# Appendix R

# Environmental Analysis and Checklist

*This page intentionally left blank.*

# APPENDIX R: ENVIRONMENTAL ANALYSIS AND CHECKLIST

## R.1 California Environmental Quality Act Requirements

The California Regional Water Quality Control Board, San Diego Region (San Diego Water Board) must comply with the California Environmental Quality Act (CEQA) when amending the Water Quality Control Plan for the San Diego Basin (Basin Plan) as proposed in this project to adopt total maximum daily loads (TMDLs) for indicator bacteria in beaches and creeks in the San Diego Region. Under the CEQA, the San Diego Water Board is the Lead Agency for evaluating the environmental impacts of the reasonably foreseeable methods of compliance with the proposed TMDLs.

The adoption of a Basin Plan amendment is an activity subject to CEQA requirements because Basin Plan amendments constitute rules or regulations requiring the installation of pollution control equipment, establishing a performance standard, or establishing a treatment requirement.[1] TMDL Basin Plan amendments normally contain a quantifiable numeric target that interprets the applicable water quality objective. TMDLs also include wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background. The quantifiable target together with the allocations may be considered a performance standard.[2] Sections 1.1 and 1.2 below describe in detail the statutory requirements and scope of this environmental analysis required by the CEQA for Basin Plan amendments.

### *R.1.1 Exemption from Requirement to Prepare Standard CEQA Documents*

The CEQA authorizes the Secretary of the Resources Agency to certify state regulatory programs, designed to meet the goals of the CEQA, as exempt from its requirements to prepare an Environmental Impact Report (EIR), Negative Declaration, or Initial Study. The State Water Resources Control Board's (SWRCB) and the Regional Water Quality Control Board's Basin Plan amendment process is a certified regulatory program and is therefore exempt from the CEQA's requirements to prepare such documents.[3]

The SWRCB's CEQA implementation regulations[4] describe the environmental documents required for Basin Plan amendment actions. These documents consist of a written report that includes a description of the proposed activity, alternatives to the proposed activity to lesson or eliminate potentially significant environmental impacts, and identification of mitigation measures to minimize any significant adverse impacts. For this project, these documents are the Technical Report entitled *Total Maximum Daily*

---

[1] 14 CCR section 15187 (a).

[2] The term "performance standard" is defined in the rulemaking provisions of the Administrative Procedure Act [Government Code sections 11340-l 1359]. A "performance standard" is a regulation that describes an objective with the criteria stated for achieving the objective [Government Code section 11342(d)].

[3] 14 CCR section 15251(g) and Public Resources Code section 21080.5.

[4] 23 CCR section 3720 et seq. "Implementation of the Environmental Quality Act of 1970."

*Loads for Indicator Bacteria Project I – Beaches and Creeks in the San Diego Region* (Technical Report), an initial draft of the Basin Plan amendment (Appendix B) and an environmental checklist (section 4 below). These components fulfill the requirements of the CEQA for preparation of environmental documents for this Basin Plan amendment.[5]

### *R.1.2 Scope of Environmental Analysis*

The CEQA has specific provisions that establish the scope of the environmental analysis required for the adoption of this TMDL Basin Plan amendment. The CEQA limits the scope to an environmental analysis of the reasonably foreseeable methods of compliance with the WLAs and LAs. The SWRCB CEQA Implementation Regulations for Certified Regulatory Programs[6] require the environmental analysis to include at least the following:

1. A brief description of the proposed activity. In this case, the proposed activity is the TMDL Basin Plan amendment. This amendment is described in section 2 of this appendix.

2. Reasonable alternatives to the proposed activity (discussed in section 8).

3. Mitigation measures to minimize any significant adverse environmental impacts of the proposed activity (discussed in section 5).

Additionally, the CEQA[7] and CEQA Guidelines[8] require the following components, some of which are repetitive from the list above:

1. An analysis of the reasonably foreseeable environmental impacts of the methods of compliance. These methods may be employed to comply with the TMDL Basin Plan amendment. Reasonably foreseeable methods of compliance are described in section 3. Sections 4 and 5 identify the environmental impacts associated with the methods of compliance.

2. An analysis of the reasonably foreseeable feasible mitigation measures relating to those impacts. This discussion is also in section 5.

3. An analysis of reasonably foreseeable alternative means of compliance with the rule or regulation, which would avoid or eliminate the identified impacts. This discussion is in section 5.1.

Additionally, the CEQA Guidelines require the environmental analysis take into account a reasonable range of:[9]

---

[5] 23 CCR section 3777
[6] Ibid.
[7] Public Resources Code section 21159 (a)
[8] 14 CCR section 15187(c)

1. Environmental factors (section 5).
2. Economic factors (section 7).
3. Technical factors (section 6).
4. Population (section 6).
5. Geographic areas (section 6).
6. Specific sites. (section 6)

A "reasonable range" does not require an examination of every site, but a reasonably representative sample of them. The statute specifically states that the agency shall not conduct a "project level analysis."[10] Rather, a project level analysis must be performed by the dischargers that are required to implement the TMDLs.[11] Notably, the San Diego Water Board is prohibited from specifying the manner of compliance with its regulations,[12] and accordingly, the actual environmental impacts will necessarily depend upon the compliance strategy selected by the dischargers. In preparing this environmental analysis, the San Diego Water Board has considered the pertinent requirements of state law,[13] and intends this analysis to serve as a tier 1 environmental review.

Any potential environmental impacts associated with the TMDL depend upon the specific compliance projects selected by the dischargers, most of whom are public agencies subject to their own CEQA obligations. If not properly implemented or mitigated at the project level, there could be adverse environmental impacts from implementing these TMDLs. The substitute CEQA documents identify broad mitigation approaches that could be considered at the project level. Consistent with the CEQA, the substitute documents do not engage in speculation or conjecture, but rather consider the reasonably foreseeable environmental impacts of the reasonably foreseeable methods of compliance, the reasonably foreseeable mitigation measures, and the reasonably foreseeable alternative means of compliance, which would avoid, eliminate, or reduce the identified impacts.

---

[9] 14 CCR section 15187(d),Public Resources Code section 21159 (c)
[10] Public Resources Code section 21159(d)
[11] Public Resources Code section 21159.2
[12] Water Code section 13360
[13] Public Resources Code section 21159 and 14 CCR section 15187

## R.2 Description of the Proposed Activity

The Basin Plan designates beneficial uses of waterbodies, establishes water quality objectives for the protection of these beneficial uses, and outlines a plan of implementation for maintaining and enhancing water quality. The proposed amendment would incorporate into the Basin Plan TMDLs for indicator bacteria in the San Diego Region.

Three beneficial uses exist in San Diego Region that are sensitive to, and subject to impairment by elevated concentrations of bacteria in the water column. Water contact (REC-1) and shellfish harvesting (SHELL) require water quality suitable for the protection of recreational uses in or near water and aquatic habitat suitable for shellfish harvesting. The water quality in the beaches and creeks of the San Diego Region have exceeded the numeric water quality objectives (WQOs) for total, fecal, and/or enterococci bacteria. Other beaches were consistently posted with health advisories and/or closed to the public. These exceedances and postings threaten and impair water contact (REC-1) and shellfish harvesting (SHELL) beneficial uses.

The San Diego Water Board's goal in adopting the TMDL is to eliminate the water quality problems caused by bacteria in its beaches and creek. Although WQOs for REC-1, and SHELL beneficial uses are written in terms of density of indicator bacteria colonies (most probable number of colonies per milliliter of water), the actual risk to human health is caused by the presence of disease-causing pathogens. When the risk to human health from pathogens in the water is so great that beaches are posted with health advisories or closure signs, or shellfish are unsafe to consume, the quality and beneficial use of the water are impaired. The adoption of a TMDL is not discretionary; rather, it is compelled by section 303(d) of the federal Clean Water Act.

The TMDLs for indicator bacteria, and their derivation are discussed in the Technical Report, section 9. For point sources, the TMDLs will be implemented primarily through waste discharge requirements (WDRs) for urban runoff that implement federal National Pollutant Discharge Elimination System (NPDES) regulations. The primary dischargers are municipalities located in the watersheds, small municipal storm separate sewer systems (MS4s), and the California Department of Transportation (Caltrans). Dischargers will receive wasteload allocations that can be met over a phased compliance schedule that should result in attainment of water quality standards.

In the San Juan Creek, San Luis Rey River, San Marcos Creek, and San Dieguito River watersheds, significant bacteria loads come from nonpoint sources in addition to wasteloads discharged from MS4s. In these watersheds, load reductions from agriculture, livestock, and horse ranch facilities will be needed to meet bacteria WQOs. The San Diego Water Board will implement the load reductions in these watersheds by enforcing facility specific WDRs and the Waiver Policy with respect to waivers for discharges of waste from agricultural, nursery, and orchard irrigation return flow, animal feeding operations, manure composting and soil amendment operations, and septic systems. The

Implementation Plan and compliance schedule are discussed in the Technical Report, section 11.

### *R.2.1 Surrounding Land Uses and Setting*

The beaches and creeks addressed in this analysis are in southern California, primarily in southern Orange and San Diego Counties. The beaches and creeks are located within or hydraulically downstream of five watersheds in Orange County (with a small portion in Riverside County) and seven watersheds in San Diego County. Most of the waterways flow directly to the Pacific Ocean, except Chollas Creek, which flows to San Diego Bay. The combined watersheds cover roughly 1,730 square miles (4,480 square kilometers).

The climate in the Region is generally mild with annual temperatures averaging around 65°F near the coastal areas. Average annual rainfall ranges from 9 to 11 inches along the coast to more than 30 inches in the eastern mountains. There are three distinct types of weather in the Region. Summer dry weather occurs from late April to mid-October. During this period almost no rain falls. The winter season (mid-October through early April) has two types of weather; 1) winter dry weather when rain has not fallen for the preceding 72 hours, and 2) wet weather consisting of storms of 0.2 inches of rainfall and the 72 hour period after the storm. Eighty five to 90 percent of the annual rainfall occurs during the winter season (County of San Diego, 2000).

The land use of the Region is highly variable. The coastline areas are highly concentrated with urban and residential land uses, and the inland areas primarily consist of open space. Most of the area is occupied by open space or recreational land use, followed by low-density residential and agriculture/livestock land uses. Other major land uses are commercial/institutional, high-density residential, industrial/transportation, military, transitional, and water. More information is provided in section 3 of the Technical Report.

## R.3 Analysis of Reasonably Foreseeable Methods of Compliance

This section identifies a range of reasonably foreseeable method(s) of compliance with the Basin Plan amendment. Bacteria generation is linked to different types of land uses, and bacteria are transported to receiving waters via urban runoff, runoff from lands used for agriculture, livestock, and horse ranch operations, natural background, and sewage spills from wastewater treatment plants. The most significant controllable source of bacteria to receiving waters is urban runoff discharges from MS4s during wet and dry weather. In wet weather, the amount of runoff and associated bacteria densities are highly dependent on land use and associated management practices (e.g., management of livestock in agricultural areas, pet waste in residential areas). In dry weather, the amount of runoff and associated bacteria densities result from various land use practices that cause water to enter storm drains and creeks, such as lawn irrigation runoff and car washing. Bacteria loads from natural sources are uncontrollable and were added to the interim wet weather TMDLs using the reference watershed approach. In the final wet weather TMDLs, background sources were not added to the TMDLs and thus, take up the entire loading capacity of the creeks resulting in load and wasteload allocations of zero.

The most reasonably foreseeable methods of compliance with the wasteload and load reductions of these TMDLs are for dischargers to implement structural and non-structural best management practices (BMPs) for point source discharges, and management measures (MMs) for nonpoint sources. Typical BMPs/MMs that may be chosen by dischargers to comply with the load and wasteload reductions are divided into non-structural and structural controls, and are described below.

**Non-structural Controls**

Non-structural controls typically are aimed at controlling sources of a pollutant and generally do not involve new construction. No potentially significant impacts on the environment were identified for these controls.

**Education and Outreach**: Conduct education and outreach to residents to minimize the potential for contamination of stormwater runoff by cleaning up after their pets, picking up litter, minimizing runoff from agriculture, livestock, and horse ranch facilities, and controlling excessive irrigation. Bacterial source-tracking studies in a watershed in the Seattle, Washington area found that nearly 20 percent of the bacteria isolates that could be matched with host animals were matched with dogs.[14]

**Road and Street Maintenance**: Increase frequency of street sweeping to maintain clean sidewalks, streets, and gutters. Street sweeping can reduce non-point source pollution by 5 to 30 percent when a conventional mechanical broom and vacuum-assisted wet sweeper is used.[15] The U.S. Environmental Protection Agency (USEPA) reports that the new vacuum assisted dry sweepers can achieve 50 to 88 percent overall reductions in the

[14] USEPA, 1999, National Menu of Best Management Practices for Stormwater-Phase II, *http://cfpub.epa.gov/npdes/stormwater/menuofbmps*

[15] ibid

annual sediment loading for a residential street, depending on sweeping frequency. A reduction in sediment load may lead to a reduction in bacteria being carried to the MS4, and ultimately to beaches and creeks.

**Storm Drain System Cleaning**: Storm drain systems should be cleaned regularly since flows in the drains are rarely high enough to flush the drains. Cleaning of the storm drain systems will reduce the levels of bacteria as well as reduction of other pollutants, trash, and debris both in the storm drain system and in receiving waters.

**BMP Inspection and Maintenance**: Conduct regular inspections of treatment control BMPs to ensure their adequacy of design and proper function. Routine inspection and maintenance is an efficient way to prevent potential nuisance situations, such as odors, mosquitoes, weeds, etc., and can reduce the need for repair maintenance and the chance of polluting storm water runoff by finding and correcting problems before the next rain.[16]

**Enforcement of Local Ordinances**: Develop and/or enforce municipal ordinances prohibiting the discard of litter, pet cleanup negligence, or lawn over-watering. Enforcement of such ordinances will decrease the likelihood of bacteria from controllable sources reaching storm drains.

**Manure Fertilizer Management Plan**: Farms and livestock operations that use manure as a soil amendment, or dispose of manure on site can adopt a manure fertilizer management plan to ensure that manure fertilizers or wastes are stored, used, and disposed of in ways that minimize exposure of manure to stormwater.

**Sizing and Location of Facilities**: Manure composting and storage facilities, and livestock holding pens, paddocks, and corrals should be properly sized, and sited in areas that do not drain to surface streams.

**Structural Controls**

Structural controls divert, store, and treat stormwater, or infiltrate stormwater into the ground. Structural controls can involve construction and operation activities that create potentially significant environmental impacts.

**Buffer Strips and Vegetated Swales**: Construct and maintain vegetative buffer strips along roadsides and in medians to slow runoff velocity and increase stormwater infiltration. Replace curbs with vegetated swales to allow highway and road runoff to percolate into the ground. Buffer strips can also be used to keep stormwater out of livestock holding pens, corrals, and paddocks.

**Bioretention**: Construct and maintain bioretention BMPs to provide on-site removal of pollutants from stormwater runoff through landscaping features.

**Infiltration Trenches**: Construct and maintain infiltration trenches designed to capture and naturally filter stormwater runoff.

[16] ibid

**Sand Filters**: Install and maintain sand filters, which are effective for pollutant removal from stormwater. Sand filters may be a good option in densely developed urban areas with little pervious surface since the filters occupy minimal space.

**Diversion /Treatment Systems**: Install diversion systems to capture non-stormwater runoff. During low flow conditions, runoff may be diverted to an on-site treatment system and released back to the MS4/receiving water, or it may be diverted to wastewater collection plants for treatment. Diversion systems consist of berms, roofs, or enclosures that can be used at farms and livestock facilities to drain storm water away from holding pens, paddocks, corrals, and manure composting areas.

**Animal Exclusion**: Construct fencing, hedgerows, and livestock trails and walkways to exclude animals from streams and riparian areas to prevent direct deposition of feces into surface waters. Alternative water supplies, shade, and forage may need to be provided if animals are excluded from streams and riparian areas.

**Waste Treatment Lagoon**: Construct liquid manure storage and treatment structures to store and treat facility wastewater and the contaminated runoff from livestock facilities at all times, up to and including storms exceeding a 25-year, 24-hour frequency event.

## R.4 Environmental Checklist

| | ENVIRONMENTAL CHECKLIST | Potentially Significant Impact | Less Than Significant with Mitigation | Less Than Significant | No Impact |
|---|---|---|---|---|---|
| **1.** | **Earth. Will the proposal result in:** | | | | |
| | a. Unstable earth conditions or in changes in geologic substructures? | | X | | |
| | b. Disruptions, displacements, compaction or overcoming of the soil? | | | X | |
| | c. Change in topography or ground surface relief features? | | X | | |
| | d. The destruction, covering or modification of any unique geologic or physical features? | | X | | |
| | e. Any increase in wind or water erosion of soils, either on or off the site? | | | X | |
| | f. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake? | | | X | |
| | g. Exposure of people or property to geologic hazards, such as earthquakes, landslides, mudslides, ground failure, or similar hazards? | | X | | |
| **2.** | **Air. Will the proposal result in:** | | | | |
| | a. Substantial air emissions or deterioration of ambient air quality? | | X | | |
| | b. The creation of objectionable odors? | | X | | |
| | c. Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally? | | | | X |

| | ENVIRONMENTAL CHECKLIST | Potentially Significant Impact | Less Than Significant with Mitigation | Less Than Significant | No Impact |
|---|---|---|---|---|---|
| **3.** | **Water. Will the proposal result in:** | | | | |
| | a. Changes in currents, or the course of direction or water movements, in either marine or fresh waters? | | | X | |
| | b. Changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff? | | | X | |
| | c. Alterations to the course of flow of flood waters? | | X | | |
| | d. Change in the amount of surface water in any water body? | | X | | |
| | e. Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity? | | X | ~~X~~ | |
| | f. Alteration of the direction or rate of flow of ground waters? | | X | | |
| | g. Change in the quantity or quality of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations? | | X | | |
| | h. Substantial reduction in the amount of water otherwise available for public water supplies? | | X | | |
| | i. Exposure of people or property to water related hazards such as flooding or tidal waves? | | X | | |
| **4.** | **Plant Life. Will the proposal result in:** | | | | |
| | a. Change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, microflora and aquatic plants)? | | X | | |
| | b. Reduction of the numbers of any unique, rare or endangered species of plants? | | X | | |

| | ENVIRONMENTAL CHECKLIST | Potentially Significant Impact | Less Than Significant with Mitigation | Less Than Significant | No Impact |
|---|---|---|---|---|---|
| | c. Introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species? | | X | | |
| | d. Reduction in acreage of any agricultural crop? | | X | | |
| **5.** | **Animal Life. Will the proposal result in:** | | | | |
| | a. Change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, insects or microfauna)? | | X | | |
| | b. Reduction of the numbers of any unique, rare or endangered species of animals? | | X | | |
| | c. Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals? | | X | | |
| | d. Deterioration to existing fish or wildlife habitat? | | X | | |
| **6.** | **Noise. Will the proposal result in:** | | | | |
| | a. Increases in existing noise levels? | | X | ~~X~~ | |
| | b. Exposure of people to severe noise levels? | | | X | |
| **7.** | **Light and Glare. Will the proposal:** | | | | |
| | a. Produce new light or glare? | | X | ~~X~~ | |
| **8.** | **Land Use. Will the proposal result in:** | | | | |
| | a. Substantial alteration of the present or planned land use of an area? | | | X | |
| **9.** | **Natural Resources. Will the proposal result in:** | | | | |
| | a. Increase in the rate of use of any natural resources? | | | | X |
| | b. Substantial depletion of any nonrenewable natural resource? | | | | X |

| | ENVIRONMENTAL CHECKLIST | Potentially Significant Impact | Less Than Significant with Mitigation | Less Than Significant | No Impact |
|---|---|---|---|---|---|
| **10.** | **Risk of Upset. Will the proposal involve:** | | | | |
| | a. A risk of an explosion or the release of hazardous substances (including, but not limited to: oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions? | | | X | |
| **11.** | **Population. Will the proposal:** | | | | |
| | a. Alter the location, distribution, density, or growth rate of the human population of an area? | | | X | |
| **12.** | **Housing. Will the proposal:** | | | | |
| | a. Affect existing housing, or create a demand for additional housing? | | | X | |
| **13.** | **Transportation/Circulation. Will the proposal result in:** | | | | |
| | a. Generation of substantial additional vehicular movement? | | | X | |
| | b. Effects on existing parking facilities, or demand for new parking? | | X | | |
| | c. Substantial impact upon existing transportation systems? | | | X | |
| | d. Alterations to present patterns of circulation or movement of people and/or goods? | | | X | |
| | e. Alterations to waterborne, rail or air traffic? | | | X | |
| | f. Increase in traffic hazards to motor vehicles, bicyclists or pedestrians? | | | X | |
| **14.** | **Public Service. Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas:** | | | | |
| | a. Fire protection? | | | X | |
| | b. Police protection? | | | X | |

| | ENVIRONMENTAL CHECKLIST | Potentially Significant Impact | Less Than Significant with Mitigation | Less Than Significant | No Impact |
|---|---|---|---|---|---|
| | c. Schools? | | | | X |
| | d. Parks or other recreational facilities? | | | X | |
| | e. Maintenance of public facilities, including roads? | | X | | |
| | f. Other governmental services? | | X | | |
| **15.** | **Energy. Will the proposal result in:** | | | | |
| | a. Use of substantial amounts of fuel or energy? | | | | X |
| | b. Substantial increase in demand upon existing sources of energy, or require the development of new sources of energy? | | | | X |
| **16.** | **Utilities and Service Systems. Will the proposal result in a need for new systems, or substantial alterations to the following utilities:** | | | | |
| | a. Power or natural gas? | | | X | |
| | b. Communications systems? | | | | X |
| | c. Water? | | | | X |
| | d. Sewer or septic tanks? | | | X | |
| | e. Storm water drainage? | | | X | |
| | f. Solid waste and disposal? | | X | | |
| **17.** | **Human Health. Will the proposal result in:** | | | | |
| | a. Creation of, and exposure of people to, any health hazard or potential health hazard (excluding mental health)? | | X | | |
| | | | | | |
| **18.** | **Aesthetics. Will the proposal result in:** | | | | |
| | a. The obstruction of any scenic vista or view open to the public? | | X | | |

| | ENVIRONMENTAL CHECKLIST | Potentially Significant Impact | Less Than Significant with Mitigation | Less Than Significant | No Impact |
|---|---|---|---|---|---|
| | b. The creation of an aesthetically offensive site open to public view? | | X | | |
| **19.** | **Recreation. Will the proposal result in:** | | | | |
| | a. Impact upon the quality or quantity of existing recreational opportunities? | | X | | |
| **20.** | **Archeological/Historical. Will the proposal:** | | | | |
| | a. Result in the alteration of a significant archeological or historical site, structure, object or building? | | X | | |
| **21.** | **Mandatory Findings of Significance** | | | | |
| | **Potential to degrade:** Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? | | X | | |
| | **Short-term:** Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time, while long-term impacts will endure well into the future.) | | | | X |
| | **Cumulative:** Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant.) | | X | | |
| | | | | | |

| | ENVIRONMENTAL CHECKLIST | Potentially Significant Impact | Less Than Significant with Mitigation | Less Than Significant | No Impact |
|---|---|---|---|---|---|
| | **Substantial adverse:** Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? | | X | | |

## R.5 Discussion of Possible Environmental Impacts of Reasonably Foreseeable Compliance Methods and Mitigation Measures

As stated previously, the environmental analysis must include an analysis of the reasonably foreseeable environmental impacts of the methods of compliance and the reasonably foreseeable feasible mitigation measures relating to those impacts. This section, consisting of answers to the questions in the checklist, discusses compliance methods and mitigation measures as they pertain to the checklist.

In formulating these answers, the impacts of implementing the non-structural and structural BMPs/MMs listed in section 3 in the various watersheds were evaluated. At this time, the exact type, size, and location of BMPs that might be implemented to comply with the TMDLs is unknown. This analysis considers a range of non-structural and structural BMPs that might be used, but is by no means an exhaustive list of available BMPs. When BMPs are selected for implementation, a project-level and site-specific CEQA analysis must be performed by the responsible agency.

Potential reasonably foreseeable impacts were evaluated with respect to earth, air, water, plant life, animal life, noise, light, land use, natural resources, risk of upset, population, housing, transportation, public services, energy, utilities and services systems, human health, aesthetics, recreation, and archeological/historical concerns. Additionally, mandatory findings of significance regarding short-term, long-term, cumulative and substantial impacts were evaluated. Based on this review, we concluded that the potentially significant impacts can be mitigated to less than significant levels. The evaluation considered whether the construction or implementation of the BMPs would cause a substantial, adverse change in any of the physical conditions within the area affected by the BMP. In addition, the evaluation considered environmental effects in proportion to their severity and probability of occurrence.

A significant effect on the environment is defined in regulation as "*a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. A social or economic change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant*."[17]

A significant effect on the environment is defined in statute as "*a substantial, or potentially substantial, adverse change in the environment*"[18] where "*Environment*" is defined as "*the physical conditions which exist within the area which will be affected by a proposed project, including air, water, minerals, flora, fauna, noise, objects of historic or aesthetic significance*."[19]

---

[17] 14 CCR section 15382
[18] Public Resources Code section 21068
[19] Public Resources Code section 21060.5

In this analysis, the level of significance was based on baseline conditions (i.e., current conditions). Short-term impacts associated with the construction of structural BMPs were considered less than significant because the impacts due to construction activities are temporary and similar to typical capital improvement projects and maintenance activities currently performed by municipalities. The long-term impacts associated with structural BMPs were considered potentially significant, but only if they could have an adverse, or potentially adverse, impact on the environment.

Social or economic changes related to a physical change of the environment were also considered in determining whether there would be a significant effect on the environment. However, adverse social and economic impacts alone are not significant effects on the environment.

**1.** Earth. a. **Will the proposal result in unstable earth conditions or in changes in geologic substructure?**

Answer**: Less than significant with mitigation**

**Discussion**: Non-structural BMPs would not create unstable earth conditions or changes in geologic substructure because none of these BMPs or MMs include earth moving activities.

For structural BMPs, infiltration of collected stormwater could potentially result in unstable earth conditions if loose or compressible soils are present, or if such BMPs were to be located where infiltrated stormwater flowing as groundwater could destabilize existing slopes. These impacts can be avoided by siting infiltration type BMPs away from areas with loose or compressible soils, and away from slopes that could become destabilized by an increase in groundwater flow. Infiltration type BMPs can also be built on a small enough scale to avoid these types of impacts.

If dischargers install facilities such as detention basins or waste treatment lagoons on a scale that could result in unstable earth conditions or in changes in geologic substructures, potential impacts could be avoided through proper geotechnical investigations, siting, design, and ground and groundwater level monitoring to ensure that structural BMPs are not employed in areas subject to unstable soil conditions.

1. Earth. b. **Will the proposal result in disruptions, displacements, compaction or overcoming of the soil?**

Answer**: Less than significant**

**Discussion**: Non-structural BMPs would not result in disruptions, displacements, compaction or overcoming of the soil because none of these BMPs include earth moving activities.

Depending on the structural BMPs selected in urbanized areas, the proposal may result in minor surface soil excavation or grading during construction of structural BMPs resulting in increased disturbance of the soil. However, much of the urbanized areas have already undergone soil compaction and hardscaping. Standard construction techniques, including but not limited to, shoring, piling and soil stabilization can mitigate any potential short-term impacts. In addition, structural BMPs can be designed and sited in areas where the risk of new soil disruption is minimal. Soil disruptions, displacements, compaction, or overcoming during construction activities would be similar to typical temporary capital improvement construction and maintenance activities currently performed by municipalities, and no long-term impacts to the soil are expected.

In non-urbanized areas, structural BMPs like fences or waste treatment lagoons have the potential to disturb soil during construction. However, the use of standard construction techniques discussed above, along with proper siting, will eliminate any erosion potential at the site.

1. Earth. c. **Will the proposal result in change in topography or ground surface relief features?**

   Answer**: Less than significant with mitigation**

**Discussion**: Non-structural BMPs would not affect topography or ground relief features because none of the non-structural BMPs would result in earth moving activities.

Implementation of structural BMPs could result in some change in topography or ground surface relief features; however, most of the potential BMPs are so small that changes to topography will not be noticeable. If the dischargers implement BMPs on a scale large enough to change topography or ground relief features, then potential adverse impacts could be avoided or mitigated through siting such topographic alterations in geologically stable areas, or by installing or designing structural BMPs with the least amount of impact to the topography.

1. Earth d. **Will the proposal result in the destruction, covering or modification of any unique geologic or physical features?**

   Answer**: Less than significant with mitigation**

**Discussion**: Non-structural BMPs would not cause the destruction, covering or modification of any unique geologic or physical features because none of these BMPs would result in earth moving activities.

Constructing structural BMPs in areas where doing so would result in the destruction, covering or modification of a unique geologic or physical features is not a reasonably foreseeable alternative that dischargers would choose. Furthermore, no impact is expected because foreseeable methods of compliance, including implementation of structural BMPs to control bacteria, would not be of the size or scale to result in the destruction, covering or modification of any unique geologic or physical features. In the unlikely event that dischargers might install facilities on a scale that could result in the destruction, covering or modification of any unique geologic or physical features, potential impacts could be mitigated by mapping these features to avoid siting facilities in these areas.

1. Earth. e. **Will the proposal result in any increase in wind or water erosion of soils, either on or off the site?**

   Answer**: Less than significant**

**Discussion**: Non-structural BMPs would not result in increase in wind or water erosion of soils, either on or off site because none of the non-structural BMPs would result in increased stormwater discharge, or in exposing soils to erosion by wind and water.

Depending on the structural BMPs selected, the proposal may result in minor soil excavation during construction of structural BMPs. However, construction related erosion impacts will cease with the cessation of construction. Wind or water erosion of soils may occur as a potential short-term impact. In urbanized areas, on-site soil erosion during construction activities will be similar to typical temporary capital improvement projects and maintenance activities currently performed by the municipalities. Typical established BMPs should be used during implementation to minimize offsite sediment runoff or deposition. Construction sites are required to retain sediment on site, both under general construction stormwater WDRs and through the construction program of the applicable MS4 WDRs; both of which are already designed to minimize or eliminate erosion impacts on receiving water. Over the long term, off-site erosion of canyons and natural channels could potentially be reduced if the structural BMPs divert stormwater from entering the canyons and channels, or reduce the runoff flow velocity, which may be considered a beneficial impact.

1. Earth. f. **Will the proposal result in changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?**

   Answer**: Less than significant**

**Discussion**: Non-structural BMPs would not result in erosion of beach sands, or increases in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake; however, non-structural BMPs, such as increased street sweeping, may reduce siltation and sediment deposition in canyons and natural channels. Reduction in siltation and sediment deposition in the creeks is beneficial as bacteria and pathogens may adsorb to fine sediments.

Deposition of significant volumes of sediment to beaches occurs mostly during wet weather flows. Therefore, wet weather diversion and treatment BMPs that remove the stream's sediment load could impact deposition of sand on beaches. End of stream detention basins that capture sediment, resulting in possible changes in deposition or erosion, can be mitigated through sand replacement and importation.

1. Earth. g. **Will the proposal result in exposure of people or property to geologic hazards, such as earthquakes, landslides, mudslides, ground failure, or similar hazards?**

   Answer**: Less than significant with mitigation**

**Discussion**: Non-structural BMPs would not result in exposure of people or property to geologic hazards because none of these BMPs would result in earth moving activities.

For structural BMPs, infiltration of collected stormwater could possibly result in ground failure if loose or compressible soils are present, or if such BMPs were to be located where introduced groundwater movements could destabilize existing slopes. This may result in landslides, mudslides, ground failure, or similar hazards. However, complying with these TMDLs using structural BMPs in areas where doing so, or of a size or scale that would result in exposure of people or property to such geologic hazards is unlikely when other alternatives exist. In the unlikely event that dischargers might install facilities on a scale that could result in exposure of people or property to geologic hazards, a geotechnical investigation should be prepared at the project level to ensure that structural BMPs are not employed in areas subject to potential geologic hazards.

2. Air. a. **Will the proposal result in substantial air emissions or deterioration of ambient air quality?**

   Answer**: Less than significant with mitigation**

**Discussion**: Short term increases in traffic during the construction and installation of structural BMPs and long-term increases in traffic caused by non-structural BMPs and maintenance of structural BMPs are potential sources of air emissions that may adversely affect ambient air quality. Several mitigation measures are available to reduce potential impacts to ambient air quality due to increased traffic during short-term construction and long-term maintenance activities. Mitigation measures could include, but are not limited to, the following: 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, 5) the design of structural devices to minimize the frequency of maintenance trips, and/or 6) proper maintanance of vehicles so they operate cleanly and efficiently.

The generation of fugitive dust and particulate matter during construction or maintenance activities could also impact ambient 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 ambient air quality impacts. These could include vapor barriers and moisture control to reduce transfer of particulates and dust to air.

The emission of air pollutants during short-term construction activities associated with reasonably foreseeable methods of compliance would not likely change ambient air conditions, because long-term ambient air quality would not change after short-term construction activities are completed.

Ambient air quality may change as a result of increased traffic due to an increase in street sweeping and/or structural BMP maintenance activities. However, the impact to ambient air quality can be reduced by using the mitigation measures described above for street sweepers and maintenance vehicles. The potential impact to ambient air quality can be further reduced if street sweeping and/or maintenance activities are scheduled to be performed at the same time as other maintenance activities performed by the municipalities, or at times when these activities have lower impact, such as periods of low traffic activity. In any case, the number of additional vehicles expected in the watersheds due to non-structural and structural BMPs is not expected to increase the level of pollutants in the air compared to current conditions, because various common managerial practices are available to mitigate the adverse effects. In fact, additional street sweeping could potentially reduce the amount of dust and particulates that may be available on the streets.

2. Air. b. **Will the proposal result in creation of objectionable odors?**

Answer**: Less than significant with mitigation**

**Discussion**: Non-structural BMPs could result in the creation of objectionable odors in urbanized areas caused by exhaust from street sweepers or maintenance vehicles. Objectionable odors due to engine exhaust would be temporary and dissipate once the vehicle has passed through the area. Objectionable odors from exhaust could be reduced if gasoline or propane engines were used instead of diesel engines. Additionally, street sweepers and maintenance vehicles could be scheduled to be performed at the same time as other maintenance activities performed by the municipalities, or at times when these activities have lower impact, such as periods when there are fewer people in the area.

Construction and installation of structural BMPs may result in objectionable odors in the short-term due to exhaust from construction equipment and vehicles, but no more so than during typical infrastructure construction and maintenance activities currently performed by the municipalities. However, structural BMPs may be a source of objectionable odors if BMP designs allow for water stagnation or collection of water with sulfur-containing compounds. Stormwater runoff is not likely to contain sulfur-containing compounds, but stagnant water could create objectionable odors.

Mitigation measures to eliminate odors caused by stagnation could include proper BMP design to eliminate standing water, covers, aeration, filters, barriers, and/or odor suppressing chemical additives. Structural BMPs should be inspected regularly to ensure that treatment devices are not clogged, pooling water, or odorous. During maintenance, odorous sources should be uncovered for as short of a time period as possible. Structural BMPs should be designed to minimize stagnation of water and installed in such a way so as to increase the distance to sensitive receptors in the event of any stagnation.

2. Air. c. **Will the proposal result in alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally?**

Answer**: No impact**

**Discussion**: Non-structural and/or structural BMPs 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.

3. Water. a. **Will the proposal result in changes in currents, or the course of direction or water movements, in either marine or fresh waters?**

Answer**: Less than significant**

**Discussion:** Most non-structural BMPs will not cause changes in currents, or the course of direction or water movements, in either marine or fresh waters because most of these BMPs would not introduce any physical effects that could impact these characteristics. Elimination of dry weather flows is the only foreseeable non-structural BMP that could have a physical impact in the watersheds due to a reduction in sediment and refuse discharge. However, any reduction of dry weather nuisance flows would bring the creeks to a more natural, pre-development condition with respect to currents, which is beneficial to the environment as discussed in the answer to question 4a.

Structural BMPs may change the currents in the watersheds by diverting flow away from the channels. However, streamflow in the urbanized lower watersheds are highly channelized, therefore none of the reasonably foreseeable structural BMPs would alter the direction or slope of the stream channels in the lower watersheds. The roughness coefficient may be reduced as sediment is kept out of the channels, which could increase the flow rate in the channels but would not change the direction of flow. The increase in flow rate in the channels could be offset by the reduction of peak flow, as a result of the installation of structural BMPs such as detention basins, sand filters or infiltration basins. Overland flow in the urbanized portion of the watershed is directed primarily to storm drains. This overland flow may change depending on the structural BMPs installed such as infiltration basins. If stormwater runoff flow is reduced, or is diverted to detention basins and not returned to the creeks, these changes would reduce the potential for erosion, which is beneficial to the environment.

In agricultural areas where creeks flow in more natural conditions, BMPs such as detention basins and waste treatment lagoons could change the currents in the watersheds by storing water that would otherwise reach creeks and/or conveyance systems; however, this could be mitigated through proper siting and planning, including the use of hydrologic models to ensure that sufficient flow is maintained in or returned to watersheds to avoid adverse impacts to currents.

3. Water. b. **Will the proposal result in changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff?**

Answer**: Less than significant**

**Discussion:** Non-structural BMPs would not result in changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff because none of

these BMPs would introduce any physical effects that could impact these characteristics.

Depending on the structural BMPs selected, absorption rates, drainage patterns, and surface water runoff may change. Grading and excavation during construction and installation of structural BMPs could result in alterations in absorption rates, drainage patterns, and surface water runoff. Several types of structural BMPs for both urban and agricultural areas collect and/or inhibit stormwater flow, which would likely alter drainage patterns, and also decrease the rate and amount of surface water runoff. For example, structural BMPs such as buffer strips would change drainage patterns by increasing absorption rates, which would reduce the amount of surface runoff to creeks. If stormwater runoff is diverted to wastewater treatment facilities, drainage patterns would be altered and surface runoff to the creeks could be reduced. If stormwater is diverted to wastewater treatment facilities, thereby reducing the overall flow, the erosion and scour that would normally be caused in the streams by stormwater runoff would be reduced. The amount of flow within the stream channel may change; however, the channelized drainage pattern would remain essentially unchanged.

In general, reducing stormwater runoff due to non-structural and structural BMPs would be beneficial to the environment because peak flows would be attenuated, reducing erosion and channel scour. Reduction in the amount of water in the stream channel may affect the ecology of the stream; however, all of these affects can be mitigated to less than significant levels as discussed below in the answers to questions 4 and 5 on Plant Life and Animal Life.

3. Water. c. **Will the proposal result in alterations to the course of flow of flood waters?**

Answer**: Less than significant with mitigation**

**Discussion:** Non-structural BMPs are unlikely to alter the course of flow of flood waters because none of the BMPs would introduce any physical effects that could impact these characteristics.

The course of flow of flood waters may change depending on the structural BMPs selected. Structural BMPs, such as sand filters, could reduce a storm drain's ability to convey flood waters. This can be mitigated through proper design (including flood water bypass systems), sizing, and maintenance of these types of structural BMPs. Other structural BMPs, such as waste treatment lagoons, sewer diversions, detention basins or infiltration basins, could alter the volume of flood waters by diverting a portion of the flood waters, but these BMPs are unlikely to alter the course of flood waters.

3. Water. d. **Will the proposal result in change in the amount of surface water in any water body?**

Answer**: Less than significant with mitigation**

**Discussion:** Non-structural BMPs such as ordinances that prohibit nuisance flows would result in a reduction in the amount of dry weather surface water in the watersheds. Because the reduction of nuisance flows would return the watersheds to a more natural, predevelopment condition, this impact is not significant. Waterbodies that are naturally occurring during dry weather are most likely groundwater fed and will not be impacted by nonstructural BMPs.

Depending on the structural BMPs selected, stormwater runoff may be retained and/or diverted for groundwater infiltration and/or to detention basins. Water that is retained or diverted would not flow into the canyons and stream channels. Because the surface water runoff to the creeks would be reduced, the adverse effects of channel scour and erosion of the creeks would also be reduced.

Reduction in the amount of water in the stream channels may affect the ecology of the streams; however, all of these affects can be mitigated to less than significant levels as discussed below in the answers to questions 4 and 5 on Plant Life and Animal Life.

3. Water. e. **Will the proposal result in discharge to surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity?**

Answer**: Less than significant with mitigation**

**Discussion:** Non-structural and/or structural BMPs would not result in any additional discharge to surface waters. Depending on the structural BMPs selected, the current amount of runoff discharged to surface waters may actually be reduced if diverted for groundwater infiltration or to wastewater treatment facilities.

If non-structural and/or structural BMPs are implemented, the level of pollutants discharged to the watersheds would be reduced. Therefore, implementation of these TMDLs will improve the surface water quality.

During wet weather discharges, certain structural BMPs (including waste treatment lagoons, detention basins, infiltration basins, and sand filters) would reduce turbidity and increase dissolved oxygen, because these BMPs would remove sediment and bioavailable oxygen demanding substances from the surface water. Reduced turbidity, and increased dissolved oxygen is beneficial to the environment.

Onsite facilities may be employed for treatment of dry weather or storm flows that use oxidizing agents such as ozone for disinfection, which can result in decreased bacteria loads. If not used properly, use of these technologies can result in adverse alteration of surface water quality because of the production of disinfection by-products. For example, if a surface water has significant concentrations of bromide, reaction with ozone can cause the formation of brominated by-products that can cause both immediate and delayed toxicity to marine organisms even after relatively short periods of ozonation.[20] Mitigation measures could include removal of bromide before contact with ozone occurs, or not using this treatment method where high concentrations of bromide are present.

A reduction of dry weather discharges (i.e., a cessation or reduction in nuisance flows) would result in a reduction of overall water in the watersheds during the dry season. This would result in a water temperature increase, and a decrease of dissolved oxygen in dry weather pools in the watersheds. Reduction in the amount of water in the stream channels may affect the ecology of the streams; however, all of these affects can be mitigated to less than significant levels as discussed below in the answers to questions 4 and 5 on Plant Life and Animal Life.

3. Water. f. **Will the proposal result in alteration of the direction or rate of flow of groundwaters?**

Answer**: Less than significant with mitigation**

**Discussion:** Non-structural BMPs would not result in alteration of the direction or rate of flow of groundwaters because none of the BMPs would introduce any physical effects that could impact these characteristics.

Over the long term, infiltration of stormwater runoff via infiltration type BMPs such as vegetative strips could significantly alter the direction or rate of flow of groundwater. This could result in unstable earth conditions if such BMPs were to be located where infiltrated stormwater flowing as groundwater could destabilize existing slopes. As discussed in the answer to question 1.a, these impacts can be avoided by siting infiltration type BMPs away from areas with loose or compressible soils, and away from slopes that could become destabilized by an increase in groundwater flow. Infiltration type BMPs can also be built on a small enough scale to avoid these types of impacts. In the unlikely event that dischargers might install facilities on a scale that could result in unstable earth conditions, potential impacts could be avoided through proper groundwater investigations, siting, design, and groundwater level monitoring to ensure that structural BMPs are not employed in areas where slopes could become destabilized.

[20] William Cooper et al. 2002. Final Report. *Ozone, seawater, and aquatic nonindigenous species: Testing a full-scale ozone ballast water treatment system on an American oil tanker*.

3. Water. g. **Change in the quantity or quality of groundwaters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?**

   Answer**: Less than significant with mitigation**

**Discussion:** Non-structural BMPs will not change the quantity or quality of groundwaters because none of these BMPs would introduce any physical effects that could impact these characteristics.

Infiltration type BMPs such as infiltration trenches may increase the quantity and degrade the quality of groundwaters. The increase in quantity is unlikely to have any adverse effects since, under pre-development conditions, infiltration rates of stormwater runoff to groundwater were most likely much higher than they are today due to the absence of hardscapes. However, as discussed in question 3.f above, increased infiltration of stormwater near steep slopes, such as canyon walls, could potentially destabilize these slopes by saturating the soils, making them more prone to sliding. Mitigation could include not siting large infiltration BMPs near canyon walls or other steep slopes.

In addition to bacteria, stormwater also contains dissolved pollutants such as nutrients, metals, pesticides, hydrocarbons, oil and grease. However, infiltration BMPs are not expected to degrade groundwater with respect to these pollutants for the following reasons.

Ambient nitrogen and phosphorus concentrations in groundwater are likely higher than nutrient concentrations in stormwater due to decades of over application of fertilizers on domestic and commercial landscapes, and agricultural areas, and deep percolation of applied irrigation water. Nonetheless, if stormwater nutrient concentrations are higher than ambient concentrations in the groundwater, mitigation could include education and outreach to homes and business to better manage fertilizer use. Fertilizer management plans could be required at commercial nurseries and agricultural operations. Phytoremediation can also be used to remove nutrients from stormwater runoff.

Bacteria and metals in stormwater runoff are not expected to degrade groundwater quality since they tend to adsorb to clay and organic particles in the soil. Likewise, oil and grease would become bound up in the soil and remain nearer to the surface due to lower densities. Pesticides and hydrocarbons are not expected to degrade groundwater quality because natural bacteria in the soil and groundwater tend to break down pesticides.

3. Water. h. **Will the proposal result in substantial reduction in the amount of water otherwise available for public water supplies?**

   Answer**: Less than significant with mitigation**

**Discussion:** For the most part, the structural and non-structural BMPs will not reduce public water supplies because most of the public water supplies for the watersheds included in these TMDLs are imported from outside the region. Exceptions are discussed below.

San Juan Creek Watershed: Elimination of dry weather nuisance flows could eliminate a source of recharge to the groundwater basin which is an important public water supply. However, if the elimination of nuisance flows is achieved through a decrease in water use, such as prohibiting runoff from landscaped areas, the reduction in demand should offset the decrease in supply. Stormwater infiltration basins could also increase recharge to the basin, thereby increasing the public water supply and offsetting any loss of supply due to elimination of dry weather nuisance flows.

San Luis Rey River Watershed: Lake Henshaw on the San Luis Rey River is an important water supply reservoir. This reservoir is located above urban areas, thus, urban BMPs will not affect the water supply in this reservoir. The reservoir is surrounded predominantly by grazing lands. Animal exclusion, the principal MM for grazing lands, will not reduce runoff into the reservoir. Therefore, the public water supply from this reservoir will not be reduced due to implementation of MMs. The City of Oceanside utilizes groundwater wells in the Mission Basin of the watershed for public water supply. The discussion above on the San Juan Creek Watershed groundwater basin applies here also.

San Dieguito River Watershed: Lake Hodges in the San Dieguito watershed is an important water supply reservoir. This reservoir is located above urban areas, thus, urban BMPs will not affect the water supply in this reservoir. The reservoir is surrounded predominantly by open space and grazing lands. Animal exclusion, the principal MM for grazing lands, will not reduce runoff into the reservoir. Therefore, the public water supply from this reservoir will not be reduced due to implementation of MMs.

San Diego River Watershed: San Vicente and El Capitan reservoirs are important water supply reservoirs. These reservoirs are located above urban areas, thus, urban BMPs will not affect the water supplies in this reservoir. These reservoirs are surrounded predominantly by open space and grazing lands. Animal exclusion, the principal MM for grazing lands, will not reduce runoff into the reservoir. Therefore, the public water supply from this reservoir will not be reduced due to implementation of MMs. The City of San Diego is planning to utilize groundwater wells in the Mission Valley Basin of the watershed for public water supply. The discussion above on the San Juan Creek Watershed groundwater basin applies here also.

3. Water. i. **Will the proposal result in exposure of people or property to water related hazards such as flooding or tidal waves?**

   Answer**: Less than significant with mitigation**

**Discussion:** Non-structural BMPs will not result in exposure of people or property to water related hazards such as flooding or tidal waves because none of these BMPs would introduce any physical effects that could impact these characteristics.

Installation of structural BMPs that are not properly designed and constructed to allow for bypass of stormwater during storms that exceed design capacity can cause flooding. However, this potential impact can be mitigated through proper design and maintenance of structural BMPs. Any modifications to the watershed hydrology should be modeled and accounted for in the design of BMPs.

4. Plant Life. a. **Will the proposal result in change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, microflora and aquatic plants)?**

   Answer**: Less than significant with mitigation**

**Discussion:** Most non-structural BMPs will not result in change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, microflora and aquatic plants) because most of these BMPs would not introduce any physical effects that could impact these characteristics. However, the creation and enforcement of ordinances to eliminate nuisance flows could result in a change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, microflora and aquatic plants), especially in the dry weather season. No adverse impacts are expected because the elimination of nuisance flows would return the creek's dry weather flows to a more natural, pre-development condition. This in turn would facilitate the return of the stream's plant community to a more natural, pre-development condition and could impede the propagation of water-loving non-native and invasive plant species. Impeding the propagation of invasive species is not a negative impact.

These flow reductions could lead to a reduction in total plant biomass along the creek's corridors. The reduced plant biomass could very well represent a significant decrease in the area of invasive and non-native plant species (such as *Arundo donax*) within the watersheds. A reduction in invasive species is necessary before the native plant populations could be restored to pre-development conditions.

The decrease in flow may result in an increase in native plant species. Native plant species that previously thrived in the watersheds may naturally repopulate the areas

that are currently occupied by invasive species. Increased diversity or area of native plant cover also could be accomplished through restoration/mitigation projects within the watersheds. Regardless of the method, the opportunity for restoration/enhancement of the stream corridors to pre-development conditions is realistic.

Conversely, a decrease in flow may decrease plant diversity by reducing the number of species that require a more constant water supply. However, these plant species are likely non-natives to Southern California and would not be present in the watersheds absent the nuisance dry weather flows.

During the wet weather season, the installation of structural BMPs such as vegetated swales, buffer strips, engineered (bioretention) wetlands, or retention ponds could increase the diversity or number of plant species, which is beneficial to the environment by increasing available habitat. However, during storm events, structural BMPs could also divert, reduce, and/or eliminate surface water runoff discharge, which may reduce the number and/or diversity of plant species within the streams, by modifying the hydrology of the creeks, which could be adverse. This can be mitigated through proper project modeling, siting, and design so that the resulting creek hydrology mimics natural conditions.

Onsite facilities may be employed for treatment of dry weather or storm flows that use oxidizing agents such as ultraviolet radiation (UV) or ozone for disinfection, which can result in decreased bacteria loads. If not used properly, use of these technologies can be harmful to a number of plant and animal species. For example, disinfecting agents can be toxic to non-target marine and freshwater organisms, including phytoplankton and zooplankton. Mitigation should include avoiding these technologies in areas where these organisms propagate.

Use of oxidizing agents can also result in the production of harmful disinfection by-products. For example, if surface water has significant concentrations of bromide, reaction with ozone can cause the formation of brominated by-products that can cause both immediate and delayed toxicity to marine organisms even after relatively short periods of ozonation.[21] Mitigation measures could include removal of bromide before contact with ozone occurs, or not using this treatment method where high concentrations of bromide are present.

Construction activities could result in the elimination of plant cover in the construction zone. The number or diversity of plant species could be maintained by preserving them prior, during, and after the construction of structural BMPs, or by re-establishing and maintaining the plant communities post construction. Or, municipalities may choose to implement non-structural BMPs and/or structural BMPs that do not reduce the surface water runoff that would be discharged to the canyons and stream channels.

[21] William Cooper et al. 2002. Final Report. *Ozone, seawater, and aquatic nonindigenous species: Testing a full-scale ozone ballast water treatment system on an American oil tanker*.

Should large impermeable detention basin be required, they could be constructed underground so as not to impact the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, microflora and aquatic plants).

4. Plant life. b. **Will the proposal result in reduction of the numbers of any unique, rare or endangered species of plants?**

Answer**: Less than significant with mitigation**

**Discussion:** Non-structural BMPs will not result in a reduction of the numbers of any unique, rare, or endangered species of plants because these BMPs will not affect the habitat of any unique, rare, or endangered species of plants.

Depending on the structural BMPs selected, direct or indirect impacts to special-status plant species may occur during and after construction. Mitigation measures could be implemented to ensure that potential impacts to unique, rare or endangered plant species are eliminated. When the specific projects are developed and sites identified, a focused protocol plant survey and/or a search of the California Natural Diversity Database should be performed to confirm that any potentially sensitive or special status plant species in the site area are properly identified and protected as necessary. If sensitive plant species occur on the project site, mitigation is required in accordance with the Endangered Species Act. Mitigation measures should be developed in consultation with the California Department of Fish and Game (CDFG) and the United States Fish and Wildlife Service (USFWS). Additionally, according to the Basin Plan, the San Luis Rey River, San Dieguito, and San Diego watersheds support the RARE beneficial use. Specifically, these areas provide riparian habitat for the willowy monardella. Therefore compliance methods involving structural BMPs should avoid affecting habitat that is vital for the survival of this plant species.

Responsible agencies should avoid installing structural BMPs that could result in reduction of the numbers of unique, rare or endangered species of plants, and instead opt for non-structural BMPs and/or identify and install structural BMPs in areas that will not reduce the numbers of such plants.

4. Plant life. c. **Will the proposal result in introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species?**

Answer**: Less than significant with mitigation**

**Discussion:** Most non-structural BMPs will not result in introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species because most of the BMPs would not introduce any physical effects that could impact

these characteristics. However, the creation and enforcement of ordinances to eliminate nuisance flows could result in the introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species especially in the dry weather season. However, no adverse impacts are expected as discussed in the answer to question 4.a.

For structural BMPs that may include the use of plants, such as vegetated swales or engineered (bioretention) wetlands, new species of plants may possibly be introduced into the area. However, in cases where plants or 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. The use of exotic invasive species or other plants listed in the Exotic Pest Plant of Greatest Ecological Concern in California (1999, California Invasive Plant Council, as amended) should be prohibited.

4. Plant life. d. **Will the proposal result in reduction in acreage of any agricultural crop?**

   Answer**: Less than significant with mitigation**

**Discussion:** Non-structural BMPs such as irrigation management plans will not result in a reduction in acreage of agricultural crops because establishing such BMPs does not necessitate area acquisition.

Structural BMPs could result in a reduction in acreage of agricultural crops. Dischargers should check the California Department of Conservation, Division of Land Resources Protection, Farmland Mapping and Monitoring Program, to see if there is Prime Farmland, Farmland of Statewide Importance, Unique Farmland or Farmland of Local Importance in the proposed project areas. Dischargers should avoid placing structural BMPs in areas that could affect the integrity of special status areas, and instead place them in areas that will have a minimal effect on crop production. If structural BMPs are installed, mitigation could include proper siting, design, or placement underground.

5. Animal Life. a. **Will the proposal result in change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, insects or microfauna)?**

   Answer**: Less than significant with mitigation**

**Discussion:** Non-structural BMPs, such as the creation and enforcement of ordinances to eliminate nuisance flows, could result in change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles,

fish and shellfish, benthic organisms, insects or microfauna) due to a reduction of dry weather flows that could eliminate instream habitats dependant on those flows. However, this would return dry weather flows in the watersheds to a more natural, pre-development condition as discussed in the answer to question 4.a. Animal species that thrived in the creeks in the absence of nuisance flows should not be adversely impacted by habitat changes if the flows are eliminated. Impeding the propagation of invasive species is not a negative impact.

Nuisance flow supported stream riffle and run habitat would decrease in duration during dry weather conditions, thereby limiting aquatic-dependent species to pools during that time period. While migration of aquatic species would be limited during dry weather, migration would be possible during wet weather flows. However, this impact is probably not significant because migration could only occur during wet weather conditions before the existence of dry weather nuisance flows. Additionally, only San Juan Creek, the San Luis Rey River, the San Dieguito River, and San Diego River watersheds have aquatic species with life cycles that would be dependent upon riffle and run habitat.

The installation of structural BMPs such as vegetated swales, buffer strips, engineered (bioretention) wetlands, or retention ponds could increase the diversity or number of animal species, which is beneficial by creating habitat for those species. However, these types of structural BMPs could also increase the likelihood of vectors and pests. For example, constructed basins and vegetated swales may develop locations of pooled standing water that would increase the likelihood of mosquito breeding. Mitigation includes the prevention of standing water through the construction and maintenance of appropriate drainage slopes and through the use of aeration pumps.[22] Mitigation for vectors and pests should involve the use of appropriate vector and pest control strategies, maintenance, and frequent inspections.

Installation of non-vector producing structural BMPs can help mitigate vector production from standing water. Netting can be installed over structural BMPs to further mitigate vector production. Structural BMPs can be designed and sites can be properly protected to prevent accidental vector production. Vector control agencies may also be employed as another source of mitigation. Structural BMPs 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.

Structural BMPs could also divert, or reduce stormwater runoff discharge, which could decrease the number and/or diversity of animal species within the stream channels by eliminating habitat dependant on those flows. Because the downstream portions of several watersheds are heavily developed with significant areas of impermeable surfaces, stormflow generated streamflow is very likely higher today than under pre-development conditions. Therefore, native communities of animals and the habitats they depend upon likely can thrive under lower streamflow

[22] http://www.cabmphandbooks.com/Muncipal.asp

conditions than what currently exist in the watersheds. Hydrologic modeling could be used to estimate the rate and volume of pre-development stormwater runoff to, and flow in, the watersheds. Using this information, BMPs could be selected and sized to not reduce streamflows in the watersheds below pre-development levels. BMPs that completely eliminate stormwater runoff are not reasonably foreseeable because of their cost and the availability of other feasible and less costly alternatives.

The current number or diversity of animal species could be maintained by minimizing the size of structural BMPs and limiting the encroachment and/or removal of animal habitat. Additionally, dischargers may choose to implement non-structural BMPs and/or structural BMPs that do not divert or reduce the stormwater runoff that would be discharged to the canyons and stream channels. Should an impermeable detention basin be required, it could be constructed underground so as to preserve habitat leading to a change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, insects or microfauna).

For a discussion of the adverse impacts caused by disinfection technologies such as ultraviolet light or ozone, please see the discussion under Question 4a).

5. Animal Life. b. **Will the proposal result in reduction of the numbers of any unique, rare or endangered species of animals?**

Answer**: Less than significant with mitigation**

**Discussion:** Non-structural BMPs will not result in a reduction of the numbers of unique, rare or endangered species of animals because these BMPs will not cause a reduction in habitat for unique, rare, or endangered animals. However, the creation and enforcement of ordinances to eliminate nuisance flows could eliminate riparian habitat dependant on those flows. Some of the watersheds, such as the San Luis Rey River, are home to special status species dependant on riparian habitat, such as the least bell's vireo. If the elimination of dry weather nuisance flows threatens to eliminate the riparian habitat of a special status species, this can be mitigated by treating the water and returning it to the stream to ensure the stream hydrology remains intact. Alternatively, mitigation banking could be used to create new habitat or improve existing habitat in the watershed.

Depending on the structural BMPs selected, direct or indirect impacts to special-status animal species may possibly occur during and after construction. Special-status species are present in many of the watersheds. If special status species are present during activities such as ground disturbance, construction, operation and maintenance activities associated with the potential projects, direct impacts to special status species could result including the following:

- Direct loss of a special status 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/refuge
- 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

Mitigation measures, however, could be implemented to ensure that special status animals are not negatively impacted, nor their habitats diminished. For example, when the specific projects are developed and sites identified, a focus protocol animal survey and/or a search of the California Natural Diversity Database should be performed to confirm that any potentially special-status animal species in the site area are properly identified and protected as necessary.

If special-status animal species are potentially near the project site area, as required by the Endangered Species Act (ESA), two weeks prior to grading or the construction of facilities and per applicable USFWS and/or CDFG protocols, pre-construction surveys to determine the presence or absence of special-status species should be conducted. The surveys should extend an appropriate distance (buffer area) off site in accordance with USFWS and/or CDFG protocols to determine the presence or absence of any special-status species adjacent to the project site. If special-status species are present on the project site or within the buffer area, mitigation would be required under the ESA. To this extent, mitigation measures shall be developed with the USFWS and CDFG to reduce potential impacts.

Additionally, habitat occupied by special status species could be negatively impacted if animal exclusion measures are placed in areas where cattle graze near streambeds.[23] Cattle grazing may help rather than hurt special status species by maintaining the suitability of vernal pool hydrological conditions.[24] Mitigation measures in areas where fencing is used to exclude cattle from the creeks include allowing cattle to graze along creek beds at set time intervals. Land owners could also provide water troughs near creeks to encourage cattle to drink from alternative sources, thereby minimizing the chances of cattle defecating directly into the creeks.

Finally, according to the Basin Plan, the San Luis Rey River, San Dieguito, and San Diego watersheds support the RARE beneficial use. Specifically, these areas provide

[23] Cori Calvert, USDA NRCS, personal communication, March 6, 2007.
[24] Pyke, Christopher R. and Jaymee Marty, 2005. Cattle Grazing Mediates Climate Change Impacts on Ephemeral Wetlands. *Conservation Biology* (October 2005)19:5:1619-1625.

riparian habitat to the southwestern willow flycatcher, and the least bell's vireo. Therefore compliance methods involving structural BMPs should avoid affecting habitat that is vital for the survival of these bird species.

5. Animal Life. c. **Will the proposal result in introduction of new species of animals into an area, or in a barrier to the migration or movement of animals?**

   Answer**: Less than significant with mitigation**

**Discussion:** Most non-structural BMPs will not result in introduction of new species of animals into an area, or in a barrier to the migration or movement of animals because most of the BMPs would not introduce any physical effects that could impact these characteristics. However, the creation and enforcement of ordinances to eliminate nuisance flows could result in a barrier to the migration or movement of animals especially in the dry weather season by eliminating habitat dependant on those flows. However, this would cause dry weather flows in the watersheds to return to a more natural, pre-development condition, as discussed in the answer to question 4a. Animal species that thrived in the creeks in the absence of nuisance flows should not be adversely impacted by habitat changes if the flows are eliminated. Impeding the propagation of invasive species is not a negative impact.

Structural BMPs would not foreseeably introduce new species. In urbanized areas, the potential installation sites would not act as a travel route or regional wildlife corridor. However, BMPs could potentially be constructed in agricultural areas or open space where travel routes or regional wildlife corridors exist. 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 such as water, food, or 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. Construction of reasonably foreseeable structural BMPs likely would not restrict wildlife movement because the sizes of BMPs are generally too small to obstruct a corridor. For terrestrial animals, corridors would be maintained regardless of stream flow since reduced flows would not provide physical barriers for these animals. In the event that any structural BMPs built would hinder animals from moving throughout the stream corridor, a pathway around the BMPs could be constructed. Additionally, some wildlife migration may be impeded by the use of fencing to coral livestock. Mitigation for this BMP includes using fence gaps large enough to allow migrating wildlife to pass through.

A net loss of native animal species habitat in the stream corridor due to BMP installation should be mitigated. Initially, avoidance and minimization of habitat loss should be considered. In some cases, BMPs may actually provide important habitat for animals in the stream corridor. Examples of such BMPs include detention/ retention ponds, vegetated swales, and buffer strips.

Dischargers should avoid compliance measures that could result in significant barriers to the migration or movement of animals, and instead opt for non-structural BMPs and/or structural BMPs other than fences that would not change the migration or movement of animals. Potential project sites in open space areas that might be used to install structural BMPs should be evaluated in consultation with CDFG to identify potential wildlife travel routes. If a wildlife travel route is identified that could be impacted by the installation of structural BMPs, then the project should be designed to include a new wildlife travel route in the same general location.

Some migratory 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 (MBTA) while nesting. The MBTA includes provisions for protection of migratory birds under the authority of the USFWS and CDFG. The MBTA protects over 800 species including, geese, ducks, shorebirds, raptors, songbirds, and many other relatively common species. If construction occurs during the avian breeding season for special status species and/or MBTA-covered species, generally February through August, then prior (within 2 weeks) to the onset of construction activities, surveys for nesting migratory avian species should be conducted on the project site following USFWS and/or CDFG guidelines. If no active avian nests are identified on or within the appropriate distance of construction areas, further mitigation may not be necessary.

Alternatively, to avoid impacts, the agencies implementing the TMDL 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 as required by USFWS between the construction activities and the nest site.

If active nest for protected avian species are found within the construction footprint or within the proscribed 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 consultation with USFWS or CDFG. These impacts are highly site specific, and assuming they are foreseeable, they would require a project-level analysis and mitigation plan.

Finally, steelhead trout, a special status species, rely on riffle and run habitat, and annual breaching of creek mouth sand bars to migrate up freshwater creeks from marine waters in order to spawn. Additionally, young steelhead reared in freshwater creeks need riffle and run habitat, and breaching of sandbars to migrate to the ocean. Adequate storm flows in the creeks are needed to create good quality migration habitat, and to breach sand bars. Creek flow volumes and rates could be insufficient to create and maintain migration habitat and breach sand bars if storm flows are entirely diverted to wastewater treatment facilities or detention basins. Mitigation

measures include allowing a sufficient amount of water to remain in the creeks during storm flows to maintain habitat for steelhead migration and sand bar breaching. Alternatively, diverted and treated water could be returned to the creeks at a flow rate and volume sufficient to maintain habitat and breach sand bars. Sand bars also can be artificially breached.

5. Animal Life. d. **Will the proposal result in deterioration to existing fish or wildlife habitat?**

Answer**: Less than significant with mitigation**

**Discussion:** Non-structural BMPs will not result in deterioration to existing fish or wildlife habitat as discussed in the answers to questions 4 and 5.
Depending on the structural BMPs selected, direct or indirect impacts to existing fish or wildlife habitat may occur. In urbanized areas, the installation of structural BMPs would not likely result in the deterioration of existing fish and or wildlife habitat in the immediate area of a project. Nonetheless, potential effects on fish or wildlife habitat can be reduced by minimizing the size of structural BMPs and limiting the encroachment and/or removal of animal habitat.

Structural BMPs could also divert, reduce, and/or eliminate stormwater runoff discharge, which could potentially change the fish and wildlife habitat within the stream channels by changing the flow regime of the creeks. In urbanized creeks with significant areas of impermeable surfaces, stormflow generated streamflow is very likely higher today than under pre-development conditions. Therefore, native communities of animals and the habitats they depend on likely can thrive under lower stormflow generated streamflow conditions than what currently exists. Hydrologic modeling could be used to estimate the rate and volume of pre-development stormwater runoff to, and flow in, the watersheds. Using this information, BMPs could be selected and sized to avoid reducing streamflows in the watersheds below pre-development levels. BMPs that completely eliminate stormwater runoff are not reasonably foreseeable because of their cost and the availability of other feasible and less costly alternatives. The return to more natural, pre-development flow regimes in the watersheds could be beneficial to restoring native habitats in the creeks.

In agricultural areas, dischargers may choose to implement non-structural BMPs and/or structural BMPs that do not divert or reduce the surface water runoff that would be discharged to the creeks, and instead rely on source control. Options for source control include managing irrigation and fertilizer to ensure no excess water or pollutants leave the property site, or utilizing livestock fencing to ensure livestock do not approach riparian habitat.

Should an impermeable detention basin be required, this could be constructed underground so as not to result in deterioration to existing fish or wildlife habitat at the project site.

6. Noise. a. **Will the proposal result in increases in existing noise levels?**

Answer**: Less than significant with mitigation**

**Discussion:** Non-structural BMPs could result in increases in existing noise levels due to increased traffic from street sweepers and/or maintenance vehicles which may increase the noise level temporarily as the vehicles pass through an area. However, the increase in noise levels would be no greater than typical infrastructure maintenance activities currently performed by municipalities and is therefore, less than significant.

The construction and installation of structural BMPs would result in temporary increases in existing noise levels, but this would be short term and only exist until construction is completed. Therefore, this noise impact is less than significant for humans. For some special status wildlife species, however, even temporary increases in noise levels could result in significant impacts. For example, special status birds might abandon nesting sites in response to the stress of noise impacts. Mitigation measures for increased noise levels that adversely affect rare and endangered species are discussed under question 5 b.

The noise associated with the construction and installation of structural BMPs would be the same as typical construction activities in urbanized areas, such as ordinary road and infrastructure maintenance and building activities. 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 prepared to identify the variety of available measures to limit the impacts from noise to adjacent homes and businesses.

Severe noise levels could be mitigated by implementing commonly-used noise abatement procedures, such as sound barriers, mufflers, and limiting construction and maintenance activities to times when these activities have lower impact, such as periods when there are fewer people near the construction area. Applicable and appropriate mitigation measures could be evaluated when specific projects are determined, depending upon proximity of construction activities to receptors.

6. Noise. b. **Will the proposal result in exposure of people to severe noise levels?**

Answer**: Less than significant**

**Discussion**: Non-structural BMPs would not result in increases in exposure of people to severe noise levels because none of these BMPs would introduce any physical effects that could impact this characteristic. Increased traffic from street sweepers and/or maintenance vehicles may increase the noise level temporarily as the vehicles pass through an area, but these levels will not be severe.

There is the possibility that severe noise levels could be emitted during construction activities. The increase in noise levels could be mitigated by implementing commonly-used noise abatement procedures, such as sound barriers, mufflers, and limiting construction and maintenance activities to times when these activities have lower impact, such as periods when there are fewer people in the area. Applicable and appropriate mitigation measures should be evaluated when specific projects are determined, depending upon proximity of construction activities to receptors.

7. Light and Glare. **Will the proposal produce new light or glare?**

Answer**: Less than significant with mitigation**

**Discussion**: Non-structural BMPs will not produce new light or glare because none of the BMPs would introduce any physical effects that could impact light and glare.

The construction and installation of structural BMPs could potentially be performed during evening or night time hours. If this scenario were to occur, night time lighting would be required to perform the work. Also, lighting could possibly be used to increase safety around structural BMPs. If temporary artificial lighting is required for construction purposes, this could be stressful for some rare and endangered species. For example, special status birds might abandon nesting sites in response to the stress of light and glare impacts. Mitigation measures for artificial light or glare that adversely affect rare and endangered species are discussed under question 5 b.

In the unlikely event that construction is performed during night time hours, a lighting plan should be prepared to include mitigation measures. Mitigation measures can include shielding on all light fixtures, and limiting light trespass and glare through the use of directional lighting methods. Other potential mitigation measures may include using screening and low-impact lighting, performing construction during daylight hours, or designing security measures for installed structural BMPs that do not require night lighting.

8. Land Use. **Will the proposal result in substantial alteration of the present or planned land use of an area?**

Answer**: Less than significant**

**Discussion**: Non-structural BMPs will not result in alteration of the present or planned land use of an area because none of the BMPs would introduce any physical effects that could impact land uses.

Implementation of structural BMPs may potentially cause minor alterations in present or planned land use of an area. However, municipalities are not required or expected to change present or planned land uses to comply with the TMDLs, and are encouraged to seek alternatives that would have the lowest impact on the land use and the environment. Potential conflicts between complying with the TMDLs and other land uses can be resolved by standard planning efforts under which specific projects are reviewed by local planning agencies. Applicable and appropriate mitigation measures could be evaluated when specific projects are determined, and a cost-benefit analysis of proposed compliance alternatives should be performed.

More reasonable alternatives should be evaluated and implemented, such as non-structural BMPs and low impact and/or small scale structural BMPs, before considering an alternative that would create considerable hardship for the community in the area.

9. Natural Resources. a. **Will the proposal result in increase in the rate of use of any natural resources?**

Answer**: No impact**

**Discussion:** Non-structural and/or structural BMPs will not increase the rate of use of any natural resources. Implementation of non-structural and/or structural BMPs should not require quarrying, mining, dredging, or extraction of locally important mineral resources. Operation of street sweepers, construction, and maintenance vehicles could increase the use of fossil fuels, and some types of equipment used in structural BMPs may consume electricity to operate pumps, etc. However, the relative amounts of additional fossil fuel and electricity that might be used would fall well within the capacity and expectations of the region's normal rate of use of natural resources. The additional use of fossil fuels and electricity could be mitigated and reduced if dischargers used alternative fuels and/or renewable energies to power their vehicles and equipment.

9. Natural Resources. b. **Will the proposal result in substantial depletion of any non-renewable natural resource?**

Answer**: No impact**

**Discussion:** Non-structural and/or structural BMPs will not substantially deplete any non-renewable natural resource. Operation of street sweepers, construction, and

maintenance vehicles could increase the use of fossil fuels, and some types equipment used in structural BMPs may consume electricity to operate pumps, etc. However, the relative amounts of additional fossil fuel and electricity that might be used would fall well within the capacity and expectations of the region's energy supply and natural resources. The additional use of fossil fuels and electricity could be mitigated and reduced if dischargers used alternative fuels and/or renewable energies to power their vehicles and equipment.

10. Risk of Upset. **Will the proposal involve a risk of an explosion or the release of hazardous substances (including, but not limited to: oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions?**

Answer**: Less than significant**

**Discussion:** Non-structural and structural BMPs will not involve a risk of an explosion or the release of hazardous substances (including, but not limited to: oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions. The reasonably foreseeable non-structural and structural BMPs included in this evaluation would not be subject to explosion or the release of hazardous substances in the event of an accident because these types of substances would not be present. There is the possibility that hazardous materials (e.g., paint, oil, gasoline) may be present during construction and installation activities, but potential risks of exposure can be mitigated with proper handling and storage procedures. All risks of exposure would be short term and would be eliminated with the completion of construction and installation activities.

11. Population. **Will the proposal alter the location, distribution, density, or growth rate of the human population of an area?**

Answer**: Less than significant**

**Discussion**: Non-structural BMPs will not alter the location, distribution, density, or growth rate of the human population of an area because none of the BMPs would introduce any physical effects that could impact these characteristics.

Implementation of structural BMPs may potentially alter the location, distribution, density, or growth rate of the human population of an area. However, dischargers are not required or expected to change present or planned land uses to comply with the TMDLs, and dischargers are encouraged to seek alternatives that would have the lowest impact on the existing and planned population of an area. Potential conflicts between complying with the TMDLs and planned growth can be resolved by standard planning efforts under which specific projects are reviewed by local planning

agencies. Applicable and appropriate mitigation measures could be evaluated when specific projects are determined.

More reasonable alternatives should be evaluated and implemented, such as non-structural BMPs and low impact and/or small scale structural BMPs, before considering an alternative that would create the need to relocate the population of parts of the watersheds.

12. Housing. **Will the proposal affect existing housing, or create a demand for additional housing?**

Answer**: Less than significant**

**Discussion**: Non-structural BMPs will not affect existing housing, or create a demand for additional housing because none of these BMPs would introduce any physical effects that could impact housing.

Implementation of structural BMPs may potentially affect existing housing. However, dischargers are not required or expected to change present or planned land uses to comply with the TMDLs, and dischargers are encouraged to seek alternatives that would have the lowest impact on land use and the environment. Potential conflicts between complying with the TMDLs and other land uses can be resolved by standard planning efforts under which specific projects are reviewed by local planning agencies. Applicable and appropriate mitigation measures could be evaluated when specific projects are determined.

More reasonable alternatives should be evaluated and implemented, such as non-structural BMPs and low impact and/or small scale structural BMPs, before considering an alternative that would create considerable hardship for the community in the area.

13. Transportation/Circulation. a. **Will the proposal result in generation of substantial additional vehicular movement?**

Answer**: Less than significant**

**Discussion**: Non-structural and/or structural BMPs will not result in generation of substantial additional long-term vehicular movement. There may be additional vehicular movement during construction of structural BMPs and during street sweeping and/or maintenance activities. However, vehicular movement during construction would be temporary, and vehicular movement during street sweeping and/or maintenance activities would be periodic and only as the vehicle passes through the area. This may generate minor additional vehicular movement.

In order to reduce the impact of construction traffic, a construction traffic management plan could be prepared for traffic control during 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 and stripping, 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.

The potential impact to vehicular movement can be reduced if street sweeping and/or maintenance activities are scheduled to be performed at the same time as other maintenance activities performed by municipalities, or at times when these activities have lower impact, such as periods of low traffic activity.

13. Transportation/Circulation. b. **Effects on existing parking facilities, or demand for new parking?**

Answer**: Less than significant with mitigation.**

**Discussion**: Non-structural BMPs may affect existing parking facilities, or create demand for new parking structures, if increased street sweeping and/or maintenance is implemented in areas with parking along roadsides. Available parking in an area could be reduced during certain times of the day, week, and/or month, depending on frequency of street sweeping and/or maintenance events. Street sweeping and maintenance events should be scheduled to be performed at the same time as other maintenance activities performed by the municipalities, and/or at times when these activities have lower impact, such as periods of low traffic activity and parking demand.

Depending on the structural BMPs selected, alterations to existing parking facilities may occur to incorporate structural BMPs. This could reduce available parking in an area. However, structural BMPs can be designed to accommodate space constraints or be placed under parking spaces and do not have to occupy space in existing parking facilities. Available parking spaces can be reconfigured to provide equivalent number of spaces or provide functionally similar parcels for use as offsite parking to reduce potential impacts.

13. Transportation/Circulation. c. **Will the proposal result in substantial impacts upon existing transportation systems?**

Answer**: Less than significant**

**Discussion**: Non-structural BMPs will not result in significant impacts upon existing transportation systems. The only foreseeable impact would come from increased street sweeping, however long-term impacts are unlikely because any increase in maintenance vehicular activities would fall well within the present day activities in any municipality, and would therefore not qualify as substantial.

Depending on the structural BMPs selected, temporary alterations to existing transportation systems may be required during construction and installation activities. The potential impacts would be limited and short-term. Potential impacts could 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.

13. Transportation/Circulation. d. **Will the proposal result in alterations to present patterns of circulation or movement of people and/or goods?**

Answer**: Less than significant**

**Discussion**: Non-structural BMPs will not result in alterations to present patterns of circulation or movement of people and/or goods, because none of the BMPs, including increased street sweeping, would introduce any physical effects that could impact these characteristics. No long-term impacts are expected because any increase in maintenance vehicular activities would fall well within the present day activities in any municipality.

Depending on the structural BMPs selected, temporary alterations to present patterns of circulation or movement of people and/or goods may be required during construction and installation activities. The potential impacts would be limited and short-term. Potential impacts could 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.

13. Transportation/Circulation. e. **Will the proposal result in alterations to waterborne, rail or air traffic?**

Answer**: Less than significant**

**Discussion**: Non-structural and/or structural BMPs are not expected to result in alterations to waterborne, rail or air traffic because none of the BMPs would introduce any physical effects that could impact these characteristics.

Depending on the structural BMPs selected, temporary alterations to rail transportation could potentially occur during construction and installation activities.

However, those potential impacts would limited and short-term and could be avoided through proper siting and design, and scheduling of construction activities.

13. Transportation/Circulation. f**. Will the proposal result in increase in traffic hazards to motor vehicles, bicyclists or pedestrians?**

Answer**: Less than significant**

**Discussion**: Non-structural BMPs could result in an increase in traffic hazards to motor vehicles, bicyclists or pedestrians due, for example, to increased street sweeping. However, any foreseeable impact from increased street sweeping would fall well within the present day conditions in any municipality, and would therefore not present new safety concerns.

Depending on the structural BMPs selected, a temporary increase in traffic hazards may occur during construction and installation activities. The specific project impacts can be reduced and mitigated by marking, barricading, and controlling traffic flow 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.

14. Public Service. a. **Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas: Fire protection?**

Answer**: Less than significant**

**Discussion**: Non-structural BMPs will not have an effect upon, or result in a need for new or altered fire protection services because none of the BMPs would introduce any physical effects that could impact this characteristic.

During construction and installation of structural BMPs, temporary delays in response time of fire vehicles due to road closure/traffic congestion during construction activities may occur. However, any construction activities would be subject to applicable building and safety and fire prevention regulations and codes. The responsible agencies could notify local emergency service providers of construction activities and road closures and could coordinate with local providers to establish alternative routes and appropriate signage. In addition, an Emergency Preparedness Plan could be developed for the construction of proposed new facilities in consultation with local emergency providers to ensure that the proposed project's

contribution to cumulative demand on emergency response services would not result in a need for new or altered fire protection services. Most jurisdictions have in place established procedures to ensure safe passage of emergency vehicles during periods of road maintenance, construction, or other attention to physical infrastructure. In any case, the installation of structural devices would not create any more significant impediments than such other ordinary activities.

14. Public Service. b. **Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas: Police protection?**

Answer**: Less than significant**

**Discussion**: Non-structural BMPs will not have an effect upon, or result in a need for new or altered fire protection services because none of the BMPs would introduce any physical effects that could impact this characteristic.

During construction and installation of structural BMPs, temporary delays in response time of police vehicles due to road closure/traffic congestion during construction activities may occur. The responsible agencies could notify local police service providers of construction activities and road closures and could coordinate with local police to establish alternative routes and traffic control during construction projects. In addition, an Emergency Preparedness Plan could be developed for the proposed new facilities in consultation with local emergency providers to ensure that the proposed project's contribution to cumulative demand on emergency response services would not result in a need for new or altered police protection services. Most jurisdictions have in place established procedures to ensure safe passage of emergency vehicles during periods of road maintenance, construction, or other attention to physical infrastructure. In any case, the installation of structural devices would not create any more significant impediments than such other ordinary activities.

14. Public Service. c. **Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas: Schools?**

Answer**: No impact.**

**Discussion**: Non-structural and structural BMPs will not have an effect upon, or result in a need for new or altered schools or school services because none of the BMPs would introduce any physical effects that could impact this characteristic.

14. Public Service. d. **Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas: Parks or other recreational facilities?**

Answer**: Less than significant.**

**Discussion**: Non-structural BMPs will not have an effect upon, or result in a need for new or altered parks or other recreational facilities because none of the BMPs would introduce any physical effects that could impact parks or recreational facilities.

During construction and installation of structural BMPs, parks or other recreational facilities could be temporarily affected. Construction activities could potentially be performed near or within a park or recreational facilities. Potential impacts would be limited and short-term and could be avoided through siting, designing, and scheduling of construction activities.

In the unlikely event that the municipalities might install facilities on a scale that could alter a park or recreational facility, the structural BMPs could be designed in such a way as to be incorporated into the park or recreational facility. Additionally, should an impermeable detention basin be required, this could be constructed underground to avoid the need for new or altered parks or other recreational facilities.

14. Public Service. e. **Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas: maintenance of public facilities, including roads?**

Answer**: Less than significant with mitigation**

**Discussion**: Non-structural BMPs may include additional road maintenance such as additional and/or increased street sweeping. Structural BMPs may require additional maintenance by dischargers to ensure proper operation. As discussed above for Questions 2, 6, and 13, additional or increased street sweeping and maintenance activities could affect air, noise, and transportation/circulation. The increase in air pollutants and noise levels would be no greater than typical street sweeping and maintenance activities currently performed by the municipalities. Street sweeping and maintenance events could be scheduled to be performed at the same time as other maintenance activities performed by the municipalities, or at times when these activities have lower impact, such as periods of low traffic activity and parking demand.

14. Public Service. f. **Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas: other government services?**

Answer**: Less than significant with mitigation**

**Discussion**: As discussed above, non-structural and/or structural BMPs may include increased street sweeping and/or additional maintenance by dischargers to ensure proper operation of newly installed structural BMPs. However, the potential impacts to air, noise, and transportation/circulation would be no greater than typical street sweeping and maintenance activities currently performed by municipalities. Street sweeping and maintenance events could be scheduled to be performed at the same time as other maintenance activities performed by the municipalities, or at times when these activities have lower impact, such as periods of low traffic activity and parking demand.

Implementation of the TMDLs will result in the need for increased monitoring in the watersheds and to track compliance with the TMDLs. However, no effects to the environment would be expected from these monitoring activities.

15. Energy. a. **Will the proposal result in use of substantial amounts of fuel or energy?**

Answer**: No impact**

**Discussion:** Non-structural and/or structural BMPs will not use substantial amounts of fuel or energy. As discussed above for Question 9, operation of street sweepers, construction, and maintenance vehicles could increase the use of fossil fuels, and some types equipment used in structural BMPs may consume electricity to operate pumps, etc. The additional use of fossil fuels and electricity could be reduced if the dischargers used alternative fuels and/or renewable energies to power their vehicles and equipment.

15. Energy. b. W**ill the proposal result in a substantial increase in demand upon existing sources of energy, or require the development of new sources of energy?**

Answer**: No impact**

**Discussion:** Non-structural and/or structural BMPs will not result in a substantial increase in demand upon existing sources of energy, or require the development of new sources of energy. As discussed for Questions 9 and 15a above, operation of street sweepers, construction, and maintenance vehicles could increase the use of

fossil fuels, and some types of equipment used in structural BMPs may consume electricity to operate pumps, etc. The additional use of fossil fuels and electricity could be reduced if the dischargers used alternative fuels and/or renewable energies to power their vehicles and equipment.

If alternative sources of energy are used, sources of alternative energy and fuel may be needed. Equipment and components for renewable sources of energy such as solar or wind are readily available. Alternative fuels such as ethanol or biodiesel are commercially available and can be used. Sources of new energy are not required to be developed.

16. Utilities and Service Systems. a. **Will the proposal result in a need for new systems, or substantial alterations to the following utilities: power or natural gas?**

Answer**: Less than significant**

**Discussion**: Non-structural BMPs will not result in a need for new systems or alterations to power or natural gas utilities because none of the BMPs would introduce any physical effects that could impact this characteristic.

Installation of structural BMPs may require alterations or installation of new power or natural gas lines. Power and natural gas lines might need to be rerouted to accommodate the addition of structural BMPs. The degree of alteration depends upon local system layouts which careful placement and design can minimize. However, that the installation of structural BMPs will result in a substantial increased need for new systems, or substantial alterations to power or natural gas utilities, is not reasonably foreseeable, because none of these BMPs are large enough to substantially tax current power or natural gas sources. No long term effects on the environment are expected if alterations to power or natural gas utilities are required.

16. Utilities and Service Systems. b. **Will the proposal result in a need for new systems, or substantial alterations to the following utilities: communications systems?**

Answer**: No impact**

**Discussion**: Non-structural BMPs will not result in a need for new systems or alterations to communications systems because none of the BMPs would introduce any physical effects that could impact this characteristic. Current forms of communications used in street sweeping and maintenance vehicles could still be used.

New systems or alterations to communications systems are not necessarily required for structural BMPs. Structural BMPs can be manually inspected and maintained without any communications system required. However, that municipalities could install a remote monitoring system, which could include a new communications system, is possible. A telephone line or wireless communications system could be installed, which would not be a substantial alteration.

16. Utilities and Service Systems. c. **Will the proposal result in a need for new systems, or substantial alterations to the following utilities: water?**

Answer**: No impact**

**Discussion**: Non-structural and/or structural BMPs will not result in a need for new systems or alterations to water lines. The need for new municipal or recycled water to implement these TMDLs is not foreseeable.

16. Utilities and Service Systems. d. **Will the proposal result in a need for new systems, or substantial alterations to the following utilities: Sewer or septic tanks?**

Answer**: Less than significant**

**Discussion**: Non-structural and/or structural BMPs will not result in a need for new systems or alterations to sewer or septic tanks because none of the BMPs would introduce any physical effects that could impact this characteristic.

Depending on the structural BMPs selected, a portion or all of the surface water runoff may be diverted to wastewater treatment facilities. If stormwater is diverted for treatment at a wastewater treatment facility, new connections to existing sanitary sewer lines may be required, but no new major sewer trunks or substantial alterations to sewer system would be expected because BMPs utilizing the sewer would likely contribute small amounts of first flush storm water. Any environmental affects from associated construction activities would be small scale and short-term and similar to typical municipal capital improvement projects.

16. Utilities and Service Systems. e. **Will the proposal result in a need for new systems, or substantial alterations to the following utilities: stormwater drainage?**

Answer**: Less than significant**

**Discussion:** Non-structural BMPs will not result in a need for new systems, or substantial alterations to stormwater drainage systems because none of the BMPs would introduce any physical effects that could impact this characteristic.

In order to achieve compliance with the TMDLs, the stormwater drainage systems may need to be reconfigured and/or retrofitted with structural BMPs to capture and/or treat a portion or all of the stormwater runoff. The alterations and/or additions to stormwater drainage systems will depend on the compliance strategy selected by each discharger at each location where structural BMPs might be installed. Impacts from construction activities to retrofit or reconfigure the storm drain system as part of BMP installation, and mitigation measures have been considered and discussed in the previous responses to the questions.

16. Utilities and Service Systems. f. **Will the proposal result in a need for new systems, or substantial alterations to the following utilities: solid waste and disposal?**

Answer**: Less than significant with mitigation**

**Discussion:** Most non-structural BMPs will not result in a need for new systems, or substantial alterations to the solid waste and disposal systems because none of the BMPs would introduce any physical effects that could impact this characteristic. In urbanized areas, increased street sweeping would generate additional solid waste, but this additional waste is not expected to exceed the maintenance capacity of normal city operations. No new solid waste or disposal systems would be expected.

The installation of structural BMPs may generate construction debris. Additionally, installed structural BMPs may collect sediment and solid wastes that will require disposal. However, no new solid waste or disposal systems would be needed to handle the relatively small volume generated by these projects. Construction debris may be recycled at aggregate recycling centers or disposed of at landfills. Sediment and solid wastes that may be collected can be disposed of at appropriate landfill and/or disposal facilities. In the event that structural BMPs are placed in areas of intensive livestock, resulting in the collection of animal waste, mitigation includes composting and/or manure production to reduce the volume of solid waste going to landfills.

17. Human Health. a. **Will the proposal result in creation of, and exposure of people to, any health hazard or potential health hazard (excluding mental health)?**

Answer**: Less than significant with mitigation**

**Discussion:** As discussed above for Questions 2 and 13, non-structural BMPs such as street sweeping and maintenance vehicles could have an effect on air and transportation/circulation. Non-structural BMPs could increase the amount of pollutants emitted into the atmosphere above ambient conditions. Non-structural BMPs could also increase traffic, which could potentially decrease the safety of pedestrians. In both cases, potential impacts can be reduced or eliminated if street sweeping and/or maintenance activities are scheduled to be performed at the same time as other maintenance activities performed by the dischargers, or at times when these activities have lower impact, such as periods of low traffic activity.

As discussed above for questions 1, 2, 3, 5, and 13, the installation of structural BMPs could have an effect on earth, air, water, animal life, and transportation/circulation. Structural BMPs could increase the risk of unstable earth conditions, which could pose a physical risk to persons in the area should a slope fail. Construction, installation, and maintenance of structural BMPs could increase the amount of pollutants the air, which could have an effect on health. Structural BMPs could potentially result in additional habitat and/or standing water which can attract pests, such as flies, mosquitoes and/or rodents, which can be carriers of disease. Maintenance of structural BMPs could also increase traffic, which could potentially decrease the safety of pedestrians. Additionally, heavy machinery and materials that may be used during construction and installation of structural BMPs could pose physical and/or chemical risks to human health.

Potential impacts to earth could be avoided or mitigated through proper geotechnical investigations, siting, design, and ground and groundwater level monitoring to ensure that structural BMPs are not employed in areas subject to unstable soil conditions. Potential health hazards attributed to installation and maintenance of structural BMPs can be mitigated by use of OSHA construction and maintenance health and safety guidelines. Potential health hazards attributed to BMP maintenance can be mitigated through OSHA industrial hygiene guidelines. Installation of non-vector producing structural BMPs can help mitigate vector production from standing water. Netting can be installed over structural BMPs to further mitigate vector production. Structural BMPs can be designed and sites can be properly protected to prevent accidental health hazards as well as prevent vector production. Vector control agencies may also be employed as another source of mitigation. Structural BMPs 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. Potential impacts to transportation/circulation can be reduced or eliminated if maintenance activities are scheduled to be performed at the same time as other maintenance activities performed by the municipalities, or at

times when these activities have lower impact, such as periods of low traffic activity. Appropriate planning, design, siting, and implementation can reduce or eliminate potential health hazards due to the installation of structural BMPs.

18. Aesthetics. a. **Will the proposal result in the obstruction of any scenic vista or view open to the public?**

Answer**: Less than significant with mitigation**

**Discussion**: Non-structural BMPs will not result in the obstruction of any scenic vista or view open to the public because none of the BMPs would introduce any physical effects that could impact this characteristic.

That dischargers would comply with this TMDL by installing structural BMPs that would adversely affect a scenic vista or view open to the public is not reasonably foreseeable. Most structural BMPs that will likely be used can be constructed as subsurface devices, such as sand filters. Once completed, structural BMPs would not foreseeably obstruct scenic vistas or open views to the public. In the unlikely event that the dischargers might install facilities on a scale that could obstruct scenic views, such impacts could be reduced or eliminated with appropriate planning, design, and siting of the structural BMPs. Additionally, many structural BMPs can, if necessary, be constructed underground to eliminate aesthetic issues.

18. Aesthetics. b. **Will the proposal result in the creation of an aesthetically offensive site open to public view?**

Answer**: Less than significant with mitigation**

**Discussion**: Non-structural BMPs will not result in the creation of an aesthetically offensive site open to public view because none of the BMPs would introduce any physical effects that could impact this characteristic.

The installation of structural BMPs could potentially create an aesthetically offensive site open to public view. Structural BMPs may create an aesthetically offensive site to the public during construction and installation, but this would be temporary until construction is completed. Once installation of the structural BMPs is complete, the site may continue to be aesthetically offensive to the public. However, many structural BMPs can be designed to provide wildlife habitat, recreational areas, and green spaces in addition to improving stormwater quality. Appropriate architectural and landscape design practices can be implemented to reduce adverse aesthetic effects. Screening and landscaping may also be used to mitigate adverse aesthetic effects. The adverse aesthetic effects could be reduced or eliminated and possibly improved with appropriate planning and design of the structural BMPs. Additionally,

many structural BMPs can, if necessary, be constructed underground to eliminate aesthetic issues.

19. Recreation a. **Will the proposal result in impact on the quality or quantity of existing recreational opportunities?**

Answer**: Less than significant with mitigation**

**Discussion**: Non-structural BMPs will not result in impact on the quality or quantity of existing recreational opportunities because none of the BMPs would introduce any physical effects that could impact these characteristics.

During construction and installation of structural BMPs, parks or other recreational areas could be temporarily affected. Construction activities could potentially be performed near or within a park or recreational area. Potential impacts would be limited and short-term, and could be avoided through proper siting, design, and scheduling of construction activities.

In the event that the municipalities might install facilities on a scale that could alter a park or recreational area, the structural BMPs could be designed in such a way as to be incorporated into the park or recreational area. Additionally, any structural BMPs can, if necessary, be constructed underground to minimize impacts on the quality or quantity of existing recreational opportunities. Mitigation to replace lost areas may include the creation of new open space recreation areas and/or improved access to existing open space recreation areas.

Additionally, improvement of water quality could create new recreation opportunities in urbanized areas of the watersheds by providing the opportunity to recreate in and near a clean water body with a robust and diverse population of plants and animals.

20. Archeological/Historical a. **Will the proposal result in the alteration of a significant archeological or historical site, structure, object or building?**

Answer**: Less than significant with mitigation**

**Discussion**: Non-structural BMPs will not result in the alteration of a significant archeological or historical site, structure, object or building because none of the BMPs would introduce any physical effects that could impact these characteristics.

In the unlikely event that dischargers might install facilities on a scale that could result in significant adverse effects on a significant archeological or historical site, structure, object or building, a project level, site-specific environmental assessment should be performed to identify the mitigation measures that could be employed to

minimize the potential effects on archeological or historical sites and identify alternatives that could potentially be used that would have less impact. The agencies responsible for implementing this TMDL could consult the relevant local archeological or historical commissions or authorities to identify these types of sites and determine ways to avoid significant adverse impacts. The potentially adverse effects on archeological or historical sites that might be present could be reduced or eliminated with appropriate planning, design, and siting of the structural BMPs.

21. Mandatory Findings of Significance - Potential to degrade: **Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?**

Answer**: Less than significant with mitigation**

**Discussion**: Non-structural BMPs will not result in the substantial degradation of the environment for plant and animal species because none of the BMPs would introduce any physical effects that could impact these characteristics.

As discussed above in Questions 4 and 5, plant and animal species could potentially be adversely affected by the installation and operation of structural BMPs. Mitigation measures could be implemented to ensure that unique, rare or endangered plant and/or animal species and their habitats are not taken or destroyed. When specific projects are developed and sites identified, a focused protocol plant and/or animal survey and/or a search of the California Natural Diversity Database should be performed to confirm that any potentially sensitive or special status plant and/or animal species in the site area are properly identified and protected as necessary. If sensitive plant and/or animal species occur on the project site, mitigation is required in accordance with the Endangered Species Act. Mitigation measures should be developed in consultation with the CDFG and the USFWS. Dischargers should avoid installing structural BMPs that could adversely affect any unique, rare or endangered species of plants and/or animals, and instead opt for non-structural BMPs and/or identify and install structural BMPs that will have little or no impact such as underground BMPs.

Taken all together, the potential impacts of the project will not cause a significant cumulative impact in the environment. In any case, the implementation of this TMDL will result in improved water quality in the waters of the Region and will have significant beneficial impacts to the environment over the long term.

21. Mandatory Findings of Significance - Short-term: **Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time, while long-term impacts will endure well into the future.)**

    Answer**: No impact**

**Discussion**: There are no short-term beneficial effects on the environment from the implementation of non-structural and/or structural BMPs that would be at the expense of long-term beneficial effects on the environment. The implementation and compliance with this TMDL will result in improved water quality in the waters of the Region and will have significant beneficial impacts to the environment over the long term.

21. Mandatory Findings of Significance - Cumulative: **Does the project have impacts which are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)**

    Answer**: Less than significant with mitigation**

**Discussion:** Cumulative impacts, defined in section 15355 of the CEQA Guidelines, refer to two or more individual effects, that when considered together, are considerable or that increase other environmental impacts. Cumulative impact assessment must consider not only the impacts of the proposed bacteria TMDLs, but also the impacts from other TMDL, municipal, and private projects, which have occurred in the past, are presently occurring, and may occur in the future, in the watershed during the period of implementation.

Past and present projects may be regarded as the general construction (development and maintenance) which has brought several regional creeks from a natural, pristine condition, to the urban, developed setting which is present today. This provides a baseline level of construction with which to compare all water quality project requirements. The past and present baseline of construction in the urbanized watersheds will probably remain constant in the future. The increment of increase proposed by the cumulative requirements of all water quality requirements can be mitigated through scheduling, and is insignificant compared to the past and on-going baseline of typical municipal construction.

Present and future impacts will come from all of the water quality control programs and pollutant load reduction projects being implemented in the watershed or planned for the near future. This includes waterbodies for which other TMDLs are to be

developed, and projects to comply with the WDRs in Order Nos. R9-2007-0001 and R9-2002-0001 (the San Diego County and Orange County municipal stormwater requirements).

Cumulative impacts of these bacteria TMDLs and other water quality control programs are not expected to be significant because effective non-structural BMPs, that have no adverse impacts, will most likely be an initial strategy for implementation of the bacteria TMDLs. For example, the bacteria TMDLs can be implemented through education and outreach, and enforcement of ordinances requiring pet owners to properly dispose of pet waste, ordinances prohibiting disposal of grease, food products, and other bacteria-laden waste products into the storm drain, and ordinances curbing nuisance flows into the stormdrain system. Another important bacteria load reduction program is to find and fix illegal cross-connections between the sanitary sewer system and the stormdrain system. Fixing cross connections between the stormdrain and sanitary sewer systems may increase the overall number of construction projects needed in the watershed to implement TMDLs. However, estimating the number of cross connections that might exist is purely speculative. Further, these types of construction projects are on a small scale and fall well within typical municipal capital improvement and maintenance activities. Additionally, some of these practices, such as curbing nuisance flows, will be effective at addressing other pollutants in addition to bacteria. Therefore the cumulative effects will not be considerable, and can be mitigated, if necessary, through scheduling.

The dischargers may opt to use structural BMPs to reduce bacteria and other pollutants to the watersheds, which would increase the likelihood of environmental effects that are cumulatively considerable. The City of San Diego funded an assessment of BMP strategies that would lessen the anticipated impacts and allow an integrated TMDL strategy that address both current and anticipated TMDLs in Chollas Creek. In this study,[25] the authors recommended a strategy that used a tiered approach that reduces the impact to the environment, and allows for more cost effective implementation of lower-impact BMPs. The tiered approach consists of three major components:

- Tier 1 – Control of Pollutants at the Source and Prevent Pollutants from Entering Runoff
- Tier 2 – Conduct Design Studies and Implement Aggressive Street Sweeping and Runoff and Treatment Volume Reduction BMPs
- Tier 3 – Infrastructure Intensive Treatment BMPs

Implementation of this BMP strategy, because it emphasizes BMPs with the least adverse impacts to the environment, should reduce cumulative impacts to less than significant levels. Although this study was specific to Chollas Creek, the recommended strategy is applicable to reducing pollutants in all watersheds.

[25] Weston Solutions, 2006. *Chollas Creek TMDL Source Loading, Best Management Practices, and Monitoring Strategy Assessment,* September, 2006.

Present and future specific TMDL projects may include structural BMP construction which must be environmentally evaluated for potential cumulative impacts by the implementing municipality. Present and future specific TMDL projects and other construction activities may result in short-term cumulative impacts as described below. However, appropriate and available mitigation measures, including scheduling, are available to reduce adverse environmental impacts associated with construction to less than significant levels.

Noise and Vibration - Local residents in the near vicinity of installation and maintenance activities may be exposed to noise and possible vibration. The cumulative effects, both in terms of added noise and vibration at multiple bacteria BMP installation sites, and in the context of other related projects, are not likely to be cumulatively considerable due to the temporary nature of noise increases and the small scale of the projects. Noise mitigation methods including scheduling of construction are discussed above, and should be used to keep cumulative noise and vibration affects to acceptable levels.

Air Quality - Implementation of the bacteria TMDL program may cause additional emissions of air pollutants and slightly elevated levels of carbon monoxide during construction activities. Emission of air pollutants resulting from installation of TMDL compliance devices may exceed certain regulatory thresholds, and therefore the TMDL, in conjunction with all other construction activity, may contribute to the region's overall exceedance of certain regulatory thresholds during the installation period. However, because these installation-related emissions are temporary, compliance with the TMDL would not result in long-term cumulatively considerable air quality impacts. Short-term impacts can be avoided through scheduling.

Transportation and Circulation - Compliance with the bacteria TMDLs could involve installation activities occurring simultaneously at a number of sites along the creek included in this project. Installation of bacteria reduction BMPs 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 depending upon a range of factors including the specific location involved and the precise nature of the conditions created by the numerous construction activities. Special coordination efforts may be necessary to reduce the combined effects to an acceptable level. Overall, cumulatively considerable impacts are not anticipated because coordination can occur and because transportation mitigation methods are available.

Public Services - The cumulative effects on public services due to the bacteria TMDLs would be limited to traffic inconveniences. These effects are not likely to be cumulatively considerable as long as alternative traffic route are available around construction sites.

Aesthetics - Construction activities associated with other related projects may be ongoing in the vicinity of one or more bacteria TMDL construction sites. To the extent that combined construction activities do occur, there would be temporary

elevated adverse visual effects. However, these effects are not cumulatively considerable in the long-term because the effects will cease with the completion of construction. Short-term impacts can be avoided through scheduling.

As analyzed above, the construction of structural BMPs, along with other construction and maintenance projects, could have short-term cumulative effects; however, these effects can be mitigated through proper construction scheduling. In addition, these effects are not cumulatively considerable in the long-term because the effects will cease with the completion of construction. In summary, appropriate and available mitigation measures, including scheduling, are available to reduce adverse environmental impacts associated with construction to less than significant levels.

21. Mandatory Findings of Significance - Substantial adverse: **Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?**

    Answer**: Less than significant with mitigation**

**Discussion**: All of the potentially significant impacts to human beings, such as air quality, noise, aesthetics, alterations to utilities, fire protection, police protections etc., are either short-term in nature, or can be mitigated to acceptable levels as previously discussed.

### *R.5.1 Alternative Means of Compliance*

The CEQA requires an analysis of reasonably foreseeable alternative means of compliance with the rule or regulation, which would avoid or eliminate the identified impacts.[26] The dischargers can use the structural and non-structural BMPs described in section 3, or other structural and non-structural BMPs, to control and prevent pollution, and meet the TMDLs' required load reductions. The alternative means of compliance with the TMDLs consist of the different combinations of structural and non-structural BMPs that the dischargers might use. Because there are innumerable ways to combine BMPs, all of the possible alternative means of compliance cannot be discussed here. However, because most of the adverse environmental effects are associated with the construction and installation of structural BMPs, to avoid or eliminate impacts, compliance alternatives should minimize structural BMPs, maximize non-structural BMPs, and site, size, and design structural BMPs in ways to minimize environmental effects.

[26] 14 CCR section 15187 (c) (3)

## R.6 Reasonably Foreseeable Methods of Compliance at Specific Sites

The San Diego Water Board analyzed various reasonably foreseeable methods of compliance at specific sites within the subject watersheds. Because this project is large in scope (encompassing 12 watersheds), the specific sites analysis was focused on reviewing potential compliance methods within various land uses. The land uses cited below correspond to the land uses that were utilized for watershed model development (the watershed models are discussed extensively in section 7 of the Technical Report and Appendices J and K). Land uses in this analysis include: dairies/intensive livestock/horse ranches, transitional (construction areas), agriculture, residential, parks/recreation, commercial/institutional, industrial/transportation, and military. These land uses represent a range of population densities and geographical settings found in the San Diego Region. Although all of these land uses generate bacteria, the ones that have the highest human and/or animal population densities are the most likely to produce human pathogens that can pollute surface waters and impair beneficial uses.

In this discussion of potential compliance methods, the San Diego Water Board assumed that, generally speaking, the BMPs suitable for the control of bacteria generated from a specific land use within a given watershed are also suitable for the control of bacteria generated from the same land use category within a different watershed. For example, a BMP used to control the discharge of bacteria from a residential area in the San Diego River watershed is likely suitable to control the discharge of bacteria from a residential area in the Aliso Creek watershed. However, in addition to land use, BMP selection includes considering site-specific geographical factors such as average rainfall, soil type, and the amount of impervious surfaces, and non-geographical factors such as available funding. Such factors vary between watersheds. The most suitable BMP(s) for a particular site must be determined by the dischargers in a detailed, project-specific environmental analysis.

The following discussion involves a programmatic level review of specific site compliance methods, or combination of compliance methods that have been implemented in the subject watersheds, as well as other BMP examples that could potentially be implemented at additional sites. The dischargers are in no way limited to using the BMPs included here to achieve TMDL compliance, and may choose not to implement these particular BMPs.

In order to meet TMDL requirements, dischargers will determine and implement the actual compliance method(s) after a thorough analysis of the specific sites suitable for BMP implementation within each watershed. In most cases, the San Diego Water Board anticipates a potential strategy to be the use of management measures, or other non-structural BMPs as a first step in controlling bacteria discharges, followed by structural BMP installation if necessary.

### *R.6.1 Potential BMPs for Dairy/ Intensive Livestock Areas and Horse Ranches*

Livestock and horse ranch areas in the San Diego Region are usually found in rural areas with lower population densities than the urbanized areas. However, small horse ranches

and individual horse corrals are sometimes found within urbanized areas with higher population densities.[27]

Examples of management measures to achieve TMDL compliance include ensuring that livestock and horse holding pens, paddocks, and corrals are properly sized and sited in areas that do not drain to surface streams. Additionally, animal waste should be properly managed (i.e., stored in a manner that prevents leaching pollutants into runoff and prevents runoff from reaching waterways during a rain event.

Examples of structural BMPs include the installation of roof gutters to prevent rain water from mixing with manure and causing erosion, or diversion structures, such as vegetative strips, that absorb runoff and prevent it from reaching waterways. Another example includes the construction of animal exclusion devices, such as fences or other physical barriers, to keep animals out of the creeks, as shown in Figures 1 and 2. Figure 1 depicts a galvanized fence that is useful for keeping dairy cows from the Konyn Dairy in Escondido, California, (background) out of the creek bed (foreground). However, this control would be more effective if set back farther from the creek bank and with a vegetative strip between the fence and the creek bank. Figure 2 shows a similar fencing device that is useful for keeping horses confined and away from surface waters. No adverse environmental effects are expected as a result of implementing these types of BMPs.

Figure R-1. Animal Exclusion Device at Konyn Dairy, Valley Center Road, San Dieguito Watershed.

[27] The US Census Bureau's 2000 data reported the City of San Diego to have a population density of 3,771 people per square mile.

Figure R-2. Animal Exclusion Device at Happy Trails Horse Ranch, Black Mountain Road, Penasquitos Watershed.

### *R.6.2 Potential BMPs for Construction Sites*

Construction activities typically take place in various settings and existing land uses. In San Diego County, construction activities result in new residential units both in urban and suburban environments, as well as industrial and commercial sites, such as business parks and shopping malls. Population densities in the areas of construction vary greatly with the specific projects.

A potential strategy to achieve TMDL compliance includes the use of structural BMPs, such as fiber rolls as shown in Figure 3. Other examples include compost blankets, netting, silt fences, or filter berms. Such devices prevent pollutants such as bacteria and sediment from reaching stormwater and stormwater drainage pathways by allowing the water and contaminants to infiltrate into the surrounding soil. Still other BMPs that are appropriate to use at construction sites include the use of sandbags, such as the ones shown in Figure 4. Sandbags also prevent runoff containing pollutants from reaching stormwater drainage pathways.

Possible adverse environmental effects include the reduction or elimination of storm flows from the use of structural barriers that prevent flow from reaching creek beds. Although such devices prevent pollutants from reaching receiving waters, so do they prevent water from reaching areas that might depend on it to provide habitat. Additionally, infiltration devices could alter the flow rate of groundwater. For a complete discussion of possible adverse effects of these BMPs, see section 5.

Figure R-3. Use of Netting and Fiber Rolls at San Elijo Hills Construction Site, Northstar Way, Carlsbad Watershed.

Figure R- 4. Use of Sandbags upstream of Moonlight State Beach, Encinitas Blvd., Carlsbad Watershed.

### *R.6.3 Potential BMPs for Agricultural Areas*

In the San Diego Region, there are few agricultural areas compared to other regions in the state, such as the Central Valley. Agricultural areas account for about 12 percent of the land in the region (see Table J-1 in Appendix J) and have lower population densities than urbanized areas.

Examples of reasonably foreseeable management measures to achieve TMDL compliance include irrigation practices that control the volume and flow rate of runoff water, thereby keeping the soil in place, and reducing soil transport (bacteria and pathogens can adsorb to sediment particles). This is especially important where manure fertilizers are applied to agricultural fields. Examples of structural BMPs include the use

of sandbags (see Figure 5) to prevent runoff containing pollutants from agricultural fields, such as the strawberry fields located in Carlsbad, California, (background) from reaching the storm drains that protect flooding of the adjacent roadways (foreground). Possible adverse environmental effects include the reduction or elimination of storm flows from the use of structural barriers (sandbags) that prevent flow from reaching creek beds. Although such devices prevent pollutants from reaching receiving waters, so do they prevent water from reaching areas that might depend on it to provide habitat. For a complete discussion of possible adverse effects of these BMPs, see section 5.

Figure R-5. Use of Sandbags near Strawberry Fields, Cannon Rd. near Interstate 5, Carlsbad Watershed.

### *R.6.4 Potential BMPs for Residential Areas*

Residential areas comprise about 15 percent of the land use in the San Diego Region. Population densities tend to be highest in the residential areas as compared to other land use categories. Thus, residential areas have the highest potential for producing human pathogens that can contaminate surface waters.

In order to achieve TMDL compliance, residential land use areas, like the area shown in Figure 6, may only require non-structural BMPs; however, structural BMPs could be retrofitted, if appropriate. Potential non-structural BMPs at this specific site include increased street sweeping, and development and enforcement of municipal ordinances prohibiting the discharge of bacteria and nuisance flows to stormwater and stormwater drainage pathways. Other potential BMPs include adoption and enforcement of ordinances to pick up pet waste, and regular inspections of storm drains for cross connections with the sanitary sewers.

Potential structural BMPs include the installation of storm drain filter sacks, which require routine maintenance. Newer residential areas, including the one shown in

Figure 7, could be designed with vegetative strips to control the velocity of runoff, increase infiltration, and prevent pollutants from entering stormwater drainage pathways.

Possible adverse environmental effects include the reduction or elimination of storm flows by the use of structural barriers that prevent flow from reaching creek beds. Although such mechanisms prevent pollutants from reaching receiving waters, so do they prevent water from reaching areas that might depend on it to provide habitat. Additionally, infiltration devices could alter the flow rate and/or quality of groundwater. For a complete discussion of possible adverse effects of these BMPs, see section 5.

Figure R-6. Clean Storm Drain in Residential Area, D Street, Carlsbad Watershed

Figure R-7. Vegetative Strip in Residential Area, San Elijo Hills, Carlsbad Watershed

### *R.6.5 Potential BMPs for Park and Recreational Areas*

Park and recreational areas make up less than 1 percent of the total land area in the San Diego Region. Because these areas do not have housing or industrial units, population densities in these areas are low. However, parks and recreational areas may have significant use as dog walking areas, and be at risk for accumulating pet wastes.

In order to achieve TMDL compliance, park and recreational areas, like the dog park shown in Figure 8, may only require non-structural controls to encourage responsible actions by pet owners, and efficient irrigation practices that do not result in runoff leaving the site. Potential non-structural controls at this specific site include the availability of pet waste plastic bags and garbage cans. Other non-structural BMPs include the enforcement of pet waste ordinances (see Figure 9). No adverse environmental effects are expected from such measures.

Figure R-8. Plastic Bag Dispenser at Mayflower Dog Park, Valley Center Road, San Dieguito Watershed.

Figure R-9. Municipal Code Signage at Mayflower Dog Park, Valley Center Road, San Dieguito Watershed.

Some park and recreation areas provide land that can be used to treat pollutants originating from the upstream watershed. For example, structural BMPs, such as the constructed wetlands shown in Figure 10, can be incorporated into a park setting. Such devices provide wildlife habitat, are visually pleasing, and are successful at reducing or removing a number of pollutants from the creeks. Figure 11 shows Cottonwood Creek Park in Encinitas, California, in the foreground, and the constructed wetlands in the background. Bioassessments performed in this manufactured wetlands before and after construction demonstrated that this project did not result in any adverse environmental effects.[28]

Figure R-10. Manufactured Wetlands at Cottonwood Creek Park, Encinitas Blvd., Carlsbad Watershed.

[28] Kathy Weldon, City of Encinitas, personal communication, February 6, 2007.

Figure R-11. Cottonwood Creek Park, Encinitas Blvd., Carlsbad Watershed.

### *R.6.6 Potential BMPs for Commercial/Institutional Areas*

Commercial and institutional areas account for approximately 2.75 percent of the land use in the San Diego Region (commercial and institutional areas were analyzed as one land use in the watershed models). Population densities vary on an hourly basis but are relatively high in these areas, compared to other land uses.

A potential strategy to achieve TMDL compliance includes non-structural controls, which may be sufficient to limit bacteria discharges. Commercial businesses and keepers of school grounds should use cleaning practices that contain pollutants instead of allowing them to enter conveyance systems. For example, debris and other waste should be swept up and disposed of properly, and trash receptacles should be available and properly maintained. Potential structural BMPs include the installation of vegetative strips and grassy areas as part of landscaping to control the velocity of runoff, increase infiltration, and prevent pollutants from entering stormwater drainage pathways. Possible adverse environmental effects include alteration of the flow rate and/or quality of groundwater from the use of infiltration devices. For a complete discussion of possible adverse effects of these BMPs, see section 5.

Another potential structural BMP that could be utilized in areas where storm drains discharge directly into receiving waters with high recreational use is a dry weather diversion, which are widely used near popular swimming beaches. Dry weather diversions are effective at reducing or removing urban runoff, or nuisance flows, from reaching receiving waters by directing them into sewer systems. These BMPs are suitable in land use categories where the specific site has similar hydrologic settings (dry weather nuisance flows discharging directly into receiving waters).

### *R.6.7 Potential BMPs for Industrial and Transportation Areas*

Industrial and transportation areas account for about 1.6 percent of the total land area in the San Diego Region. As with the previous discussion, population densities are variable, depending on time of day and also day of week.

Several industrial parks and roadways have adjacent landscaped areas where both management areas and structural BMPs could be designed to help reduce bacteria discharges to surface waters. Management measures include using manure fertilizers sparingly, and efficient irrigation practices that minimize the amount of runoff leaving the site. Landscaping can be designed to capture and control the velocity of runoff, increase infiltration, and prevent pollutants from entering stormwater drainage pathways. Additionally, pervious surfaces near transportation areas often have steep slopes. To prevent erosion and the transport of sediment and bacteria to stormwater drainage pathways, various structural BMPs can be used. Some examples are fiber rolls, netting, and compost blankets.

Possible adverse environmental effects include the reduction or elimination of nuisance dry weather flows from the use of structural barriers that prevent flow from reaching creek beds. Although such devices prevent pollutants from reaching receiving waters, so do they prevent water from reaching areas that might depend on it to provide habitat. Additionally, infiltration devices could alter the flow rate and/or quality of groundwater. For a complete discussion of possible adverse effects of these BMPs, see section 5.

### *R.6.8 Potential BMPs for Military Areas*

Military areas account for about 1 percent of the land area in the San Diego Region and have relatively high population densities, as compared to most land uses. Although military areas are treated as an independent land use for TMDL analysis, military areas are actually comprised of the various aforementioned land uses. Military areas have residential, commercial, and transportation areas, for example. Therefore the applicable structural and non-structural BMPs mentioned for possible use in these land uses would also be suitable in military areas.

## R.7 Economic Factors

This section presents the San Diego Water Board's economic analysis of the most reasonably foreseeable methods of compliance with the Basin Plan amendment to incorporate TMDLs for bacteria indicators at beaches and creeks in the San Diego region.

### *R.7.1 Legal Requirement for Economic Analysis*

The San Diego Water Board must comply with CEQA when amending the Basin Plan.[29] The CEQA process requires the San Diego Water Board to analyze and disclose the potential adverse environmental impacts of a Basin Plan amendment that is being considered for approval. TMDL Basin Plan amendments typically include "performance standards."[30] TMDLs normally contain a quantifiable numeric target that interprets the applicable WQO. TMDLs also include WLAs for point sources and LAs for both nonpoint sources and natural background. The quantifiable target together with the allocations may be considered a performance standard.

CEQA has specific provisions governing the San Diego Water Board's adoption of regulations such as the regulatory provisions of Basin Plans that establish "performance standards" or treatment requirements.[31] These provisions require that the San Diego Water Board perform an environmental analysis of the reasonably foreseeable methods of compliance with the WLAs and LAs prior to the adoption of the TMDL Basin Plan amendment. The San Diego Water Board must consider the economic costs of the methods of compliance in this analysis.[32] The proposed Basin Plan amendment does not include new WQOs but implements existing objectives to protect beneficial uses. ~~The San Diego Water Board is therefore not required to do a formal cost-benefit analysis.~~The San Diego Water Board is therefore not required to consider the factors in Water Code section 13241 (a) through (f).

The most reasonably foreseeable methods of compliance with this Basin Plan amendment is for dischargers to implement structural and non-structural controls to reduce bacteria loads in their discharges to surface waters. Additionally, dischargers will need to conduct surface water monitoring to evaluate the effectiveness of the controls they implement.

Porter Cologne Water Quality Control Act, Article 3, section 13141, California Water Plan, states that "prior to implementation of any agricultural water quality control program, an estimate of the total cost of such a program, together with an identification of potential sources of financing, shall be indicated in any regional water quality control plan." Section 5.2.3 in this document addresses this requirement.

---

[29] Public Resources Code section 21080

[30] The term "performance standard" is defined in the rulemaking provisions of the Administrative Procedure Act (Government Code sections 11340-l 1359). A "performance standard" is a regulation that describes an objective with the criteria stated for achieving the objective. [Government Code section11342(d)].

[31] Public Resources Code sections 21159 and 21159.4

[32] See Public Resources Code section 21159(c)

### *R.7.2 TMDL Project Implementation Costs*

The specific controls to be implemented for bacteria reduction will be chosen by the dischargers after adoption of this TMDL Basin Plan amendment. All costs are preliminary estimates only since particular elements of a control, such as type, size, and location, would need to be developed to provide a basis for more accurate cost estimations. Identifying the specific controls that dischargers will choose to implement is speculative at this time and the controls presented in this section serve only to demonstrate potential costs. Therefore, this section discloses typical costs of conventional controls for urban runoff, as well as monitoring program costs. The Implementation Plan for these TMDLs does not require additional controls for stormwater runoff from agriculture, livestock, and horse ranch facilities other than what is already required in existing WDRs for these facilities, and in the Basin Plan WDR Waiver Policy. Therefore, there will be no additional costs to agricultural and livestock facility owners and operators to comply with these TMDLs.

### *R.7.3 Cost Estimates of Typical Controls for Urban Runoff Discharges*

Approximate costs associated with typical non-structural and structural BMPs that might be implemented in order to comply with the requirements of this TMDL project are provided below. The BMPs are divided into non-structural and structural classes. Cost estimates for structural BMPs cited from "*Stormwater Best Management Practice Handbook – New Development and Redevelopment. January 2003*" are for new construction costs only (CASQA, 2003). These estimates generally do not take into account retrofit of existing structures or the potential purchase on land needed for the BMP. Cost estimates provided by Caltran's *BMP Pilot Retrofit Pilot Program* were from BMPs retrofitted on existing State owned land (Caltrans, 2004). Annual maintenance costs estimates are based on a percentage of the construction cost estimate (USEPA, 1999).

**<u>Non-Structural Controls</u>**

**Education and Outreach:** Education and outreach to residents, businesses and industries can be a very effective tool. These efforts can include methods to reduce sources of pathogens like pet waste in residential areas and livestock in agricultural areas and methods aimed at reducing excessive irrigation that will flow into the storm drain system. The cost of educational programs will vary with the scope of efforts and are estimated range up to $210,900. Educations materials can cost from 10¢ per flyer to $1,750 for household surveys (USEPA, 1999). Because education and outreach efforts are typically a component of water quality programs, the cost to develop educational programs and materials to comply with the TMDL project requirements are expected to be less than estimated because the programs and materials addressing storm water and urban runoff related issues may already exist.

**Road and Street Maintenance:** Another effective BMP to prevent pollutants, trash, and organic material from entering the storm drain is proper maintenance and cleaning of the sidewalks, streets, and gutters. The largest expenditures for street sweeping programs are in staffing and equipment. The capital cost for a street sweeper is between $60,000 and $180,000 and the average useful life of a sweeper is about four to eight years (USEPA,

1999). Operation and maintenance costs are estimated to range from $15 to $30 per curb mile. This particular BMP may prove to be more cost-effective than certain structural controls, especially in more urbanized areas with greater areas of pavement.

**Illicit Connection Identification:** Illicit connections of sanitary sewer line and infiltration from leaking sewer lines to the storm water drain system can be a source of pathogens in urban runoff. Identification of illegal connections can be done through visual inspection or through the use of dye and smoke tests. Visual inspection of the storm drain system can cost from $1,250 to $1,750 per square mile (USEPA, 1999).

**Land Use Modifications:** Land Use Modifications can be used to minimize the degradation of water resources caused by storm water run-off by directing urban growth and development away from environmentally sensitive areas and waterways. Sensitive areas can be protected through open space preservation and rezoning of development rights. Costs for new development will be lower if the site is adjacent to existing urban areas because the infrastructure and public services should already exist. Savings can also be realized if the development site is modified to reduce the impacts from urban run-off caused by impervious surfaces by reducing street widths, clustering housing developments, smaller parking lots, and incorporating vegetative BMPs into the site design. Savings come through the reduction of costs associated with clearing and grading, road paving, and storm water drainage systems. See Table R-1 for an example of capital cost savings (CASQA, 2003).

*Table R-1. Summary of Potential Savings by Land Use Modifications*

| Development Pattern | Capital Costs (2005 Dollars)[4] |
|---|---|
| Compact Growth[1] | $31,000 |
| Low-Density Growth (3 units/acre)[2] | $60,100 |
| Low-Density Growth, 10 miles from Existing Development[3] | $82,500 |

[1]Costs include streets (full curb and gutter), central sewage and water supply, storm drainage and school construction.
[2]Assumes housing mix of 30 percent single-family units and townhouses; 70 percent apartments.
[3]Assumes housing is located 10 miles from major concentration of employment, drinking water plant and sewage treatment plant.
[4] Adjusted for inflation from 1987 dollars (Sahr, 2006).

**Structural Controls**

**Vegetated Buffer or Filter Strips**: Vegetated buffer strips are vegetated surfaces that are designed to treat sheet flow from adjacent surfaces, such as parking lots, highways, and rooftops (CASQA, 2003). The costs associated with vegetated buffer strips vary and are dependent of the costs associated with establishing the vegetation. Cost estimates range from $13,000 to $30,000 per acre. Additional costs could include the purchase of land for the buffer strip (CASQA, 2003). Maintenance of the buffer strip consists mainly of irrigation, mowing, weeding, and litter removal. Costs are estimated to be $350/acre/year (CASQA, 2003). Caltrans reported actual construction costs of a buffer strip for Carlsbad Maintenance Station to be $81,000 with average annual maintenance cost of $1,900 (Caltrans, 2004).

**Bioretention**: Bioretention systems are designed to mimic the functions of a natural ecosystem for treating storm water runoff (USEPA, 1999). Pollutants are removed by a number of processes including adsorption, filtration, volatilization, ion exchange, and decomposition (USEPA, 1999). Bioretention construction costs in residential areas are estimated to be $3 to $4 per square foot depending on the soil conditions and plant selection. Commercial and industrial costs range from $10 to $40 per square foot depending on the design and need for storm drains (CASQA, 2003). Maintenance activities conducted on bioretention facilities were not found to be very different from maintenance of a landscaped area (CASQA, 2003).

**Sand Filters**: Media filters are commonly used to treat runoff from small sites such as parking lots and small developments, in areas with high pollution potential such as industrial areas, or in highly urbanized areas where land availability or costs preclude the use of other BMP types (USEPA, 1999). An Austin Sedimentation-Filtration System (a type of surface sand filter) is estimated to cost $18,500 (CASQA, 2003). A sand filter constructed at the La Costa Park and Ride for a 2.7-acre watershed area cost $226,000 with an average annual maintenance cost of $870 (Caltrans, 2004).

**Infiltration Trench**: Infiltration systems are designed to capture a volume of storm water runoff, retain it, and infiltrate that volume into the ground (USEPA, 1999). Infiltration trench is estimated to cost $45,000 for a 5-acre commercial site (USEPA. 1999). An infiltration trench constructed at the Carlsbad Maintenance Station for a 0.7-hectare watershed area cost $180,000 with an average annual maintenance cost of $723 (Caltrans, 2004).

**Diversion/Treatment Systems**: If no other on-site treatment options are available, diverting the polluted runoff to the sanitary sewer system or other treatment plant may be considered. An individual diversion structure is likely to cost over one million dollars, which does not include maintenance costs.

For example, the City of Dana Point recently put into operation a diversion and ozone treatment system targeting Salt Creek and Monarch Beach. The system has a capacity of 1,000 gallons per minute. According to the Orange County Register (October 18, 2005), the system cost $6.7 million. These costs include $1 million in architectural features, and $1 million for design and administration of the project. Operation and maintenance is contracted out at a cost of $90,000 per year. In another example, the City of Encinitas has constructed a diversion and ultraviolet radiation treatment system to kill bacteria in runoff to Moonlight Beach. The system has a capacity of 150 gallons per minute, and cost $1 million for testing, design and construction. Operation and maintenance costs are $10,000 per year (Jeremy J. Clemmons, PBS&J, personal communication, October 26, 2005).

### *R.7.4 Cost Estimate Summary for Urban Runoff Controls*

Table R-2 summarizes the estimated costs of non-structural urban runoff controls. Tables R-3 summarizes for each watershed the estimated costs of the specific structural urban

runoff BMPs that were evaluated for each watershed. The cost estimates for the structural controls are based on sizing the control to treat 10 percent of the urbanized area of each watershed. For example, using the 10 percent cost estimates provided in Table R-3, a cost estimate for 100 percent land treatment could easily be calculated by multiplying the 10 percent cost estimate by 10, or by 5 for 50 percent, or 8 for 80 percent, etc. Additionally, the estimated cost of one diversion structure is provided and can be scaled upward depending on the individual needs in any given watershed.

*Table R-2. Summary of Cost Estimates for Non-Structural Controls*

| BMP | Estimated Cost[1] |
|---|---|
| Education and Outreach | $0 to $210,900 per program |
| Road and Street Maintenance | $60,000 to $180,000 |
| Illicit Connection Identification | $1,250 to $1,750 per square mile |
| Land Use Modifications | Potential cost reduction to developers and local government |

[1] USEPA, 1999.

*Table R-3. Cost Estimates for Structural Controls for 10 Percent of Urbanized Areas*

***Laguna/San Joaquin Watershed***

| BMP | Estimated Total Cost to Treat 10 % of an Urbanized Area (in acres) [1, 2, 3] | Estimated Yearly Maintenance Cost[2] |
|---|---|---|
| Vegetated Buffer Strip | $1,605,752 - $3,705,583 | $39,526 |
| Bioretention | $3,866,672 - $51,555,919 | $270,667 - $3,608,914 |
| Sand Filters | $5,434,855 - $21,492,379 | $706,531 - $2,794,009 |
| Infiltration Trench | $217,394 - $513,841 | $43,479 - $102,768 |
| Diversion | > $1 million per diversion structure | > $10,000 per structure |

***Aliso Creek Watershed***

| BMP | Estimated Total Cost to Treat 10 % of an Urbanized Area (in acres) [1, 2, 3] | Estimated Yearly Maintenance Cost[2] |
|---|---|---|
| Vegetated Buffer Strip | $7,941,403 - $18,326,314 | $195,481 |
| Bioretention | $19,122,996 - $254,974,741 | $1,338,610 - $17,848,232 |
| Sand Filters | $26,878,594 - $106,292,622 | $3,494,217 - $13,818,041 |
| Infiltration Trench | $1,075,144 - $2,541,249 | $215,029 - $508,250 |
| Diversion | > $1 million per diversion structure | > $10,000 per structure |

[1] CASQA, 2003.
[2] USEPA, 1999.
[3] Urbanized Area includes the following Land Uses: Residential (low and high), Commercial, Industrial, Military, Parks/Recreation, and Transitional.

*Table R-3. Cost Estimates for Structural Controls for 10 Percent of Urbanized Areas, Continued*

***Dana Point (Salt Creek Watershed)***

| BMP | Estimated Total Cost to Treat 10 % of an Urbanized Area (in acres) [1, 2, 3] | Estimated Yearly Maintenance Cost[2] |
|---|---|---|
| Vegetated Buffer Strip | $2,446,069 - $5,644,774 | $60,211 |
| Bioretention | $5,890,163 - $78,535,960 | $412,311 - $5,497,517 |
| Sand Filters | $8,279,001 - $32,739,687 | $1,076,270 - $4,256,159 |
| Infiltration Trench | $331,160 - $782,742 | $66,232 - $156,548 |
| Diversion | > $1 million per diversion structure | > $10,000 per structure |

***San Juan Creek Watershed***

| BMP | Estimated Total Cost to Treat 10 % of an Urbanized Area (in acres) [1, 2, 3] | Estimated Yearly Maintenance Cost[2] |
|---|---|---|
| Vegetated Buffer Strip | $12,326,022 - $28,444,667 | $303,410 |
| Bioretention | $29,681,213 - $395,751,785 | $2,077,685 - $27,702,625 |
| Sand Filters | $41,718,844 - $164,979,067 | $5,423,450 - $21,447,279 |
| Infiltration Trench | $1,668,754 - $3,944,327 | $333,751 - $788,865 |
| Diversion | > $1 million per diversion structure | > $10,000 per structure |

***San Clemente Hydrologic Area***

| BMP | Estimated Total Cost to Treat 10 % of an Urbanized Area (in acres) [1, 2, 3] | Estimated Yearly Maintenance Cost[2] |
|---|---|---|
| Vegetated Buffer Strip | $3,407,024 - $7,862,363 | $83,865 |
| Bioretention | $8,204,156 - $109,389,373 | $574,291 - $7,657,256 |
| Sand Filters | $11,531,466 - $45,601,091 | $1,499,091 - $5,928,222 |
| Infiltration Trench | $461,259 - $1,090,248 | $92,252 - $218,050 |
| Diversion | > $1 million per diversion structure | > $10,000 per structure |

***San Luis Rey River Watershed***

| BMP | Estimated Total Cost to Treat 10 % of an Urbanized Area (in acres) [1, 2, 3] | Estimated Yearly Maintenance Cost[2] |
|---|---|---|
| Vegetated Buffer Strip | $30,297,138 - $69,916,472 | $745,776 |
| Bioretention | $72,955,881 - $972,750,675 | $5,106,912 - $68,092,547 |
| Sand Filters | $102,544,159 - $405,515,539 | $13,330,741 - $52,717,020 |
| Infiltration Trench | $4,101,766 - $9,695,084 | $820,353 - $1,939,017 |
| Diversion | > $1 million per diversion structure | > $10,000 per structure |

[1] CASQA, 2003.
[2] USEPA, 1999.
[3] Urbanized Area includes the following Land Uses: Residential (low and high), Commercial, Industrial, Military, Parks/Recreation, and Transitional.

*Table R-3. Cost Estimates for Structural Controls for 10 Percent of Urbanized Areas, Continued*

***San Marcos Hydrologic Area***

| BMP | Estimated Total Cost to Treat 10 % of an Urbanized Area (in acres) [1, 2, 3] | Estimated Yearly Maintenance Cost[2] |
|---|---|---|
| Vegetated Buffer Strip | $370,238 - $854,396 | $9,114 |
| Bioretention | $891,538 - $11,887,246 | $62,408 - $832,107 |
| Sand Filters | $1,253,114 - $4,955,497 | $162,905 - $644,215 |
| Infiltration Trench | $50,125 - $118,476 | $10,025 - $23,695 |
| Diversion | > $1 million per diversion structure | > $10,000 per structure |

***San Dieguito River Watershed***

| BMP | Estimated Total Cost to Treat 10 % of an Urbanized Area (in acres) [1, 2, 3] | Estimated Yearly Maintenance Cost[2] |
|---|---|---|
| Vegetated Buffer Strip | $23,678,609 - $54,642,944 | $582,858 |
| Bioretention | $57,018,382 - $760,249,464 | $3,991,287 - $53,217,462 |
| Sand Filters | $80,142,984 - $316,929,074 | $10,418,588 - $41,200,780 |
| Infiltration Trench | $3,205,719 - $7,577,155 | $641,144 - $1,515,431 |
| Diversion | > $1 million per diversion structure | > $10,000 per structure |

***Miramar (Miramar Reservoir Hydrologic Area)***

| BMP | Estimated Total Cost to Treat 10 % of an Urbanized Area (in acres) [1, 2, 3] | Estimated Yearly Maintenance Cost[2] |
|---|---|---|
| Vegetated Buffer Strip | $18,565,993 - $42,844,599 | $457,009 |
| Bioretention | $44,707,140 - $596,098,622 | $3,129,500 - $41,726,904 |
| Sand Filters | $62,838,745 - $248,498,675 | $8,169,037 - $32,304,828 |
| Infiltration Trench | $2,513,550 - $5,941,118 | $502,710 - $1,188,224 |
| Diversion | > $1 million per diversion structure | > $10,000 per structure |

***Scripps Hydrologic Area***

| BMP | Estimated Total Cost to Treat 10 % of an Urbanized Area (in acres) [1, 2, 3] | Estimated Yearly Maintenance Cost[2] |
|---|---|---|
| Vegetated Buffer Strip | $3,161,585 - $7,295,966 | $77,824 |
| Bioretention | $7,613,136 - $101,509,064 | $532,920 - $7,105,634 |
| Sand Filters | $10,700,750 - $42,316,602 | $1,391,097 - $5,501,158 |
| Infiltration Trench | $428,030 - $1,011,707 | $85,606 - $202,341 |
| Diversion | > $1 million per diversion structure | > $10,000 per structure |

[1] CASQA, 2003.
[2] USEPA, 1999.
[3] Urbanized Area includes the following Land Uses: Residential (low and high), Commercial, Industrial, Military, Parks/Recreation, and Transitional.

*Table R-3. Cost Estimates for Structural Controls for 10 Percent of Urbanized Areas, Continued*

***San Diego River Watershed***

| BMP | Estimated Total Cost to Treat 10 % of an Urbanized Area (in acres) [1, 2, 3] | Estimated Yearly Maintenance Cost[2] |
|---|---|---|
| Vegetated Buffer Strip | $45,339,627 - $104,629,910 | $1,116,052 |
| Bioretention | $109,178,381 - $1,455,720,117 | $7,642,487 - $101,900,408 |
| Sand Filters | $153,457,201 - $606,853,475 | $19,949,436 - $78,890,952 |
| Infiltration Trench | $6,138,288 - $14,508,681 | $1,227,658 - $2,901,736 |
| Diversion | > $1 million per diversion structure | > $10,000 per structure |

***Chollas Creek Watershed***

| BMP | Estimated Total Cost to Treat 10 % of an Urbanized Area (in acres) [1, 2, 3] | Estimated Yearly Maintenance Cost[2] |
|---|---|---|
| Vegetated Buffer Strip | $9,780,114 - $22,569,494 | $240,741 |
| Bioretention | $23,550,635 - $314,010,276 | $1,648,544 - $21,980,719 |
| Sand Filters | $33,101,925 - $130,903,066 | $4,303,250 - $17,017,399 |
| Infiltration Trench | $1,324,077 - $3,129,637 | $264,815 - $625,927 |
| Diversion | > $1 million per diversion structure | > $10,000 per structure |

[1] CASQA, 2003.
[2] USEPA, 1999.
[3] Urbanized Area includes the following Land Uses: Residential (low and high), Commercial, Industrial, Military, Parks/Recreation, and Transitional.

### *R.7.5 Costs for Agricultural Sources of Nonpoint Pollution*

The most reasonably foreseeable method of compliance with this Basin Plan amendment establishing TMDL projects for agricultural areas and livestock facilities involves reducing bacteria loading to surface waters by implementing MMs (management measures) and MPs (management practices). Current WDRs for agricultural facilities already require the design and implementation of systems that collect solids, reduce contaminant concentrations, and reduce runoff to minimize the discharge of contaminants in both facility wastewater and in runoff that is caused by storms up to and including a 25-year, 24-hour frequency storm. Additionally, the Waiver Policy[33] may conditionally waive the issuance of WDRs for specific types of discharges if the terms of the waiver conditions are met. Conditional waivers may apply to animal feeding operations, plant crop residues, agricultural and nursery irrigation return water, manure composting and soil amendment operations, and storm water runoff where not regulated by NPDES requirements. Therefore, compliance with this TMDL project will not result in additional costs beyond what is already required by enforcement of WDRs and waivers.

[33] California Regional Water Quality Control Board, San Diego Region, Waiver of Waste Discharge Requirements (Waiver Policy), November 1, 2002. Resolution No. R09-2002-0186.

Animal waste can be managed in several different ways including: prevention of livestock entering a waterway (fencing and water troughs), re-routing runoff water away from areas with animal waste (dike, diversion, roof runoff structure), removing waste (waste storage facility, manure transfer), or treating waste (waste treatment pond, composting facility, anaerobic digester).

Costs for purchase and maintenance of MPs varies not only by the type of MP needed, but also for the cost of a specific MP depending upon the type and number of livestock, the number of acres for runoff to filter, and the physiography of the acreage. The costs reported in Table R-4 are based on actual MPs that have been funded through the Farm Bill Environmental Quality Incentives Program (EQIP) in San Diego County from 2004 to 2006.

Considering that WDRs and the Waiver Policy already require animal feeding operations to conform with regulations that prevent pollutants from being discharged to waters of the U.S., additional costs to install MPs should not be needed for existing facilities, and therefore are estimated to be $0. However, new facilities, or facilities out of compliance, will be required to install the appropriate MPs to meet the conditions in the WDRs and Waiver Policy, and will have a start up cost ranging from $40,000 to $100,000 for poultry, and $3,000 to $50,000 for equestrian facilities (which generally have many fewer animals than poultry farms and dairies in the San Diego Region). Average start up costs for dairy MPs can range from $50,000 to $200,000, depending upon the number of cows. The sheer volume of manure generated at the larger dairy operations requires more ambitious and effective MPs ranging in cost from $100,000 to $500,000. These MPs include composting, solid/liquid waste separation facilities, or anaerobic digestion. To reduce individual operator expenses, these more expensive MP facilities can be shared among dairy operators.

*Table R-4. Environmental Quality Incentives Program - San Diego MP Cost List with Designation of Appropriate Use for Poultry, Dairy, and Horses*

| Management Practice | Unit | Avg. Cost | Poultry | Dairy | Horse |
|---|---|---|---|---|---|
| Anaerobic Digester | EA | $500,000 | | X | |
| Animal Mortality Facility | | NA | X | | |
| Composting Facility | EA | $100,000 | X | X | X |
| Dike | FT | $10 | X | | X |
| Diversion | FT | $20 | X | X | X |
| Fence | FT | $4 | | X | X |
| Grassed Waterway | AC | $500 | X | X | X |
| Lined Waterway or Outlet | FT | $100 | X | X | X |
| Manure Transfer* | EA | $30,000 | | X | |
| Nutrient Management | AC | $32 | X | X | X |
| Open Channel* | FT | $10 | X | X | X |
| Pipeline | FT | $10 | X | X | |
| Pond Sealing or Lining | EA | $10,000 | X | X | |
| Roof Runoff Structure | EA | $10,000 | X | X | X |
| Solid / Liquid Waste Separation Facility | | NA | | X | |
| Underground Outlet | FT | $20 | X | X | X |
| Waste Facility Cover | | NA | X | X | |
| Waste Storage Facility | EA | $100,000 | X | X | X |
| Waste Treatment Strip* | AC | $400 | X | X | X |
| Waste Treatment Pond* | EA | $50,000 | X | X | X |
| Waste Utilization* | AC | $100 | X | X | X |
| Watering Facility | EA | $10,000 | | X | X |

EA = Each; FT = Lineal Feet; AC = Acre, NA = Costs Not Available, X = Appropriate Use
Values are taken from the NRCS EQIP San Diego Cost Share List for 2006, unless the BMP name has an * after it, then values are taken from the 2004-2005 State Approved Cost Share List or the 2004-2005 San Diego Cost Share List.

When manure is transferred from an animal feeding operation to be used as fertilizer for crops, then runoff from these fields that contribute to bacterial loading must be considered for MPs. MPs for fields with manure application may include upgrades or installation of new irrigation equipment, and filter or buffer strips. Prices listed in Table R-5 for irrigation systems are for a complete system, and will be less for upgrading a system already in place. Costs for MPs per site range from $5,000 to $50,000, assuming an irrigation system will not need to be completely replaced.

*Table R-5. Environmental Quality Incentives Program, San Diego MP Cost List for Addressing Runoff from Fields with Manure Application.*

| Management Practice | Unit | Avg. Cost |
|---|---|---|
| Irrigation System, Micro-irrigation | AC | $6,000 |
| Irrigation Sprinkler System | AC | $4,500 |
| Irrigation Water Management | AC | $50 |
| Irrigation Tailwater Management | EA | $25,000 |
| Filter Strip | AC | $400 |
| Buffer Strip | AC | $800 |

### *R.7.6 Potential Sources of Funding*

The most prevalent source of funding for agricultural MPs is the funding associated with the Farm Bill EQIP. These funds can be obtained through the USDA Natural Resources Conservation Service (NRCS) Office. For the San Diego Region, the local NRCS Field Office is located at 332 S. Juniper St., Suite 110, Escondido, CA 92025. Upon review and approval of a project, the NRCS will authorize payment for up to 50 percent of the estimated costs for purchasing and installing agricultural MPs.

Other sources of funding are administered by the SWRCB, which receives funding, through the USEPA, for Federal CWA section 319(h) and section 205(j) programs, and from the State of California Proposition 13 program.

### *R.7.7 Cost Estimates for Surface Water Monitoring*

The Health and Safety Code already requires a monitoring and reporting program for indicator bacteria at ocean beaches throughout California during dry weather.[34] Thus, the dischargers will incur no additional costs for monitoring water quality at beaches from April 1 through October 31 (the required monitoring period). Water quality and flow monitoring for inland surface water and storm drains will be required to measure the effectiveness of controls implemented by the dischargers to reduce bacteria loads. This additional monitoring will add to the costs of implementing these TMDLs.

The TMDLs do not specify the locations and frequencies of sampling of inland surface waters, storm drains, and beaches outside the Health and Safety Code requirements, to measure the effectiveness of bacteria load reduction controls. Each watershed is different in terms of size, flow, land uses, existing bacteria load, and reductions needed. Thus, a different monitoring plan individually tailored for each watershed must be formulated and implemented by the dischargers.

This analysis discloses the costs of collecting, transporting, and analyzing a water sample for the four indicator bacteria for which there are inland surface water WQOs. The costs

[34] Health and Safety Code section 15880 (Assembly Bill 411, Statutes of 1997, Chapter 765).

disclosed are that of a two-person team, day-long sampling effort. The laboratory analytical costs were taken from the San Diego Water Board's Laboratory Services Contract cost tables. Where different analytical methods were available, the more expensive method was used in the estimate. Staff costs were estimated based on a two person sampling team in the field for an 8-hour day. The staff costs were estimated based on a billing rate of $90 per hour, the rate used for billing San Diego Water Board staff costs in the Cost Recovery Programs. This rate includes overhead costs. The vehicle costs were estimated assuming a distance traveled of 100 miles per day, and a vehicle cost of $0.34 per mile, the per diem reimbursement rate for San Diego Water Board staff when they use their own cars for State business. This analysis assumes that the dischargers possess basic field monitoring equipment, including meters to measure temperature, conductivity, and pH, and equipment to measure flow in the field. No additional costs were computed for these items. Surface water monitoring costs are summarized in the Table R-6 below. Assuming that a two-person sampling team can collect samples at 5 sites per day, the total cost for one day of sampling would be $2274.

*Table R-6. Cost Estimates for Surface Water Monitoring*

| Expenditure | Cost per Unit |
|---|---|
| Laboratory Analyses | |
| Total Coliform | $40 per sample |
| Fecal Coliform | $40 per sample |
| Enterococci | $40 per sample |
| *E. Coli* | $40 per sample |
| | |
| Staff Costs | $180 per hr |
| Vehicle Costs | $34 per 100 mi |

## R.8 Reasonable Alternatives to the Proposed Activity

The environmental analysis must include an analysis of reasonable alternatives to the proposed activity.[35] The proposed activity is a Basin Plan Amendment to incorporate bacteria TMDLs for the beaches and creeks in the San Diego Region. The purpose of this analysis is to determine if there is an alternative that would feasibly attain the basic objective of the rule or regulation (the proposed activity), but would lessen, avoid, or eliminate any identified impacts. The alternatives analyzed include taking no action, modifying water quality standards, and incorporating a Basin Plan amendment to establish a "Reference System Approach." The alternatives are discussed in the subsections below.

### *R.8.1 No Action Alternative*

Under the "no action" alternative, the San Diego Water Board would not adopt the proposed TMDL Basin Plan amendment, and bacteria loading would likely continue at current levels. The "no action" alternative 1) does not comply with the CWA; 2) is inconsistent with the mission of the San Diego Water Board; and 3) does not meet the purpose of the proposed TMDL Basin Plan Amendment. Under CWA section 303(d), the San Diego Water Board is obligated to adopt a TMDL project for waters that do not meet water quality standards.[36] Therefore the "no action" alternative is not viable and cannot be considered an acceptable alternative.

### *R.8.2 Water Quality Standards Action*

Another alternative to adopting the TMDL Basin Plan amendment is the modification of water quality standards. If the applicable standards are not appropriate, a plausible regulatory response may be to correct the standards through mechanisms such as a use attainability analysis (UAA) or a site-specific objective (SSO). If the REC-1 and SHELL beneficial uses are improperly designated for any of the beaches and creeks included in this project, or if SSOs for total coliform, fecal coliform, and enterococci would be less stringent than what is reported in the Ocean Plans and Basin Plan, the TMDLs might not be necessary, or the required pollutant load reductions might be lower. This alternative might lessen or eliminate the adverse impacts associated with constructing structural BMPs by eliminating the need for structural BMPs or reducing the number of structural BMPs necessary. This alternative should not be construed as implying that standards may be changed as a convenient means of "restoring" waterbodies. To the contrary, federal and state law contain numerous detailed requirements that in many cases would prevent modifications of the standards, especially if modifications would result in less stringent waste discharge requirements. However, modification of standards may be appropriate to make uses more specific, to manage conflicting uses, to address site-specific conditions, and for other such reasons.[37]

---

[35] 23 CCR section 3777

[36] Water quality standards are comprised of designated beneficial uses, the applicable numeric and/or narrative WQOs to protect those uses, and the SWRCB's anti-degradation policy provisions (Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California*).

[37] SWRCB. 2005. *A Process for Addressing Impaired Waters in California*, June 2005

As a first step in developing TMDLs, the San Diego Water Board confirmed the impairment status of the beaches and creeks and determined, from the available evidence, that bacteria densities exceeded water quality objectives that support REC-1 and SHELL beneficial uses. At this time, the San Diego Water Board has no evidence that REC-1 and SHELL beneficial uses were inappropriately designated for the beaches and creeks. Therefore based on the available information, an action to de-designate these beneficial uses may be harmful to the environment, and this option is not preferred.

Developing SSOs for total coliform, fecal coliform, and enterococci may be appropriate at specific sites if epidemiology or other scientific studies demonstrate that less stringent water quality objectives would still be protective of human health, or if better indicator(s) are identified. SSOs should be (1) based on sound scientific rationale; (2) protective of the designated beneficial uses of the beaches and creeks; and (3) adopted by the San Diego Water Board in a Basin Plan amendment.

There are no efforts currently underway or planned by interested persons to fund the scientific studies needed to develop SSOs for bacteria in the beaches and creeks. Furthermore, the development of SSOs for bacteria in the beaches and creeks, including the scientific and epidemiological studies necessary to support them, would be costly, time consuming, and resource intensive.

Even in the event that scientific studies were initiated and SSOs developed and adopted, the need for a TMDL likely would not be eliminated. If SSOs for bacteria were developed in the future and adopted, this TMDL Basin Plan Amendment would be modified accordingly. If interested parties were willing to fund and oversee development of scientific studies to investigate SSOs, the most effective and expeditious means to improve water quality would be to conduct these studies concurrent with actions necessary to achieve compliance with the current TMDL.

### *R.8.3 Reference System Approach*

Issue No. 7 from the San Diego Water Board's 2004 Triennial Review of the Basin Plan includes investigating and considering adoption of a Basin Plan amendment authorizing the implementation of single sample bacteria WQOs in fresh and marine waters using a 'reference system/antidegradation approach.' A reference system is defined as an area and associated monitoring point that is not impacted by human activities that potentially affect the bacteria densities of the receiving water. If this Basin Plan amendment is adopted, the final wet weather bacteria TMDLs would be replaced with TMDLs that incorporate the reference system approach. The San Diego Water Board could delay adoption of the bacteria TMDLs until after it adopts a Reference System Basin Plan amendment and replaces the final TMDLs of this project with new ones calculated with a wet weather exceedance frequency as authorized by the new amendment. The new final wet weather TMDLs will be similar to the interim wet weather TMDLs of this project and will not require the large load and wasteload reductions of the final TMDLs of this project. This alternative is not recommended because the San Diego Water Board has ample time (10 years) to investigate and adopt a reference system Basin Plan amendment

before the final TMDL reductions are required. Further, because the interim TMDLs were calculated using a reference system exceedance frequency and are likely to be similar to new final TMDLs calculated in accordance with a Reference System Basin Plan amendment, the interim TMDLs should be implemented immediately.

### *R.8.4 Preferred Alternative*

Because the previous three alternatives discussed are not expected to attain the basic objective of the proposed activity at this point in time, the preferred alternative is the proposed activity itself, which is the Basin Plan amendment incorporating the bacteria TMDLs.

## R.9 CEQA Determination

The implementation of these TMDLs will result in improved water quality in the San Diego region, but it may result in temporary or permanent localized significant adverse impacts to the environment. Specific projects employed to implement the TMDLs may have significant impacts, but these impacts are expected to be limited, short-term, or may be mitigated through careful design and scheduling. The Technical Report, the draft Basin Plan amendment, and the Environmental Checklist and associated analysis provide the necessary information pursuant to state law[38] to conclude that properly designed and implemented structural or non-structural methods of compliance will not have a significant adverse effect on the environment, and all agencies responsible for implementing the TMDLs should ensure that their projects are properly designed and implemented. Any of the potential impacts need to be mitigated at a subsequent project level because they involve specific sites and designs not specified or specifically required by the Basin Plan amendment to implement the TMDLs. At this stage, any more particularized conclusions would be speculative.

Specific projects that may have a significant impact would be subject to a separate environmental review. The lead agency for subsequent projects would be obligated to mitigate any impacts they identify, for example, by mitigating potential flooding impacts by designing the BMPs with adequate margins of safety.

Furthermore, implementation of the TMDLs is both necessary and beneficial. If at some time, it is determined that the alternatives, mitigation measures, or both, are not deemed feasible by those local agencies, the necessity of implementing the federally required TMDLs and removing the indicator impairment from the San Diego Region (an action required to achieve the express, national policy of the Clean Water Act) remains.

The benefits of meeting water quality standards to achieve the expressed, national policy of the Clean Water Act far outweigh the potential adverse environmental impacts that may be associated with the projects undertaken by persons responsible for reducing discharges of bacteria to beaches and creeks of the San Diego Region. Meeting water quality standards and the national policy of the Clean Water Act is a benefit to the people of the state because of their paramount interest in the conservation, control, and utilization of the water resources of the state for beneficial use and enjoyment (Water Code section 13000). Furthermore, the health, safety and welfare of the people of the state requires that the state be prepared to exercise its full power and jurisdiction to protect the quality of waters in the state from degradation, particularly including degradation that unreasonably impairs the water quality necessary for beneficial uses.

Water quality that supports the beneficial uses of water are necessary for the survival and well being of people, plants, and animals. Water contact (REC-1),and shellfish harvesting (SHELL) are beneficial uses of water that serve to promote the social and

[38] Public Resources Code, section 21159

environmental goals of the people of the San Diego Region and require water quality suitable for the protection of human health, aquatic life and aquatic dependent wildlife.

In addition, implementation of the TMDLs will have substantial benefits to water quality and will enhance beneficial uses. Enhancement of the REC-1 and SHELL beneficial uses will have positive, indirect social and economic effects by increasing the natural habitat and aesthetic value of the 12 watersheds. These substantial benefits outweigh any unavoidable temporary adverse environmental effects.

In accordance with state law,[39] the San Diego Water Board finds that, although the proposed project could have significant effect on the environment, revisions in the project to avoid or substantially lessen the impacts, can and should be made or agreed to by the project proponents. This finding is supported by the evidence provided in the impact evaluation section of this document, which indicates that all foreseeable impacts are either short-term or can be readily mitigated.

On the basis of the initial environmental review checklist and analysis, and Technical Report for these TMDLs, which collectively provide the required information;

- ☐ I find the proposed Basin Plan amendment could not have a significant effect on the environment.
- ☒ I find that the proposed Basin Plan amendment could have a significant adverse effect on the environment, but that those impacts should be mitigated. This substitute environmental documentation constitutes a program-level analysis. The Water Boards cannot specify manner of compliance. Any impacts that might occur as a result of specific implementation projects can and should be mitigated by the entity carrying out or permitting that project. However, there are feasible mitigation measures that would substantially lessen any significant adverse impacts. These mitigation measures are discussed above and in the Technical Report for the TMDLs.
- ☐ I find the proposed Basin Plan amendment may have a significant effect on the environment. There are no feasible alternatives and/or feasible mitigation measures available which would substantially lessen any significant adverse impacts. See the attached written report for a discussion of this determination.

_____ _____

John H. Robertus Date
Executive Officer

[39] Public Resources Code, section 15091