptable risk. The allocation is expressed in terms of the maximum number of days per year in which the target may be exceeded for the beaches' receiving waters.

Objectives of the SMBB Wet Weather Bacteria TMDL

The goal of the SMBB Wet Weather Bacteria TMDL is to reduce the risk of illness associated with swimming in marine waters contaminated with bacteria. Currently, over 55 million beachgoers visit the SMBB and spend over $1.7 billion annually in the community. An epidemiological study by the Santa Monica Bay Restoration Project established a causal relationship between adverse health effects and poor recreational water quality. In 1998 and in 2002, the 303(d) List showed that SMBB were impaired by bacteria and therefore the Regional Water Quality Control Board, Region 4 (Regional Board) adopted a bacteria TMDL in December 2002, which was approved by USEPA on July 15, 2003. The TMDL is intended to specifically control the bacteria that reaches the beaches during or as a result of wet weather runoff events.

A "reference system / anti-degradation approach" was incorporated into the allocation and will continue to be used through the implementation period. The reference sites, Leo Carrillo Beach and its associated drainage area, as well as Arroyo Sequit Canyon, are sites that are similar in physical and bacteriological makeup to the SMBB. These sites will serve to ensure that bacteriological water quality of the Santa Monica Bay beaches is at least as good as that of the reference sites and that no degradation of existing bacteriological water quality is permitted. Currently, stormwater runoff conveyed by storm drains and creeks from undeveloped areas are the primary sources of elevated bacteria levels during wet weather, and the reference site reflects these variations as well.

The TMDL requires that the nearshore waters of SMBB reach water quality targets that will ensure that risk of bacteriological illness is no greater than the USEPA's "acceptable health risk" of 19 illnesses per 1000 swimmers, or less than a 2 percent risk of illness.

Specific Criteria for Compliance

Compliance with the SMBB Wet Weather Bacteria TMDL numeric criteria includes the following targets:

Rolling 30-day Geometric Mean Limits:

- Total Coliform density shall not exceed 1,000/100 ml
- Fecal Coliform density shall not exceed 200/200 ml
- Enterococcus density shall not exceed 35/100 ml
- Geometric mean targets may not be exceeded at any time

Single Sample Limits:

- Total Coliform density shall not exceed 10,000/100 ml
- Fecal Coliform density shall not exceed 400/100 ml
- Enterococcus density shall not exceed 104/100 ml
- Total Coliform density shall not exceed 1,000/100 ml if the ratio of fecal-to-total exceed 0.1

An exceedance is demonstrated when the average of samples taken within the past 30 days exceeds the target limit or when any single sample exceeds the target limit.

The TMDL establishes the critical condition as the 90th percentile 'storm year' in terms of wet days. This designation of the 90th percentile year as the reference year avoids a situation where the reference beaches are frequently out of compliance. The allowable number of exceedance days is set such that:

(1) Bacteriological water quality at any site is at least as good as at the designated reference site.

(2) There is no degradation of existing shoreline bacteriological quality.

For Jurisdictional groups 2 and 3 beach sites, the final allowance of wet weather exceedence days is 17 except at Venice City Beach at Windward Ave. which is 13 days.

Primary jurisdictions are identified within the Santa Monica Bay watershed, each with a group of associated subwatershed and beach monitoring locations. Responsible jurisdictions are required to conduct daily or systematic weekly bacterial sampling in the wave wash at all major drains and creeks or at existing monitoring stations at beaches to determine compliance. The primary jurisdiction is responsible for submitting the implementation plan, which will determine the implementation timeframe for the watershed.

The TMDL acknowledges that there are two broad approaches to implementation :

- Integrated water resources approach (preferred approach): This approach takes a holistic view of regional water resources by integrating planning focused on beneficial re-uses of stormwater

- Non-integrated water resources approach: This approach looks at the specific watershed in isolation

The integrated water resources approach is preferred because it recognizes that there may be a background source of bacteria, which may contribute to exceedance of sample objectives during wet weather. The City of Los Angeles and the members of the Jurisdictional Groups 2 and 3 also agree that an integrated approach would be the most cost-effective and efficient approach to this problem.

If an integrated water resource approach is pursued, the watershed must achieve 10 percent cumulative percentage reduction from the total exceedance-day reduction within 6 years, a 25 percent reduction within 10 years, and a 50 percent reduction within 15 years of the effective date of the TMDL. Final implementation targets must be achieved no later than 18 years after the TMDL's effective date.

If an integrated water resources approach is not pursued, each jurisdictional group must achieve a 25 percent cumulative percent reduction from the total exceedance-day reduction within 6 years, and a 50 percent reduction within 8 years of the effective date of the TMDL. Final implementation targets must be achieved no later than 10 years after the TMDL's effective date.

After consideration of the implementation plans, the Regional Board shall amend the TMDL at a public hearing and adopt an individual implementation schedule for each jurisdiction.

The regulatory tools used to enforce the TMDL (including the implementation plan) are discharge permits: both Federal National Pollution Discharge Elimination Permits System (NPDES) under the Clean Water Act (section 402(p)), and State Waste Discharge requirements under the California Water Code (sections 13267, 13263 and 13291). These permits include the Los Angeles County Municipal Stormwater (MS4) NPDES Permit, and the Caltrans Stormwater Permit.

3.0 Runoff Management Options

There are three primary implementation options available to the Jurisdictional Group 2/3 agencies to achieve the waste load allocations and water quality requirements of the TMDL:

1. Institutional Options

Institutional options are intended to prevent/reduce levels of bacteria, or bacteria sources (e.g. garbage/trash) from initially being picked up by runoff whether on-site, in the curb/street, or in the storm drain system. They generally do not reduce the amount of flow or

volume to be managed, but may reduce bacteria levels. They generally consist of "programmatic" efforts such as education and implementation of "good housekeeping" practices for individuals, businesses, and industry. Examples of these options are pet waste programs and restaurant education/inspection programs for areas near the beach.

2. On-site Options

On-site options consists of land use and technology practices which are implemented on the site of the wet weather urban runoff to retain, attenuate, percolate, reuse or otherwise prevent the high rate of wet weather urban runoff. These on-site solutions are often referred to as structural best management practices (BMPs).

2. Regional Options

Regional options refer to diversion, collection and treatment of the urban stormwater runoff from a watershed or sub-watershed. These regional options include:

- Treatment and Reuse or Discharge

  This refers to diverting water from the stormwater collection system, prior to discharge, to a dedicated wet weather treatment facility or infiltration/recharge system. The effluent from the treatment facility could be reused either for irrigation supply or for groundwater injection supply, discharged directly to a surface water or to the stormwater collection system for eventual discharge into a surface water.

- Diversion to the Publicly Owned Treatment Works (POTW)

  This refers to the diversion of the urban wet weather runoff from the stormwater collection system to existing POTW(s) for treatment and either reuse (irrigation supply or injection into groundwater) or direct discharge to surface waters.

Based on the work completed for Tasks 4, 5 and 6, the following framework of wet weather runoff management options is emerging for Jurisdictions 2 and 3:

1. Institutional Options
2. On-Site Options:

   a) cisterns

   b) on-site storage and reuse opportunities

   c) infiltration options

3. Regional Options:

   a) diversions to the wastewater treatment plant

b) treatment for either discharge or reuse as irrigation supply

c) treatment for use as a possible supply for injection at West Basin

d) use of extended 1-mile outfall at the Hyperion site

On-Site Options

Cisterns

Rain barrels and cisterns are low-cost water conservation devices that can be used to reduce runoff volume and, for smaller storm events, delay and reduce the peak runoff flow rates. They divert and store runoff from impervious roof areas.

Individual cisterns can be located beneath each downspout, or the desired storage volume can be provided in one large, common cistern that collects rainwater from several sources. Pre-manufactured residential-use cisterns come in sizes ranging from 100 to 10,000 gallons.

Not all of the rainfall that is collected can be used for irrigation. If the rainfall occurs when the cistern is full, it will be discharged to the local stormwater collection system. The effectiveness of a cistern is dependent on cistern size, roof area, landscape area, rainfall amount, and rainfall interval.

Underground Storage and Reuse

This option involves capturing runoff from areas other than, or in addition to, rooftops and storing it for subsequent reuse on-site. This option could also include some treatment (such as chlorination) and would require careful management and consideration of water distribution systems.

The potential sites for this type of system would be public parks, government facilities, or schools at which the runoff could be reused for irrigation without meeting full Title 22 treatment standards (requiring filtration and disinfection). The landscape maintenance could involve a controlled subsurface distribution system (i.e., no sprinkler system) so that direct public contact is essentially eliminated. In addition to chlorination, treatment options could include trash/gross solids removal and removal of oil and grease, where needed, to minimize operational problems.

For this type of project, an underground storage area would be excavated and lined; as noted, initial treatment could be required to remove trash, oil, and grease. Wet weather runoff would be directed to the underground system by either conveyance piping or through infiltration of the surface soil, or a combination of both. The runoff would be stored in the underground system and could be pumped and used for on-site irrigation. Each system would be designed and sized to collect and treat runoff (from either on-site or additional street areas) and stored underground in a system sized to appropriately supply a percentage of the irrigation demand.

On-Site Infiltration

On-site infiltration involves capturing runoff at the site where it is generated and storing it in a basin or structural feature of some type where it can infiltrate to the local groundwater. While it reduces the amount of runoff from a site, it does not store the runoff for on-site irrigation use as with rain barrels and cisterns. Types of on-site infiltration BMPs include porous pavement, infiltration trenches and swales, french drains, and dry wells.

Infiltrating runoff requires that the soils are permeable enough to allow percolation into the underlying groundwater basin in a reasonable time and without excessive mounding or surfacing. Since the groundwater aquifer under Jurisdictions 2 and 3 is largely confined, it is unlikely that there is significant opportunity for groundwater recharge through on-site infiltration projects. There is the potential, however, for some runoff to infiltrate into the top layers of soil, where it will reduce the overall runoff volume leaving the site. Sandy or sandy loam soils have the highest percolation rates (infiltration capacity). Clay soils tend to have the lowest infiltration capacity. The clay in poorly draining soils quickly expands when wet and prevents further percolation.

Of the 9,000 acres of soil with good infiltration capacity, much of this area is either along the coastal sands or in the steep, mountainous terrain of the Santa Monica Canyon. The steep, mountainous terrain is not appropriate for on-site infiltration projects because there is no development or urban land use that generates runoff; and these areas are too far upstream of the desired runoff concentration points. The coastal sand areas, however, may provide opportunities for localized infiltration and treatment systems. Other limitations may be significant along the coast, including lack of available space and shallow groundwater.

Porous Pavement

Use of porous pavement is one effective way to capture runoff. Several types of porous pavement are described below.

Porous Concrete: This pavement has stable air pockets encased within it that allow water to drain uniformly through the concrete into the ground below, where it can naturally infiltrate. The material becomes stronger and more stable when it gets wet, so it does not deteriorate as quickly as other paving materials.

Grass Pavers: Plastic rings in a flexible grid system are placed on a base of blended sand, gravel and topsoil, then filled with topsoil such as sandy loam and planted with vegetation. This pavement gives designers a turfgrass alternative to asphalt or concrete for such low-traffic areas as firelanes, overflow and event parking, golf cart paths, residential driveways, and maintenance and utility access lanes. The support base and the rings' walls prevent soil compaction and reduce rutting and erosion by supporting the weight of traffic and concentrated loads, while the large void spaces in the rings allow a strong root network to develop. The end result is a load-bearing surface covered with natural grass which is typically around 90 percent pervious, allowing for stormwater pollution filtration and treatment.

Gravel Pavers: This pavement option is intended for high frequency, low-speed traffic areas. The same ring structure as with the grass paver is used, but the voids in the rings are filled with gravel in order to provide greater load bearing support for unlimited traffic volumes and/or parking durations.

Interlocking Concrete Paving Blocks: The shape of these interlocking pre-cast units leaves drainage openings that typically comprise approximately 10 percent of the paver surface area. When properly filled with permeable material, the voids allow for movement of stormwater through the pavement surface into the layers below. The system is a highly durable, yet permeable pavement that is capable of supporting heavier vehicular loads than grass or gravel pavers and it offers the most flexibility in widespread application.

Dry Wells and Bioretention Areas

Dry wells involve adding a grate at the end of the paved area. They are designed to capture and store stormwater until the water percolates into the subsurface soils. They serve the dual purpose of retaining and cleansing runoff and rainwater, giving the water time to percolate into the ground rather than carrying pollutants into the City storm drain system. In general, dry wells are used as a localized BMP for a single site or very small drainage area (like a driveway).

Bioretention areas are an option in which runoff is directed into shallow landscaped depressions. Bioretention is a type of retention grading applicable to large areas. These depressions and the surrounding areas are designed to provide onsite treatment, incorporating many of the pollutant removal mechanisms that operate in forested ecosystems. They are commonly located in parking lot islands, median strips, swales or within small pockets of residential land uses.

Regional Options

Another option for managing wet weather runoff, which involves a regional approach, is treatment and reuse or discharge. This option refers to diverting runoff from the storm drain system to a dedicated runoff treatment facility. Treated effluent from this facility could be discharged back to the storm drain system. From the storm drain system this effluent could then flow to a discharge point. However, it is also possible to reuse this effluent, depending on the quality, volume and market for non-potable water.

In order to divert the flows to a treatment and discharge facility, the runoff would have to be captured and a collection system installed, possibly pumped to the facility, and treated.

Additionally, storage would need to be provided at least equal to the daily volume. The plant would need to be designed to treat that volume in one day in order to be prepared for another storm event the following day.

Reuse as Non-Potable Supply for Irrigation or Other Uses

The City of Los Angeles Department of Water and Power (DWP) and the City of Santa Monica provide water to users within Jurisdictions 2 and 3 and are thus responsible for coordinating recycled water supplies to potential customers. As part of the IRP, the DWP is currently developing a water recycling master plan. The considerations used in developing the master plan include possible modifications, expansions, or additions to the City's wastewater and stormwater conveyance and treatment facilities. The primary focus is

utilizing recycled water for traditional irrigation use. Thus, it is possible that recycled stormwater could be used for irrigation.

Capture, Store, Treat and Inject

This option deals with disposal by injection back into the groundwater table. For a more regional facility, applications will be limited to areas with relatively small drainage areas and appropriate soils conditions. In Venice Beach, for example, there are areas where the profile could include sand, a boardwalk, houses and a street. The runoff from this area could be routed to a treatment system to remove grit and oil and then be routed to an infiltration system located in the sandy area. A typical treatment system would consist of an inlet, a grit chamber, an oil wall separator, and flow control. The infiltration system would consist of a perforated culvert under the boardwalk that could store the runoff until it is infiltrated.

Groundwater Injection

Groundwater injection is a method of groundwater recharge at regional level that not only augments groundwater supplies, but also often serves an additional purpose of protecting the groundwater against seawater intrusion. The water (generally imported and/or reclaimed supplies) is injected through a series of injection wells, thereby creating a pressure ridge that impedes the inland movement of the salt water front and maintains protective groundwater elevations in the aquifers. For this evaluation, groundwater injection is explored as a means to manage wet weather runoff.

Injection of wet weather runoff in an independent system similar to West Basin, which consists of treatment at West Basin Water Reuse Plant and injection , is theoretically possible, but is not feasible due to the variable quality, quantity and overall lack of reliability of wet weather runoff as a source, as well as the extensive permitting and operational issues involved.

Extend Outfall and Discharge to Ocean

This option involves disposing of runoff using ocean outfalls so that beach impacts are minimized. It should be noted that this option is not consistent with the integrated water resources management approach that is a goal of this study. The runoff would be treated solely as a waste without regard to potential beneficial use opportunities.

An outfall system generally consists of an inlet structure, pumps, an outfall pipe, and diffusers to distribute the flow over a wide area to promote dilution. Considerations in designing an outfall system include the outfall length and frequency of use.

Diversion to Wastewater System

Another option for managing wet weather runoff is diversion to the wastewater system for treatment and discharge into the existing outfalls. This option is a current practice for the City for dry weather (low flows). To meet current SMBB Bacteria TMDL requirements, a portion of the estimated wet weather runoff from a maximum rainfall of 0.45 inches in the Santa Monica Bay watershed could be diverted to the wastewater system for conveyance and treatment. In order to divert to the wastewater system, flow would have to be bled into the wastewater system during off peak hours (midnight to 5 AM). Therefore, operational storage would need

to be built. Additionally, the diversions would need to be sized and constructed accordingly. This would require the building of the diversion itself as well as any improvements that may need to be made to the collection system in order to handle the flow.

4.0 Regulatory Requirements

In general, the regulatory issues associated with the above options for management of the urban wet weather runoff and attainment of the TMDL are related to:

- Permitting the construction of on-site treatment systems
- Permitting the construction and operation of regional facilities, and
- Permitting of effluent, whether it be for beneficial reuse or for the discharge of the effluent.

Local Regulations Applicable to Jurisdictions 2 and 3

Since some on-site options may be constructed as private projects, applicable local regulations are summarized in this section. On the other hand, for facilities that will be publicly implemented, public agencies have their own internal processes to design and review projects to ensure that they adhere to these codes.

The installation of on-site solutions or the construction and operation of treatment facilities must be consistent with the regulatory framework of the member agencies within Jurisdictions 2 and 3, such as the Los Angeles County Code, Los Angeles Municipal Code, Santa Monica Municipal Code, and El Segundo City Code. The County and City Codes require that private property owners obtain appropriate permits from County/City departments prior to constructing structural BMPs on their property. Within unincorporated areas of the County of Los Angeles, owners will obtain permits from the County departments, and the incorporated areas will obtain permits from the corresponding City.

The applicable County/City Codes are listed in Table 1 and described below.

Planning and Zoning Code

The purpose of the Planning and Zoning Code is to guide the growth and development of the County/City in accordance with the County/City's General Plan by regulating the location and use of buildings, structures, and land for residential, commercial, industrial, recreational, and other specified uses. This code provision requires that permits be obtained to use property in any manner that requires special consideration (e.g., due to peculiar characteristics of the use; or because of size, technological process or type of equipment; or because of its location with reference to surroundings, street or highway width, traffic generation or other demands on public services).

At the beginning of the construction approval process, the County/City Planning Division reviews plans for development projects and new proposed uses for consistency with various standards including the Zoning Ordinance and the General Plan, and issues planning approval.

Building Code

The Building Code regulates the design, construction, quality of materials, use, occupancy, location, and maintenance of all buildings, structures, grading and certain equipment. The provisions of this Code apply to the construction, alteration, moving, demolition, repair, and use of any building or structure and grading, and require the following permits:

- **Building Permit**: A building permit is required to erect, construct, enlarge, alter, repair, move, improve, remove, convert or demolish any building or structure. A permit is also required for any sandblasting, liquid washing, compressed air cleaning or steam cleaning of exterior surfaces of any building or structure. The building permit does not cover any grading, plumbing, electrical, HVAC, fire sprinkler, pressure vessel, or elevator work that needs to be performed on the building or the site. A separate permit shall be obtained for each of those items.

- **Grading Permit**: A grading permit is required to import or export any earth materials to or from any grading site. A grading permit is also required to perform any grading within areas designated "hillside". Any grading project involving more than 100 cubic yards of excavation and involving an excavation in excess of 5 feet in vertical depth at its deepest point measured from the original ground surface shall be done by a State of California licensed contractor.

- **Combination Building Permit**: A combined building permit allows the permittee to obtain a single permit for all building, electrical, plumbing, heating, ventilating, and air conditioning work in lieu of obtaining separate permits. Combined building permits are only allowed when electrical, plumbing, heating, ventilating and/or air conditioning work is necessary and in conjunction with the building work being performed, and will only be granted for work on single family dwellings and duplexes.

The provisions of this Code do not apply to "work located primarily in a public right of way; public utility towers and poles; certain governmental agencies, special districts and public utilities as determined by the building official; equipment not specifically regulated in this Code; hydraulic flood control structures; or minor work of negligible hazard to life specifically exempted by the building official". The reason for these exemptions is to not require cities to obtain permits for public works projects which are developed primarily by City engineering staff. However, as noted previously, the design and review process for public works projects is intended to ensure that projects are designed to meet the requirements of State and local codes.

Plumbing Code

The Plumbing Code regulates the design, construction, quality of material, and installation of plumbing. The provisions of this Code apply to the construction, alteration, moving, removal, repair and use of any plumbing or drainage work, and the qualification and registration of certain persons performing such work. The following permit is required by the Plumbing Code:

- **Plumbing Permit**: A plumbing permit is required to add, alter, construct, install, move, relocate, reconstruct, repair, or replace any plumbing, rainwater piping, subsurface drainage piping, swimming pool piping, reclaimed water piping, or greywater piping. A plumbing permit is required for all the plumbing work in a relocated building; and no connection to a supply pipe or drainpipe shall be made until such permit has first been obtained from the Department of Public Works.

Again, as noted above, the provisions of this Code do not apply to work located primarily in a public way; work consisting of public utility service piping; certain governmental agencies, special districts and public utilities as determined by the Chief Plumbing Inspector; or work otherwise specifically exempted elsewhere in the Code or by the Chief Plumbing Inspector.

Others

The installation of on-site structural BMPs and the construction of regional runoff management potions could involve work within the County/City road right-of-way. Permits would be required for private projects, or possibly in the case where one public agency intends to construct a project within the right-of-way of another agency or jurisdiction. Three types of permits are generally required for these types of projects:

- Construction Permit: A construction permit is required for the construction of driveways, curb drains, sidewalks, curbs and gutters and other types of surface construction.

- Excavation Permit: An excavation permit is required when any portion of the road right of way, which often includes the portion of land beyond the curb and all the way to the sidewalk, is cut for the purpose of laying down utility lines, installing electrical cabinets, installing poles or constructing manholes.

- Encroachment Permit: An encroachment permit is required when using any part of the road right of way for storing materials, detouring traffic or parking equipment in the street temporarily or long term.

Fire Prevention

The Fire Prevention Office is responsible for enforcement of the Fire Code and fire and life safety provisions of the Municipal Code. In certain occupancy classes, subject to the State Fire Marshal's Regulations, the Fire Prevention Office is responsible for enforcement of nonstructural provisions of the California Building, Mechanical, and Electrical Codes. The Fire Prevention Office performs plan reviews; issues construction and installation permits; and conducts inspections of new construction, fire protection systems, and hazardous processes.

TABLE 1
County and City Code Citations

	County/City regulations				
County/City	**Planning/Zoning Code**	**Building Code**	**Plumbing Code**	**Public Works/Environmental Protection**	**Other**
County of Los Angeles	Title 22 Planning and Zoning	Title 26 Building Code	Title 28 Plumbing Code	Title 12 Environmental Protection, Chapter 12.80 Stormwater and Runoff Pollution Control Title 20 Utilities	Title 32 Fire Code
City of Los Angeles	Chapter I General Provisions and Zoning	Chapter IV Building Regulations, Article 1 Building Code	Chapter IV, Article 4 Plumbing Code	Chapter VI Public Works and Property, Article 4.4 Stormwater and Urban Runoff Pollution Control	
City of Santa Monica	Article 9 Planning and Zoning	Article 8 Building Regulations, Chapter 8.12 Building Code	Article 8, Chapter 8.32 Plumbing Code	Article 7 Public Works, Chapter 7.10 Urban Runoff Pollution Article 7, Chapter 7.04 Streets, Excavations, Sewers, etc.	Article 8, Chapter 8.40 Fire Code
City of El Segundo	Title 15 Zoning Regulations	Title 13 Building Regulations, Chapter 1 Building Code	Title 13, Chapter 5 Plumbing Code	Title 5 Health and Sanitation, Chapter 4 Storm Water and Urban Runoff Pollution Control Title 5, Chapter 7 Standard Urban Storm Water Mitigation Plan Implementation	Title 13, Chapter 10 Fire Code

Issues Regarding Implementation of Options Consistent With the Local Regulations

On-site Options

The installation of on-site solutions requires permitting from the County/City's Planning Division because the use of on-site structural BMPs is relatively new and uncommon, particularly at residential dwellings.

In general, the installation of on-site solutions requires only slight modification to a property. For instance, the installation of cisterns at a single-family residential property involves installing the cistern above-ground and modifying the roof gutter and downspout to direct the rain water to it. Also, the construction of porous pavement and infiltration trenches involves minor earthwork and landscaping. Depending on the size of construction, the property owner would be required to obtain a building permit, a grading permit, a plumbing permit, and possibly a permit from the local environmental health department if there is a potential for vector or mosquito attraction.

Regional Options

The County/City Codes apply to the regional runoff management options as well. The diversion to wastewater system option involves the construction of diversion structures, and therefore requires approval from the County/City Planning and Public Works. In addition, the construction permit, excavation permit, and encroachment permit would be required since most work would be done in the public right-of-way. Any use of the public right of way requires the issuance of a permit by Public Works. The encroachment permit must be obtained from the State of California, Department of Public Works, Division of Highways for permission to excavate, construct and/or otherwise encroach on a state highway. Similar permits are required for the options that involve transmission of treated runoff.

The regional runoff management options that involve treatment and storage require the construction of stormwater treatment and storage facilities. For these options, the building permit and grading permit are required.

For the treatment and reuse option, the plumbing permits would be required at the reuse end, since all users of recycled water would require dual plumbing system for the potable water and the recycled water. The County Code Title 26, Section 7105.6.3 states the following: "The installation of separate water irrigation systems from domestic water supply systems (dual distribution systems) shall be required to allow for the current and future use of recycled water, where recycled water is currently available or is available in the foreseeable future. The recycled water irrigation systems shall be designed and operated in accordance with all local and State Codes. This includes the consideration of the effects of reclaimed water use to the public and to existing slopes, buildings, structures, utility lines and pavements due to deleterious chemicals."

TABLE 2
Local Regulations that Govern Implementation Options for SMBB Bacteria TMDL

Implementation Options	Local Regulations/Permits					
	Building Codes	**Plumbing Codes**	**Planning and Zoning**	**Public Works**	**Environmental Protection**	**Other**
On Site Solutions						
Rain Barrels/Cisterns	Building Permit, Grading Permit	Plumbing Permit	Planning Approval	If using public right of way	N/A	N/A
Porous Pavement	Building Permit, Grading Permit	N/A	Planning Approval	If using public right of way	N/A	N/A
Infiltration Trenches	Building Permit, Grading Permit	N/A	Planning Approval	If using public right of way	N/A	N/A
Treatment , Reuse and Discharge Facility	**Building Permit** **Grading Permit**	**Plumbing Permit**	**Planning Approval**	**Construction In public rights of way**	**NA**	**Fire Code for electrical and access**
Direct Reuse	N/A	N/A	N/A	N/A	N/A	N/A
Groundwater Injection	N/A	N/A	N/A	N/A	N/A	N/A
Discharge to Surface Waters	N/A	N/A	N/A	N/A	N/A	N/A
Diversion to Wastewater System for Treatment at POTW	N/A	N/A	**Planning Approval**	**Construction permits in public right of ways**	N/A	N/A

State and Federal Regulations Governing Implementation Options

There are two major factors that impact whether state or federal regulations would govern the implementation options: 1)**location of the facility** and potential construction and operation impact of the option, and 2) **management of the effluent** .

Location of a Regional Facility

Location of a facility and how construction impacts particularly sensitive locations will determine in what ways a project is subject to a variety of State and Federal resource protection requirements. For example, if the construction impacts coastal access, the State Coastal Act could be invoked. If the construction would impact a navigable water, a United States Army Corps of Engineers (USACE) permit would be needed. If there were impacts to a wetland, a USACE permit would still be required, and the California Department of Fish and Game (CDFG) and the United States Fish and Wildlife Services (USFWS) would likely be involved, as would the RWQCB. Impacts related to location of a facility and construction would be analyzed during an environmental analysis under the California Environmental Quality Act (CEQA).

Location impacts are two fold--impacts related to constructing a facility and impacts related to operating a facility. These impacts should be thoroughly analyzed in a CEQA document for the facility. In the course of defining these impacts, it should be understood that if there is an impact on fish, other aquatic life (either in a wetland or other habitat), or impacts to terrestrial or avian resources, contact should be made with the resource protection agencies so that they can participate and aid in the development of mitigation measures which would be adopted through the CEQA process.

With a completed CEQA document, including descriptions of impacts and mitigation for the impacts, negotiations for permitting and approval for construction and operations of a regional facility can be concluded.

Management of the Effluent

The second major reason why a state or federal regulatory agency would govern the implementation options would be to ensure that the management of the effluent for discharge or for reuse would be consistent with other public health, environmental, and resource protection regulations. The effluent can be discharged either directly or indirectly to a surface water, percolated or injected into groundwater, or directly recycled for a variety of non-potable uses.

If the regional facility requires a new discharge, a new permit and an anti-degradation analysis may also be required. The resource protection agencies would comment on such an analysis with the worse case being a judgement that a threatened or endangered species would be harmed by a new discharge. In all instances other than a new surface or groundwater discharge, permits are already in place that allow stormwater discharges. The following section will discuss the permit requirements for the implementation solutions in

further detail. Table 3 outlines the state and federal regulations and agencies that govern the implementation options under consideration.

TABLE 3
Regulations that Govern Implementation Options for SMB Bacteria TMDL

	State/Federal Environmental Regulations						
Implementation Options	**NPDES Permit**	**Coastal Zone**	**Dept. of Health Services**	**Fish and Game**	**Corps of Engineers**	**Fish and Wildlife**	**Marine Fisheries**
On Site BMPs	**Already approved in Phase I MS4 permit**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Cisterns	Already approved	NA	NA	NA	NA	NA	NA
Porous Pavement	Already approved	NA	NA	NA	NA	NA	NA
Infiltration Trenches	Already approved	If does not create a landslide hazard	If considered groundwater replenishment	NA	NA	NA	NA
Treatment and Discharge Facility	**Already approved in Phase I MS4 Permit**	**If in Coastal Zone – a Public Works Plan**	**NA**	**Depends on location of treatment and discharge**	**Depends on location of treatment and discharge**	**Depends on location of treatment and discharge**	**Depends on location of treatment and discharge**
Direct Reuse	New permit	If in Coastal Zone	Permit Required and must meet Title 22		Depends on location	Depends on location	Depends on location
Groundwater Injection	N/A	NA	New permit				
Discharge to Surface Waters	Potential for Modified permit – if Ocean may need new permit and antidegradation	If Ocean, may need consistency approval and permit	NA	If a new discharge would need approval		If new discharge would new approval	If a new Ocean discharge would need approval
Diversion to Wastewater System for Treatment at POTW	Already approved as long as mass not exceeded	NA	NA	NA	NA	NA	NA

Permit Requirements for Direct Discharge to Waters

Every discharge to waters of the State must have Waste Discharge Requirements (WDR)-- in effect, a discharge permit. Waters of the State includes groundwater. For waters of the United States (i.e., surface waters), a NPDES permit is also required. A NPDES permit is required under the Clean Water Act for discharges into any surface water. The Los Angeles Regional Water Quality Control Board is the state agency responsible for issuing and enforcing these permits under a delegation agreement between the state and USEPA. The NPDES permit incorporates the water quality standards for a specific receiving water, includes effluent limits for traditional point-source discharges or BMPs (e.g., for stormwater discharges) intended to ensure compliance with the water quality standards, and has implementation conditions for the discharge including dilution factors, programmatic schedules, and levels of effort. The NPDES permit is enforceable by the state, by the federal government, and by citizens.

On-Site Solutions

There is already an existing permit for the stormwater discharges for LA County issued by the RWQCB that is a WDR and an NPDES permit. It requires BMPs that meet the Maximum Extent Practicable (MEP) standard to meet stormwater program requirements (under the Clean Water Act). This permit already requires and approves the BMPs for control of pollutants in stormwater (urban wet weather runoff). The development and implementation of various BMPs including on-site solutions considered for control of the bacteria contamination along the SMBB are already an integral element of compliance under the existing MS4 permit.

Treatment and Discharge Solutions

If the City were to capture the stormwater flow, or any portion of the flow, treat it to remove a specific level of bacteria or other pollutants, and then discharge it back into the same storm system, this could be considered consistent with the stormwater permit. This level of treatment could be considered a BMP, and MEP for stormwater, and thus the existing permit, would be sufficient. If this is considered as an option, it would be prudent to discuss it with the co-permittees and with the RWQCB to ensure that they feel comfortable about the interpretation that this is a BMP and already allowed under the permit.

The Santa Monica Urban Runoff Reuse Facility (SMURRF) is a case-in-point that runoff, in this case dry weather runoff, that is captured, treated, and reused is permitted as a BMP. Regulatory compliance for the SMURRF was judged on the basis of the application of best available technology as a BMP covered under the Los Angeles County Municipal Stormwater NPDES Permit.

Treatment and Reuse Solutions

Beneficial reuse can take the form of irrigation as well as industrial use and other non-potable uses. To assure protection of public health where water reuse is involved, the California Department of Health Services (DHS) has been statutorily directed to establish statewide reclamation criteria for the various uses of reclaimed water (Water Code Section 13521). DHS has promulgated regulatory criteria which are currently set forth in the California Code of Regulations, Title 22, Division 4, Chapter 3, 60301 et seq. DHS's regulatory criteria include

numerical limitations and requirements, treatment method requirements, and provisions and requirements related to sampling and analysis, engineering reports, design, operation, and maintenance.

DHS's regulations also permit the granting of exceptions to reclaimed water quality requirements in some cases, call for a case-by-case review of groundwater recharge projects, and allow use of alternative methods of treatment as long as the alternative methods used are determined by the Department to assure equivalent treatment and reliability. Many of the regulatory requirements related to sampling, analysis, engineering reports, personnel, operation, and design are narrative in nature and leave room for discretionary decisions based on the individual project demands.

The RWQCB must also approve the application for beneficial reuse of wastewater (which in this case is stormwater because it contains pollutants). No person may either reclaim water or use reclaimed water until the RWQCB has either issued reclamation requirements or waived the necessity for such requirements (Water Code Section 13524). In the process of issuing reclamation requirements, the RWQCB must consult with and consider recommendations of DHS (Water Code Section 13523). Any reclamation requirements which are issued by the RWQCB, whether applicable to the reclaimer or to the user of reclaimed water, must include or be in conformance with any regulatory reclamation criteria adopted by DHS.

In the case of the SMURRF, a finding was made that the facility itself is a Best Management Practice and that it complies with the Title 22 requirements. A discharge permit was not issued.

Injection of Treated Stormwater into a Groundwater Basin

In order to inject any water into a groundwater basin, at a minimum it should meet Title 22 quality requirements. In many places in Southern California, stormwater is used to recharge aquifers; however, this is done through spreading basins. The spreading and filtration into the aquifer provides additional treatment as the water passes through the soils. This additional treatment is not provided when injection is employed.

Injection into the groundwater basin has been practiced by the County of Los Angeles and other Southern California agencies as a way to develop a salt water intrusion barrier along the coast. The injected freshwater creates pressure ridges along the coastline, thereby preventing salt water from entering and spoiling the aquifers. The three salt water intrusion projects in the County inject a blend of treated imported water and highly treated recycled water meeting Title 22 requirements; the quality of the aquifers is thereby maintained for drinking water purposes.

Recycled water, originating either from stormwater or from effluent, injected into a groundwater basin that is primarily used for a municipal supply, will likely be required to meet drinking water standards prior to injection. These standards include removal of metals, pathogens and other toxics. The West Basin Municipal Water District, the Water Replenishment District of Southern California, and the Orange County Water District all

inject drinking water quality reclaimed water into the groundwater basin. The reclaimed water is intended as a sea water intrusion barrier, and the groundwater basin is a drinking water basin.

Another more recent concern about injection of reclaimed water, especially effluent but also stormwater, is the potential for contamination of a groundwater basin with endocrine disrupters which can be found in effluent and stormwater that receives inflow and infiltration from a wastewater collection system. As a result of this concern, the DHS subjects injection projects to close review, but projects are being approved.

Permitting for Discharge of Stormwater Into Deeper Ocean Waters

The stormwater currently discharged along the coastline is often discharged via channels and pipe to the shoreline of the ocean. Heavy rains can cause a ponding effect, but the intention is that stormwater discharge is to flow into the wave wash and be diluted or seep into the sand. Freshwater is less dense than the salt water of the ocean; therefore, it rides on the waves so that it can be washed up and a swimmer/surfer/wader can more easily come into contact with the contaminated stormwater.

An option for removing the potential for contact is to take the discharge point of the stormwater into deeper waters where it will be more readily mixed and where it will not be taken back into the recreation waters with tides or currents.

The discharge of the stormwater is already permitted. However, the California Ocean Plan regulates discharges into the Pacific Ocean within the three miles of the territorial waters. Beyond three miles, the national Clean Water Act applies, mandating that USEPA will need to issue the permit. In most cases, USEPA has asked the state to jointly issue permits for US waters outside the three-mile zone.

The Ocean Plan has four specific requirements for point source discharges:

- Bacteria standards for discharge state that in waters less than 30 feet deep and bounded by a distance of 1,000 feet from the shoreline, the same bacteria standards apply as those along the shore (1,000 per 100 ml provided that no more than 20 percent from any sampling station in any 30-day period may exceed 1,000 per l00 ml, and that no single sample, when verified and repeated within 48 hours, shall exceed 10,000 per 100 ml).

- The discharge will not violate the physical characteristics of the ocean, such as discoloration, floatables and reduction of light.

- The chemical characteristics of the ocean will not be violated. As listed in the Ocean Plan, these violations include: a depression of oxygen of more than 10 percent, pH of more than 0.02 units, and nutrient materials that cause objectionable growth.

- The discharge must comply with Table B, water quality objectives of the Ocean Plan. This table includes six month, daily, and instantaneous maximums for metals, acute and chronic

toxicity, phenolic compounds, chlorinated phenolics, endrin, HCH and radioactivity. Table B also includes human health criteria for non-carcinogens and carcinogens, which are measured on 30-day averages.

When determining compliance with Table B, actual initial dilution and background concentration are part of the calculation. There are other aspects of the Ocean Plan that state that a discharge may not harm the biological characteristics of the Ocean. Table A of the Ocean Plan applies to effluent discharges only.

The Ocean Plan contains specific implementation requirements for permitting discharges. Stormwater can be discharged into the Ocean if, with dilution, it can meet the water quality standards as contained in Table B and the implementation requirements contained in other parts of the Plan. An ambient water quality monitoring program may be required in a discharge permit.

In addition, if the stormwater discharge were located a distance from the shoreline, an anti-degration analysis may be necessary, as this would be considered a "new discharge." Because this would be an intermittent and occasional discharge that occurs only in wet weather, it may be possible to negotiate with the Regional Board to allow the existing stormwater permit to be applicable for ocean discharge. This may especially be possible if the discharge is within 1,000 feet of the shoreline and in water more shallow than 30 feet. I am not aware of any case in California where stormwater only is discharged beyond the wave wash. San Francisco discharges combined sewage into the ocean 4 miles offshore. This discharge is governed by the Ocean Plan Table B and is combined in the same outfall with effluent, which is governed by Tables A and B. The San Francisco discharge is not disinfected, but that is only due to dye and current studies that show that the discharge will not come back into recreational waters.

Diversion to POTW

The City of Los Angeles also has several NPDES permits for the POTW that it owns and operates. Should the choice be to divert wet weather urban runoff to the POTW, the existing permits could cover this additional discharge as long as it does not exceed a mass limit established by the permit or any subsequent TMDL. If there were a potential to exceed the mass limit during wet weather, it may be possible to negotiate a change to that permit for these wet weather periods only. This would depend on what pollutant limit is exceeded and whether the receiving waterbody is considered impaired for this pollutant.

State Coastal Zone Requirements

If the location of the implementation options are in the coastal zone, and are not already regulated by the local coastal plan or the local zoning plan, there may be a review and subsequent permitting under the State Coastal Act. For the on-site solutions, it is unlikely that any state regulation or requirement would come into play. Likewise, the option of diversion to the POTW would not require any new structure or impact on the local coastal resources which are protected under the State and Local Coastal Plans. If the choice is to treat and discharge or reuse, requiring new facilities within the coastal zone, a Public Works Plan (a

permit consistent with the State and Local Coastal Plan) would be required. The Public Works Plan would ensure that access to the coast is not impeded by the construction or operations of the facility, and that other natural coastal resources are not harmed. In most cases, the issue of impacts on coastal resources would be thoroughly analyzed in a CEQA document and if there were impacts, mitigation measures would be developed. The Coastal Commission's Public Works Plan would then incorporate these mitigation measures in a regulatory action to ensure implementation and compliance. Although this is an administrative and ministerial action on the part of the State Coastal Commission, and is not controversial or time consuming, it does take coordination and attention consistent with the CEQA analysis so that this agency is aware of the proposal and able to most efficiently issue a Public Works Plan.

Input from Resource Protection Agencies

The three main resource protection agencies that may weigh in on an implementation solution (especially a regional approach) are the CDFG, USFWS, and the NOAA Fisheries in the Department of Commerce. These agencies are especially concerned about impacts of the regional facility and the effluent from the regional facility on the fish, and the marine life that fish depend on, and on wildlife that depend on marine and wetland habitats. Unless the on-site solutions are causing a wetland or other habitat to dry up, then it is unlikely that these agencies would be concerned with the on-site solutions.

United States Army Corps of Engineers Permit Requirements

The USACE has regulatory authority over navigable waters and issues permits for construction in these waters, including under Section 404 of the Clean Water Act, pertaining to the dredging and or filling of wetlands. Again, it is unlikely that the on-site BMPs will require any of the USACE's permits or attentions. For a regional facility, if the construction will impact the navigability of water or require dredging or filling of wetlands, the USACE will be involved. As with the resource agencies, the USACE should be involved in discussion during the CEQA evaluation so that impacts can be clearly described and potential mitigation measures can be jointly developed. With the completion of the CEQA document, the USACE will begin permit negotiation.

If a wetland is involved, Section 404 of the CWA will be invoked. The RWQCB, the USEPA, and the resource agencies mentioned above (CDFG, USFWS, and NOAA Fisheries) will participate with the USACE to develop and issue a permit. If filling a wetland is contemplated, the policy of "no net loss" will be invoked and offsets will be necessary. The RWQCB would require a public hearing on a wetland-related permit, as fill or discharge would need both NPDES and WDR permits as well as Section 404 permits.

Issues Regarding Implementation of Options Consistent With the State and Federal Regulations

On-site BMPs are already permitted under state and federal regulations. Only in an extreme situation in which the on-site solution would have the potential to damage a natural resource

protected by a state or federal resource agency, (e.g. a wetland) would it be considered necessary to go beyond the existing permits.

However, for the regional solutions which involve treatment, discharge, or reuse, the state and federal regulations would be applicable if :

- The location of the regional facility impacts the natural aquatic, terrestrial or avian resources protected by the state and federal resource protection agencies.
- The location of the regional facility is in the Coastal Zone, thereby requiring a local planning and zoning approval and a Public Works Plan for the Coastal Commission.
- The location of the facility requires construction in a wetland, requiring dredging and filling of a wetland which would involve the USACE, and the state and federal water quality and resource protection agencies.
- A new surface water discharge is developed for the product (effluent) of the regional facility requiring a new NPDES permit, and potentially an anti-degradation analysis.
- The product or effluent of the regional facility is reused as a non-potable water supply either directly or after storage in an aquifer where it is injected. This would require the RWQCB and DHS to permit the reuse and the groundwater replenishment.

5.0 Conclusion

This TM has provided a summary of applicable regulations as the implementation plan is in the development stages. There are regulations that would be applicable for all of the proposed runoff management options. Early communication and engagement with local, state, and federal regulatory agencies, as well as clear descriptions and full and thorough CEQA documentation, will ensure that permits and approvals for the SMBB Wet Weather Bacteria TMDL implementation solutions are expedited.