

Final Technical Memorandum Task 4.4: Evaluation of Non-Structural BMP Options

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1.0 Introduction

This Technical Memorandum (TM) has been prepared as a step in developing a detailed TMDL implementation plan (TMDLIP) in compliance with the Malibu Creek Watershed Dry- and Wet-Weather Bacteria total maximum daily load (MCW Bacteria TMDL). This TM will identify and apply evaluation criteria to existing and proposed best management practices (BMPs) as identified in Technical Memorandums 4.1, 4.2, and 4.3, and identify new plans or programs to facilitate compliance with the MCW Bacteria TMDL.

The MCW is a major watershed in western Los Angeles County and southeastern Ventura County. At 109 square miles, it is the second largest watershed draining to the Santa Monica Bay. The MCW includes portions of unincorporated Los Angeles and Ventura Counties, as well as seven cities in the two counties. Much of the watershed is open space under the jurisdiction of the State of California and the Santa Monica Mountains Conservancy. The following agencies are jointly responsible for meeting the MCW Bacteria TMDL requirements: Los Angeles County; Ventura County and Ventura County Watershed Protection District; the Cities of Calabasas, Malibu, Westlake Village, Agoura Hills, Hidden Hills, and Thousand Oaks; the California Department of Parks and Recreation; the National Park Service; the Santa Monica Mountains Conservancy; and the California Department of Transportation (Caltrans). The MCW and its subwatersheds are shown in Figure 1-1, which follows Section 1.3.

1.1 Watershed Description

Creeks and lakes, located in the upper portions of the MCW drain into Malibu Creek, which then continues into the downstream portion of the watershed draining into Malibu Lagoon and ultimately into Santa Monica Bay when the Malibu Lagoon sand bar is breached. Historically, there is minimal flow during the summer months; much of the natural flow that occurs during the summer in the upper tributaries comes from springs and seepage areas. During these periods, Malibu Lagoon is disconnected from the ocean by a sand bar. During the first rain storms of the wet season, runoff from the watershed increases flow in Malibu Creek dramatically, resulting in the lagoon breaching the sand bar and runoff flowing out to the bay. The natural hydrology of the watershed has been modified by the creation of several dams and man-made lakes, the importation of water to the system for human use that provides for most of the base flow to the system, and the presence of the Tapia Wastewater Reclamation Facility (WRF) that provides significant dry-weather flow to the system during winter months. The discharges from the Tapia WRF are treated to tertiary standards.

The western part of the watershed drains the areas around Hidden Valley Creek, Potrero Creek, Westlake Lake, and Triunfo Creek (total area about 25,210 acres). These areas are largely undeveloped. There is limited agricultural land use, located mostly in the Hidden Valley subwatershed. Most of the residential and commercial/industrial land use is in the area around Westlake Village. Nearly all the runoff from this large watershed area is funneled to the Triunfo Creek and ultimately to Malibou Lake.

The eastern side of the Malibou Lake drainage area is 15,900 acres and includes the subwatersheds of Lindero, Medea, and Palo Comado Creeks, all 303d-listed for coliform, as well as the subwatershed draining the unlisted Cheseboro Creek. The land use in these areas, while still largely undeveloped, has a relatively higher percentage of residential and commercial land uses as compared to the western portion of the Malibou Lake drainage area, particularly in the Lindero and Medea Creek subwatersheds.

Malibou Lake discharges to Malibu Creek, which is listed as impaired for its entire 10-mile length from the Lake to the Lagoon. Malibu Creek also receives flow from Las Virgenes Creek and Stokes Creek, both of which are listed as impaired for coliform. Much of the area in this portion of the watershed is currently undeveloped. Land use at the bottom of the watershed near the lagoon has a comparatively higher density of development, with significant residential and commercial development.

Overall, land use in the MCW is about 80 percent undeveloped. The developed land is a mixture of residential (13 percent), commercial/industrial (4 percent), and agricultural (3 percent).

1.2 Statement of Problem

The water quality in Malibu Creek, the five tributaries (Stokes, Las Virgenes, Palo Comado, Medea, and Lindero Creeks) and Malibu Lagoon, which receives runoff from Malibu Creek, exceeds the water quality objectives (WQOs) established in the Water Quality Control Plan for the Los Angeles Region (Basin Plan) for indicator bacteria. The Basin Plan includes the indicator bacteria of fecal coliform and *E. coli* for fresh waters, and total coliform, fecal coliform, and *enterococcus* for marine waters (Malibu Lagoon) that was established to protect the recreational uses of the receiving water bodies. These continuing impairments resulted in requirements under the Federal Clean Water Act and the California Porter-Cologne Act to prepare a TMDL for bacteria for the watershed. The California Regional Water Quality Control Board (RWQCB), Los Angeles Region, adopted the MCW Bacteria TMDL with an effective date of January 24, 2006.

A number of water bodies in the MCW are hydrologically connected to these impaired water bodies including: Trifunfo, Cheseboro, Cold Creek, Sherwood, Westlake, Lindero, and Malibou Lake, as described in Section 1.1. However, the water bodies in these areas were largely unassessed by the RWQCB due to a lack of data. The lack of data in many cases is due to the absence of flow throughout much of the year. These water bodies are considered within the MCW Bacteria TMDL and the implementation plan because they have the potential to contribute significant bacterial indicator loading to the impaired water bodies downstream.

According to data developed for the TMDL, runoff from urban areas is the most significant source of bacteria in the MCW. Other suspected sources include improperly operating or failing on-site waste-water treatment systems (OWTS) and horse and confined animal facilities. However, the exact sources of bacterial loading have not been identified; rather suspected sources have been preliminarily identified. Developments in the Malibu Lagoon subwatershed and in some unincorporated areas in the northern part of the MCW are not connected to a public sewer and rely on OWTSs, which could be a bacteria source when they short-circuit or completely fail. Short-circuits in OWTSs occur when wastewater is not adequately treated prior to entering subsurface water, such as when the distance from a leach field to subsurface water is too close to allow adequate filtration of the wastewater. OWTS failures occur when the system is no longer operating properly, such as when the septic tank is overflowing, the leach field is plugged, or the system has partially collapsed. Most of the urban land uses in the cities in the northern portion of the watershed are connected to sewer collection and treatment systems. Portions of the watershed are also home to a large population of horses, which could contribute to the fecal bacteria presence in the creeks and tributaries; however, such an impact has not yet been demonstrated.

In order for the MCW to comply with the Bacteria TMDL allocations, nonstructural and structural best management practices (BMPs) must be considered and implemented throughout the watershed. Enforceable programs under which the practices will be implemented include a municipal separate storm sewer system (MS4) National Pollutant Discharge Elimination System (NPDES) Permit, local ordinances, and California Assembly Bill 885 (AB 885) which regulates on-site wastewater systems. When adopted, AB 885 will modify California Code of Regulations, Title 27, Division 2, Subdivision 1, Chapter 7.

1.3 Purpose of this Technical Memorandum

As stated earlier, the purpose of this TM is to identify and apply evaluation criteria for existing non-structural BMPs and proposed BMP enhancements as identified in TMs 4.1 – 4.3 and to develop and evaluate new non-structural BMPs. This TM has been prepared as a step in developing a detailed TMDLIP for compliance with the MCW Bacteria TMDL. Multiple nonstructural solutions based upon the evaluations conducted in this TM may be incorporated into the TMDLIP to reduce bacterial loading within the MCW.

The TM is organized as follows:

- Section 2.0 summarizes the existing and enhanced BMPs discussed in TMs 4.1-4.3, describes additional new BMPs, summarizes applicable stormwater ordinances, and presents possible revisions to existing stormwater quality ordinances.;
- Section 3.0 defines the BMP evaluation criteria and performance measures;
- Section 4.0 evaluates the BMPs and lists applicable performance measures in matrix form; and
- Section 5.0 describes the methodology for incorporating the evaluations into the TMDLIP.

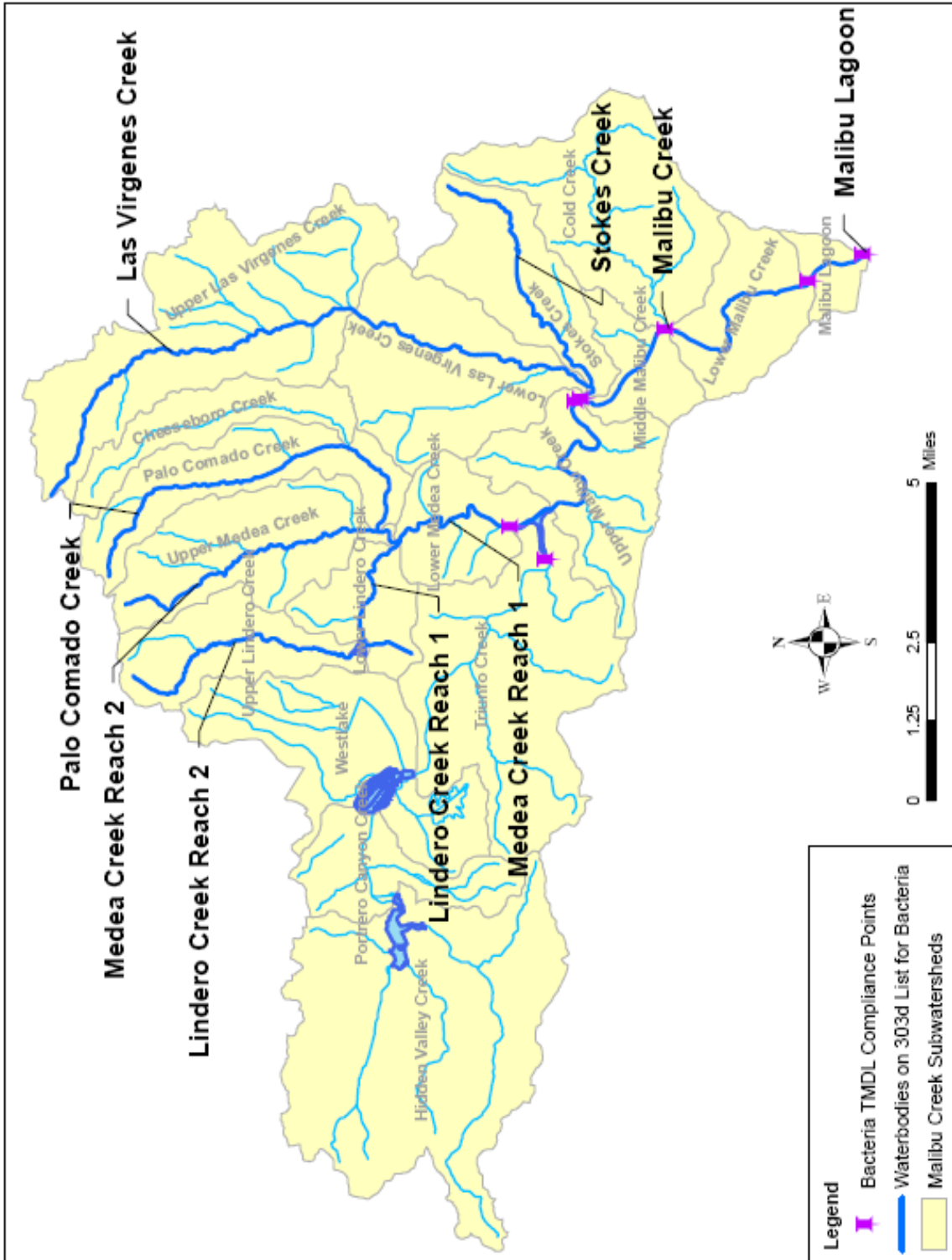


Figure 1-1
 Subwatersheds, Bacteria 303d Listed Waterbodies, and Current Bacteria TMDL
 Compliance Points in the Malibu Creek Watershed

2.0 Existing, Enhanced, and New Best Management Practices Programs

Prior to evaluating non-structural BMPs for possible implementation to reduce bacterial loading in the MCW, it is necessary to summarize the existing BMPs, identify potential enhancements and/or new BMPs, and review existing stormwater ordinances for potential modification. Existing BMPs and enhancements were initially summarized in TMs 4.1-4.3 and will not be further described within this TM. Additional proposed BMPs are summarized within this section. Because implementation of many BMPs and BMP programs is dependent on the municipality's storm water ordinances for authority to implement, a review of existing stormwater and runoff pollution related ordinances for the two largest agencies, Los Angeles County and Ventura County, was conducted. The ordinances were reviewed to determine the scope and the discharges covered under the ordinance, and as a preliminary step in identifying opportunities for modification to reduce dry-weather bacterial loading.

2.1 Previously Introduced Best Management Practices

Enhanced BMPs and new BMPs were identified in TMs 4.1-4.3 to target the reduction of bacterial loading during dry and/or wet-weather events to assist in complying with applicable bacteria TMDLs. The previously introduced enhanced and new BMPs that are not self-explanatory are briefly described below.

2.1.1 *Septic Tanks*

Mandatory Servicing and Inspection of Septic Tank Systems

This BMP would require the mandatory servicing and inspection of septic tank systems for both residential and commercial/industrial businesses on a routine basis to reduce bacterial loading associated with improperly operating septic tanks. For new developments, conditions of approval would require a licensed septic tank specialist to inspect the system during servicing and at intervals specified by the governing agencies and report the results to the applicable county health department and governing agency. For existing commercial/industrial users this program can be incorporated into the existing industrial/commercial facilities control program. This requirement could also be incorporated into the public agency activities programs for all existing public septic tank systems. It should be noted that Wisconsin has a similar program at the state level.

2.1.2 *Equestrian*

Identify and Develop a List of Commercial Horse Stables and Equestrian Centers for Outreach

Horse stables are known to generate preventable source of bacteria. This program would seek to identify all commercial horse stables in the MCW through business tax records. Identified businesses would be presented with outreach materials to inform the operators of steps that can

be taken to reduce bacterial loading. Education can take the form of videos, handouts, and/or workshops.

Pilot Program for Commercial Horse Stables and Equestrian Centers with Pre- and Post BMP Sampling

A pilot program could be established in the MCW for an existing commercial horse stable to test and illustrate the effectiveness of BMPs in reducing bacterial loading. This program would be applicable to confined animal facilities in general. The objective of this program is to provide physical data to stable operators as they would be more likely to adopt BMPs when the effectiveness has been demonstrated. Suitable BMPs to be implemented would be derived from the City of Los Angeles's pamphlet on *Stormwater Best Management Practices for Horse Owners & Equine Industry* including:

- Install gutters that divert runoff from livestock area;
- Design diversion terraces that drain into areas with sufficient vegetation to filter the flow;
- Protect manure storage facilities from rainfall and surface runoff;
- Collect soiled bedding and manure daily from stalls and paddocks and place in temporary or long-term storage units. Store in sturdy, insect resistant and seepage free units such as plastic garbage cans with lids, composters, or pits lined with an impermeable layer;
- Compost soiled bedding and manure;
- Give away composted material to local greenhouses, nurseries, and botanical parks;
- Transport manure to topsoil companies or composting facilities;
- Confine animal in properly fenced areas except during exercise and grazing periods;
- Utilize fencing to keep horses away from environmentally sensitive areas and protect stream banks from contamination;
- Use manure and soiled bedding sparingly to fertilize pastures and croplands;
- Establish healthy and vigorous pastures with at least three inches of leafy material;
- Subdivide grazing areas into three or more units of equal size;
- Clip tall weeds and old grass to control weeds and stimulate regrowth;
- Rotate animals to clean pasture when grass is grazed to three to four inches and let pastures grow to eight to ten inches before allowing grazing;
- Keep animals away from wet fields when possible; and

- During heavy rainfall, consider indoor feeding, a practice that keeps more manure under the roof and away from runoff.

2.1.3 New Development

Green Building Program

In 1994, the City of Santa Monica adopted the Santa Monica Sustainable City Program. This program was developed by the City's Task Force on the Environment as a way to create the basis for a more sustainable way of life. A similar program to this could be considered for the MCW. Conventional design and construction methods produce buildings that can negatively impact the environment as well as occupant health and productivity. These buildings are more expensive to operate and contribute to excessive resource consumption, waste generation, and pollution. To help reduce these impacts and meet the goals of the Sustainable City Program, the Task Force recommended that the city adopt a set of guidelines for required and suggested practices to facilitate the development of "green" buildings in Santa Monica without forcing excessive costs or other burdens upon developers, building owners or occupants. Encouragement of green buildings in Santa Monica is promulgated through the use of monetary subsidies and accelerated building plan checks.

The guidelines were developed for, and specifically apply to, the following building types:

- Institutional and Commercial Offices;
- Light Industrial Buildings;
- Commercial Retail Buildings;
- Multi-Family Residences; and
- Hotels and Motels.

The guidelines are not intended to address development of single-family residential dwellings and duplexes, high rise buildings, or occupancies with special process demands (heavy industrial operations, car washes, service garages, etc.), however, many of the recommended practices presented in the guidelines are also relevant to these building types.

Many of the suggested practices in the guidelines are beyond the requirements included in the Los Angeles County and Ventura County NPDES permits. However, it is possible these practices would reduce runoff during dry and wet weather periods thus reducing bacterial loading in water courses in the MCW. This program and the associated BMPs could be implemented through the development planning process and continue throughout the life of the project. These practices include the following:

- Incorporate areas for urban agriculture (small garden plots) and rooftop/balcony gardens;

- Match the area and type of paved surfaces to their intended use;
- Reuse graywater for outdoor landscape irrigation;
- Collect rainwater for outdoor landscape irrigation; and
- Use integrated pest management to minimize pesticide use.

Seal of Approval Program

Under the seal of approval program, new projects or redeveloped projects that incorporate dry- or wet-weather reductions in runoff would receive a seal of approval from the governing agency. This seal would serve to alert patrons and residents that a particular project has gone beyond the minimum requirements to address runoff.

2.1.4 Commercial/Industrial

Business Reward/Stewardship Program

Development of a business reward/stewardship program would reward businesses that assist in keeping the environment clean. Businesses that implement stormwater quality measures would be able to apply for the reward on a quarterly or monthly basis. Recognition efforts could consist of a framed certificate, recognition by a governing agency, and/or a newspaper advertisement for qualifying businesses. The restaurant reward program BMP would be similar to this program, except it would be exclusively for restaurants. Santa Barbara County has a similar program for rewarding restaurants that actively prevent the discharge of waste into streets and gutters. Santa Clara County has a county-wide Green Business Program where businesses become “green” certified if they meet a series of criteria developed separately for each business category. The City of Santa Monica has a similar program resulting in sustainable quality rewards.

Incentives Programs for Maintenance Requirements

This BMP would be designed to provide incentives, such as a seal of approval or other certification, for maintenance activities. Categories of incentives could be related to low-water demand landscaping, containment of runoff, energy conservation, and containment of manure at commercial equestrian facilities.

Business Assistance Program Team

The objective of the business assistance program is to encourage businesses to become team members of a water quality control program similar to Malibu’s Clean Water Program. Member businesses are those businesses that make a conscious effort to reduce dry- and wet-weather runoff. The program is designed to recognize participating businesses by giving them a seal of approval to display. Residents that are environmentally aware may choose to patronize businesses that participate in the program versus those that do not.

2.1.5 Public Agency Activities

Video Monitoring of High Priority Storm Drains

The City of Malibu uses video monitoring at high priority drains to look for suspicious discharges. Priority drains are determined based on high-use areas and trash and debris accumulation levels at drain entrances. Under this program, if suspicious discharges are found they are sampled and tested. If an illegal discharger is located, enforcement actions will be taken. This BMP proposes to establish a similar program at selected priority drains throughout the MCW.

2.2 New Best Management Practices

Additional potential non-structural BMPs were identified beyond the new or enhanced BMPs presented in TMs 4.1-4.3. These BMPs target the reduction of bacterial loading during dry and/or wet-weather events to assist in complying with the applicable bacteria TMDLs. These BMPs are briefly described below.

2.2.1 Septic Tanks

Garbage Disposal Elimination for Buildings with Septic Tanks

By requiring elimination of garbage disposal units in buildings with septic tanks, the required frequency of pumping can be reduced thereby reducing bacterial loading associated with overflowing septic tanks. This measure would reduce the build-up of solids in septic tanks. Enforcement would occur by not allowing the installation of garbage disposals in new projects that utilize septic tanks. This would be confirmed during the final building inspection prior to issuing the certificate of occupancy. While these measures would be generally effective, ongoing inspections would be required to verify that garbage disposals are not installed at a later date.

Septic Tank Inspections Upon Change in Ownership

Another means of inspecting septic tanks for proper operations would be to require inspection and necessary maintenance of a septic system when there is a change in ownership of property. This measure would provide some control over possible pollution from septic tanks, but would likely not occur at a sufficient frequency to be totally effective. A benefit of this measure, however, could be that an existing regulatory database (tax assessors record, for example) could trigger a notification of a required inspection, thus reducing the amount of administration necessary for the program.

Voluntary Inspection and Maintenance Program for Septic Tanks

A voluntary inspection and maintenance program could be implemented throughout the MCW. This program could incorporate educating septic system owners on the importance of maintaining septic systems through workshops, brochures, and other outreach mechanisms. Reminders of this program could be sent with utility bills and/or property tax notices. The cost

of this program would be less than a mandatory program, but as a trade-off, voluntary compliance would not have the same impact as a mandatory program. This program would depend highly on public education and motivation of septic system owners to maintain and have their septic systems inspected at adequate intervals. Inspection and maintenance costs would be paid by septic system tank owners,

2.2.2 Equestrian/Livestock

Exclusion Fences

Bacterial loading in watercourses can potentially be reduced through the installation of exclusion fences in areas of the watershed where livestock and/or horses graze. Exclusion fences would prohibit livestock and horses from grazing adjacent to water courses. New water sources would need to be provided if the water course is the sole source of water. This BMP may be enacted by modifying zoning regulations on lands that permit grazing. Subsidies or grants could be offered to offset the costs for existing property owners with livestock and/or horses. After adoption of the revised zoning regulations, any costs associated with installing exclusion fences on property where livestock and/or horses were not previously present would be the responsibility of the property owner.

Manure Management

Manure management requires horse and other large animal users to clean-up manure from parking lot/trailhead areas after each trail use. The manure would either be composted or stored prior to disposal in a manner that would prevent the manure from coming into contact with runoff and precipitation. This BMP would also require soiled bedding and manure to be removed from stalls on a daily basis and stored in seepage free containers prior to disposal. Implementation of this BMP could occur through revision of existing ordinances related to animals.

2.2.3 Pets

Installation of Doggy Loos

Installation of doggy loos at public parks would reduce bacteria loading associated with pet waste that is disposed in trash cans that allow for penetration of water. Doggy loos are pet feces disposal units placed in the ground that rapidly break down pet feces. A foot operated lid is the only part of the unit above ground. With these units there is minimal maintenance and no refuse collection is required. Installation of these units could be a public agency activity coordinated with public education. Potential drawbacks to doggy loos could include inadvertent injury to small animals/children from the lid, potential entrapment, and groundwater pollution in areas of high groundwater.

Installation of Pooch Patches

Pooch patches have the ability to reduce bacteria loading by providing a convenient location for dogs to defecate with adjacent sealed bins for immediate disposal of feces by owners. Pooch patches are poles placed in parks with a light scattering of sand around each pole. The theory is dog owners introduce their pets to the pole when entering a park and dogs will then return to the poles to defecate

Animal Licensing Fee Add-on

In addition to existing licensing fees for pets, including horses, an additional fee could be added to support the construction of structural BMPs designed to reduce bacterial loading of water courses. This fee would not be designed to entirely fund the construction of structural BMPs, but would partially fund construction based upon the impact of pets.

2.2.4 New Development and Redevelopment Planning/Public Agency Activities

Creation of Riparian Buffers and/or Wetlands in Flood Areas

Requiring the use of riparian buffers and/or wetlands between flood prone areas and direct pathways to drainage ways could reduce bacterial loading during wet-weather. Riparian buffers and wetlands would naturally filter and treat stormwater discharges before they enter water courses. This could be required as part of public agency activities for agency owned land and new development planning.

Minimization of Directly Connected Impervious Areas

Minimization of directly connected impervious area (DCIA) requires developers to reduce impervious areas or break-up impervious areas with pervious surfaces to promote infiltration in those parts of the MCW where soils are permeable. Development of DCIA standards for different land use types would reduce the volume of runoff thus reducing bacterial loading. This BMP could be implemented under both the public agency activities for new public agency projects and in the development planning program for new development.

Conservation Easements

Utilization of conservation easements between businesses that have a high probability of introducing bacteria into water courses would serve to reduce bacterial loading. Conservation easements would consist of natural buffers that would filter out any runoff from businesses before it enters a water course or water body. The developer/owner would provide the easement as part of the development planning process.

Location of Recreational Areas

Implementation of a BMP to require recreational areas, such as urban parks and picnic areas, to be located away from water courses or require a vegetative buffer between such areas and

water courses would reduce bacterial loading. Urban parks and picnic areas are areas where people commonly bring pets. Additionally, trash from these areas and birds attracted to the trash tend to increase bacterial loading. This BMP would also encompass relocating equestrian trails that border water courses so the trails are farther away and the natural vegetative buffers are increased to filter out manure. This would be a public agency activity BMP.

2.3 Ordinance Review

Stormwater, runoff pollution control, and other applicable ordinances for the two largest agencies, Los Angeles County and Ventura County, were reviewed. Individual ordinances for each agency in the MCW were not reviewed as it is assumed the ordinances are similar in intent. Highlights of the ordinances reviewed are presented below.

2.3.1 Los Angeles County Highlights

The purpose of Los Angeles County's stormwater and runoff pollution control ordinances is stated as:

"To protect the health and safety of the residents of the county by protecting the beneficial uses, marine habitats, and ecosystems of receiving waters within the county from pollutants carried by stormwater and nonstormwater discharges. The intent of this chapter is to enhance and protect the water quality of the receiving waters of the county and the United States, consistent with the Act."

The ordinance specifically addresses:

- **Discharge to the Storm Drain System** – Prohibits illicit connections, pollutant discharge (where pollutant is defined as including animal waste, such as discharge from confinement facilities, kennels, pens, stables, etc.) construction runoff, discharge from industrial/commercial activities, and irrigation runoff.
- **Runoff Management** – Includes good housekeeping provisions, covering items such as animal waste, runoff from landscape irrigation and washing paved areas, BMP requirements for commercial and industrial activities, and construction activities.
- **Violations and Enforcement** – Included for illicit connections, nuisance discharge, and provisions for inspections.

Other ordinances applicable to bacteria loading include:

- Restrictions of horses on beaches, with exceptions.
- Animal care – Establishes requirements for owners and animal establishments to preserve human health and safety.
 - Dog Kennels – Regulations on surfacing and sanitation of dog runs, including proper drainage.

- Prohibition of animal nuisances – Owners are required to pick-up after animals.

2.3.2 *Ventura County Highlights*

The purpose of Ventura County's Stormwater Quality Management Ordinance is to:

“Prescribe regulations as mandated by the Federal Water Pollution Control Act (referred to as the Clean Water Act), 33 U.S.C. 1251 et seq., as amended, and the California Water Code, to effectively prohibit non-stormwater Discharges into the Storm Drain System, flood control channels, and debris and detention basins, and to reduce the Discharge of Pollutants in Stormwater to the maximum extent practicable. Stormwater runoff is one step in the natural cycle of water. However, human activities, such as construction and the operation and maintenance of an urban infrastructure, may result in undesirable discharges of Pollutants, which may accumulate in local drainage facilities and eventually may be deposited in the waters of the United States. The intent of this Chapter is to ensure the health, safety, and general welfare of citizens, and protect and enhance water quality by controlling the contribution of urban Pollutants to runoff which enters the Storm Drain System and Watercourses of the County of Ventura.”

The ordinance specifically addresses:

- **Prohibition of non-stormwater discharges** – Prohibits discharge of water other than stormwater, with exceptions for irrigation water, landscape irrigation, and lawn watering.
- **Illicit connections** – Prohibits illicit connections.
- **Reduction of pollutants in stormwater** – Discharge of stormwater containing pollutants that have not been reduced to the maximum extent practicable by applications of BMPs is prohibited, pollutants include animal waste.
- **Inspections and enforcement**

One other ordinance applicable towards reducing bacterial loading in stormwater is:

- **Animals** – No animals allowed on beaches, owner must clean-up after animals in public locations.

2.3.3 *Ordinance Observations*

Ventura County's and Los Angeles County's ordinances are designed to comply with the requirements of their applicable NPDES permits and provide enforcement mechanisms against individuals and businesses that violate these ordinances. Additionally, both counties specifically list animal waste as a pollutant that is regulated in discharge or runoff from animal facilities, such as kennels, horse stables, and other animal facilities.

There are a few notable differences between the two ordinances. Ventura County specifically exempts irrigation, landscape irrigation, and lawn watering from the provisions of the stormwater quality ordinances. Los Angeles County prohibits runoff from these practices in its

stormwater quality ordinances. While Ventura County may not be able to regulate agricultural runoff from irrigation, it could potentially regulate landscape irrigation and lawn watering under its stormwater quality ordinances. Implementation of this would limit dry-weather runoff, thus potentially reducing bacterial loading.

Additional ordinances that could potentially be further explored for implementation to assist in reducing dry-weather bacterial loading include:

- Ordinances designed to encourage “Green Buildings” similar to the City of Santa Monica; and
- Ordinances placing restrictions on grazing adjacent to streams.

3.0 Best Management Practices Program Evaluation Criteria

Five criteria were developed as a means to evaluate the existing, enhanced, and new non-structural BMPs as presented in Section 2.0, to address dry- and wet-weather bacteria TMDLs: effectiveness, relative cost, risk of implementing a BMP, risk of not implementing a BMP, and dry- and wet-weather applicability. For each BMP, performance measures were developed to measure the success of the BMP in the future. Definitions of the evaluation criteria and rating scales are provided within this section.

3.1 Effectiveness Criterion

An effectiveness criterion is used to determine the degree to which non-structural BMPs would have an impact on alleviating both dry- and wet-weather bacterial loading to water courses in the MCW. Effectiveness for purposes of this TM is a subjective assessment of the relative ability of a non-structural BMP to reduce dry and/or wet-weather bacterial loading, thus presumably improving water quality in the MCW. In the absence of detailed source identification data, it is not possible to determine the effectiveness of non-structural BMPs. Therefore, a broad scale was developed and applied to the effectiveness criteria to assist in developing uniform criteria for evaluation:

- Above Average – BMP is more effective in reducing bacteria loading than other BMPs;
- Average – BMP is average in reducing bacteria loading as compared to the other BMPs; and
- Below Average – BMP is less effective in reducing bacterial loading than other BMPs.

The following provide examples of how these ratings might be applied:

- If a BMP targets a source that is likely to have a high bacterial loading and the BMP would affect a relatively large area or a large group within the watershed, then the effectiveness relative to other BMPs would be considered above average.

- If a BMP targets a source that is neither a major contributor of bacterial loading nor insignificant and if its applicability throughout the watershed is moderate, the BMP would be considered average in its effectiveness relative to other BMPs.
- If a BMP affects only a minor or infrequent source of bacterial loading to the watershed and its applicability to the watershed is relatively isolated, its effectiveness rating relative to other BMPs would be considered below average.

3.2 Cost Criterion

Evaluating the relative cost of each non-structural BMP in combination with the other criteria is necessary to assist in determining if a BMP should be implemented. For purposes of this technical memorandum, costs include a relative measure of the costs associated with additional staff time on behalf of the implementing agencies and materials and equipment, including both start-up costs, and ongoing operational requirements. Costs are reflective of the cost to an agency and do not reflect costs assumed by others, such as the cost of treatment control BMPs that would be paid for by developers.

The Jurisdictions 1/4 Wet-Weather Bacteria TMDLIP, developed in 2005, included a method for identifying and evaluating the most appropriate BMPs to achieve the desired TMDL objectives. Consistent with the methodology that was used in the Jurisdictions 1/4 Wet-Weather Bacteria TMDLIP, the following scale was developed to evaluate costs for each BMP in the MCW:

- Low cost - \$0 to \$10,000;
- Medium cost- \$10,001 to \$250,000; and
- High cost - \$250,001 and up.

3.3 Risk of Implementation Criterion

Each non-structural BMP has a risk associated with implementation. Implementation risks include financial or other burdens placed on businesses, residents, and non-residents; increased level of effort required on behalf of public agencies; regulatory constraints; public resistance; political issues; and oversaturation of public outreach materials. The higher the implementation risk, the less of a chance a BMP will be performed properly and sustained, and consequently the lower the likelihood that the BMP will result in a reduction of bacterial loading. The following scale was used to evaluate implementation risk of non-structural BMPs:

- Low – Risk associated with implementation is low, there is a low chance that the BMP will not be successfully implemented;
- Medium – Risk associated with implementation is medium, there is medium chance the BMP will not be successfully implemented; and
- High – Risk associated with implementation is high, there is a high chance the BMP will not be successfully implemented to the extent anticipated.

3.4 Risk of Not Implementing a BMP Criterion

Not implementing a non-structural BMP also has an associated risk. A lack of implementation can result in an agency not achieving compliance with the Dry- and Wet-weather Bacteria TMDL for the MCW and/or the applicable NPDES permit. By not implementing a BMP that targets a source associated with high bacterial loading, for example, the risk of not achieving compliance with the TMDL would be increased. The risk of not implementing a BMP is measured using the following scale:

- Low – Risk associated with no implementation is low, there is a low chance that not implementing the BMP will result in non-compliance;
- Medium – Risk associated with no implementation is medium, there is medium chance that not implementing a BMP will result in non-compliance; and
- High – Risk associated with no implementation is high, there is a high chance not implementing a BMP will result in non-compliance.

3.5 Dry- and Wet-Weather Applicability

Each non-structural BMP is more or less effective under either dry weather runoff conditions, wet weather runoff conditions, or equally effective under both. Evaluation of the BMPs under the two runoff conditions allows for determination of the proper suite of non-structural BMPs for implementation to address bacterial loading under both the dry- and wet-weather conditions recognized in the TMDL. The following scale was used to determine the specific weather condition the BMP operates best under:

- Wet – BMP tends to be more dominant in addressing bacterial loading during wet-weather;
- Dry – BMP tends to be more dominant in eliminating non-storm water flows or reducing bacterial loading during dry-weather; and
- Both – BMP tends to be more or less equal in addressing bacterial loading during wet- and dry-weather.

3.6 Performance Measures

Success of non-structural BMPs is determined by a set of performance measures. Performance measures allow agencies to determine if a non-structural BMP is operating within a specified range of performance. Unlike structural BMPs, success of a non-structural BMP is not readily defined as a measureable reduction in bacterial loading based upon sampling results. Success for non-structural BMPs are determined by meeting pre-defined performance targets set by the agencies, such as the number of impressions associated with public outreach materials or the frequency of restaurant inspections.

4.0 Best Management Practices Program Evaluation Criteria

Utilizing the aforementioned criteria, each existing BMP, proposed BMP enhancement, and new BMP was preliminarily evaluated to ultimately assist in the prioritization of the non-structural

BMPs in combination with the structural BMPs in the TMDLIP for Dry- and Wet-Weather Bacteria. Each subsection and evaluation table addresses one of the six NPDES Permit categories established under the programs by the Permittees of Los Angeles County and Ventura County. Without conclusive evidence prioritizing specific sources of bacteria contamination within the MCW, a logical approach was developed to present a broad range of BMPs to target multiple bacteria sources under each category. Tables under each subsection serve as a suite of potential BMPs to address sources of bacterial loading in the MCW associated within the applicable category. Based on the evaluations, the BMP options for each category would be selected and prioritized by subwatershed and scheduled for implementation in conjunction with the structural BMPs in the TMDLIP.

4.1 Public Information and Participation Programs

Public Information and Participation Programs (PIPP) are those programs that seek to educate and involve individuals and create awareness of measures to improve stormwater quality. BMPs in this category are designed to address the following sources of bacteria:

- Urban runoff (including residential and commercial/industrial users);
- Onsite wastewater treatment systems; and
- Horses and confined animal facilities (private/non-commercial).

Implementation of additional BMPs in this category can potentially reduce bacterial loading by increasing the education of residents and businesses within the watershed. Increasing awareness regarding human health risks, bacterial sources, runoff as a means of conveyance to transport bacteria, and an appropriate behavior or changes to reduce bacteria will increase knowledge and decrease bacterial loadings. People are more apt to make behavioral modifications if they understand the relationship between their activities and the impact of their specific activities on bacterial loading in dry- and wet-weather runoff. The PIPP as it pertains to the NPDES Permits is further described in Technical Memorandum 4.1. Evaluations for the non-structural BMPs and performance measures are categorized within the Public Information and Participation Program (PIPP) are presented in Tables 4-1 and 4-2, located at the end of Section 4-1.

Table 4-1
Public Participation and Information Programs
Existing Programs Evaluation
 Page (1 of 2)

BMP Name	Description	Effectiveness for Reducing Bacteria	Evaluation Criteria				
			Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	Performance Measures
Residential PIPP							
Beach Cleanups	Cleanup of beaches at mouth of MCW.	Above Average	Low	Low	Medium-High	Both	Number of clean ups and amount of trash collected
Watershed Event Announcements	Announcements by MCW Coordinator of watershed events in newspapers and television.	Average	Low	Low	Low	Both	Attendance and number of calls and webhits.
Online Information	Online information for residents and businesses.	Below Average	Low	Low	Low	Both	Number of hits on website
Tours of Malibu Creek Watershed	Tours of watershed and distribution of brochures on tours.	Average	Low	Low	Low	Both	Number of tours and attendance
Booklet Creation and Distribution	Creation and distribution of booklets such as the Living Lightly Guide, Horse BMPs, etc.	Above Average	Medium	Low	Medium	Both	Surveys and number of calls and webhits.
Storm Drain Stencils	Stencils on storm drains.	Average	Low-Medium	Low	High	Both	Number of storm drain stencils
Signs	No Dumping Signs installed along waterways and No littering signs along highways.	Average	Low-Medium	Low	Medium	Both	Number of signs installed
Water Pollution Hotline	Hotline for the public to call-in and report water pollution problems.	Above Average	Medium	Low	High	Both	Number of phone calls
Newsletters	Articles in newsletters on pollution.	Below Average	Medium	Low	Low	Both	Number of calls and webhits.
Counter Handouts	Handouts at public service counters.	Below Average	Medium	Low	Low	Both	Number of impressions
Coordination with Other Agencies	Coordination of public outreach activities and outreach materials with other agencies.	Average	Low	Medium	Low	Both	meetings an amount of materials jointly produced
Creek Clean-up	Creek clean-up day sponsored by the City and coordinated with local schools.	Above Average	Low	Low	Low	Both	Number of events, attendance and the amount of trash collected.
Handouts at Community Activities	Handouts of brochures and promotional items at community activities.	Below Average	Low	Low	Low	Both	Number of calls, webhits, and community events
Partnerships with HOAs	Partnerships with HOAs to distribute brochures and materials on a monthly basis to residents.	Average	Low	Low	Low	Both	Number of HOA partnerships established
Water Quality Videos	Video educating residents and businesses on BMPs.	Average	Low-Medium	Low	Low	Both	Number of videos presented to groups.
Outreach Materials Geared Towards Various Ethnicities	Development of bilingual outreach materials for multiple ethnicities.	Average	Low-Medium	Low	Low	Both	Number of calls and webhits.
Clean Water Program	Clean Water Program for residents and businesses in Malibu with a mascot and stickers for participating businesses.	Average	Medium	Low	Low	Both	Percentage reduction in violations.
Adopt-a-Waterway	Adoption of waterways.	Average	Low	Low	Medium	Both	Number of adoptions
Water Conservation Signs	Posted signs regarding water conservation.	Average	Low-Medium	Low	Medium	Dry	Percentage reduction in water use.
Billing Inserts	Billing insert distributed with trash, sewer, and/or water bills to reduce stormwater pollution.	Below Average	Low	Low	Low	Both	Number of calls and webhits.
Newspaper, Theater and Cable PSAs	PSAs shown in newspapers, at the movie theater, and on cable TV stations on stormwater quality.	Below Average	Low-Medium	Low	Low	Both	Number of calls and webhits.
Speakers	Stormwater/runoff presentations to various groups.	Average	Low	Low	Low	Both	Number of presentations
School Outreach Programs	Outreach programs targeting students.	Average	Low	Low	Medium	Both	Professional assessment of

Table 4-1
Public Participation and Information Programs
Existing Programs Evaluation
 Page (2 of 2)

BMP Name	Description	Effectiveness for Reducing Bacteria	Evaluation Criteria				
			Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	Performance Measures
Field Trips	Field trips for students to educate students on water quality issues.	Average	Low	Low	Medium	Both	Survey of teachers.
Water Education for Teachers	Program geared towards training teachers to teach children about environmental issues.	Average	Medium	Low	Medium	Both	Survey of teachers.
Times-In-Education Program	Program with the L.A. Times on stormwater quality.	Below Average	Low	Low	Low	Both	Number of participants in
Fact Sheets	Fact sheets distributed at point-of-sale facilities (e.g. Home Depot) detailing techniques that consumers can use to prevent stormwater pollution.	Above Average	Low	Low	Low	Both	Staff trained.
Media Partnership with Caltrans	Media partnership with Caltrans.	Average	Low-Medium	Low-Medium	Low	Both	Number of calls and webhits.
Cross Promotions with Businesses	Promotions in conjunction with businesses.	Average	Low	Low-Medium	Low	Both	Number of participants.
Partnerships with Chamber of Commerce and Contractors Association	Partnerships with the local Chamber of Commerce and Contractors Association to extend outreach.	Average	Low	Low	Low	Both	Number of partnerships
Workshops	Offer workshops on slope stabilization/erosion control/septic/graywater/co-existing with wildlife/invasives management; workshops targeted to businesses.	Average	Low-Medium	Low	Low	Both	Number of workshops and number of participants

Table 4-2
Public Information and Participation Programs
Enhancements Programs Evaluation
 Page (1 of 3)

BMP Name	Description	Evaluation Criteria					
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effectiveness in Dry or Wet Weather	Performance Measures
Residential PIPP							
Pets							
Outreach to Pet Owners Linking Waste to Bacterial Loading	Outreach to pet owners establishing a link between animal wastes and health issues and focus on point of contact. The objective of this recommendation is to target pet owners with information about pet waste and its impact on water bodies.	Above Average	Low	Low	Medium-High	Both	Number of impressions
Animal License Fee Add-on	Increase animal license fees with fee to contribute towards partially paying for treatment of bacterial loading from pets; educate pet owners on reason for increased fee	Above Average	Low	Medium	Medium	Both	Additional funds raised
Place Pet Waste Bag Dispensers at Trailheads	Place pet waste bag dispensers at trailheads and trash cans with lids, if trash cans with lids are not already present.	Above Average	Low	Medium	Medium-High	Both	Number of trailheads with bags and number of bags distributed
Pet Store/Vet/Shelter POS Campaign	Distribution of outreach materials at point of sale facilities regarding the link between pets and bacterial loading of water bodies.	Above Average	Low	Low	Medium-High	Both	Number of participants.
Residential Equestrian							
Develop an Inventory of Areas with Confined Animals and Educate Property Owners on Bacteria TMDLs (combine with commercial inventory effort)	This program will educate the owners of confined animals about bacteria TMDLs and steps they can take to decrease negative impacts on the environment. A network of volunteers from environmental organizations could be trained in this area.	Above Average	Low	Medium	Medium-High	Both	Number of owners trained and survey.
Educate horse/livestock users on the use of exclusion fences	Create educational materials for horse/livestock owners about manure management	Above Average	Low	Medium	Medium	Both	Number reached.
Educate horse/livestock users on the manure management	Create educational materials for horse/livestock owners about exclusion fences and the benefits	Above Average	Low	Medium	Medium	Both	Number trained and number of fences installed.
Support Efforts to Create Updated Horse BMP Outreach Materials	Support RCD and County efforts to create horse BMP outreach materials for both the County-wide horse community and agency regulatory staff. Work with other stakeholders to distribute materials and create awareness.	Above Average	Medium	Low	Medium	Both	Completion of updated Horse BMP Outreach Materials and number distributed.
Post Signs at City and County-owned Trailheads for Equestrian Users Emphasizing Clean-up of Manure in Parking Lots	Post signs at City and County-owned trailheads designated for equestrian users to not clean out horse trailers in parking lots and to clean up horse waste.	Below Average	Low	Medium	Low	Both	Number of signs installed
Visitors/Recreation							
Outreach at Trailheads to Emphasize use of Restrooms and Proper Waste Disposal	Posting signs at trailheads to remind hikers to use the restroom before a hike will both increase awareness and prevent improper waste disposal.	Below Average	Low	Medium	Low	Both	Number of signs installed
Increase Lagoon & State Park Educational Signage on Water Quality	Encourage incorporation of watershed-related info at Lagoon and other state parks – update signage, add kiosks, include watershed model.	Average	Low	Medium	Low	Both	Development of revised signs and installation
Partner with California State Parks and NPS to Develop Educational Signs in Campgrounds to Target Visitors	Work closely with State Parks and NPS to install educational signs in campgrounds and parks, including language on proper disposal of diapers and wipes.	Below Average	Low	Medium	Medium	Both	Number of signs installed
Work with the County Outreach Coordinators to Identify Methods to Reach Visitors to the Watershed		Average	Low-Medium	Medium	Medium	Both	TBD based on program.
OWTS							
Voluntary Septic Inspection and Maintenance Program	Implement a voluntary inspection and reporting program including education on the importance of proper maintenance; reminders would be sent with property taxes or utility bills; incentives possible offered for participation	Average	Low	Low	Low	Both	Number of calls or requests.
Provide Septic System (OWTS) Pumpers and Customers with Septic System Guides	The goal of this suggestion is to provide septic system owners with information pertaining to their septic system and how to prevent pollution using proper maintenance procedures.	Above Average	Low	Low	Medium	Both	Number of impressions

Table 4-2
Public Information and Participation Programs
Enhancements Programs Evaluation
 Page (2 of 3)

BMP Name	Description	Evaluation Criteria					
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effectiveness in Dry or Wet Weather	Performance Measures
Dry-Weather Flow							
Mailers or Other Outreach for Proper Pool Drainage	Mailers to residents with pools, point of sale distribution of materials (pool stores, other stores selling pool chemicals and maintenance items), distribution of materials to HOAs and Poolmen's Association to not drain pools into the storm drain system.	Below Average	Low	Low	Low	Dry	Number of materials distributed, number trained.
Partnerships with HOAs to Increase Impressions and Promote Water Quality and Water Conservation	Partnerships with HOAs to educate residents; work with HOAs to reduce runoff from common area landscaping.	Above Average	Low	Low	Low	Dry	Number of HOA partnerships established, number trained, number of presentations, and percentage reduction in water use.
Work with LVMWD, WBMWD, and WWD 29 to Support/Expand Water Audit and Conservation Programs	Work with Las Virgenes Municipal Water District (LVMWD) and West Basin Municipal Water District (WBMWD), Los Angeles County Waterworks District No. 29 (WWD 29) and to support and expand water conservation and water audit programs and make link to bacterial loading caused by runoff.	Above Average	Medium	Low-Medium	Medium	Dry	Number of water audits conducted, number of conservation programs, and percentage reduction in water use.
Partnership with LVMWD, WBMWD, and WWD 29 in Relating Conservation of Water to Water Quality of Urban Runoff	Work closely with the press to feature articles on water conservation and water quality of urban runoff.	Above Average	Medium	Low-Medium	Medium	Dry	Number of articles published
Include Water Conservation in Existing Educational Programs at Schools	Develop water conservation into existing curriculum on water quality.	Below Average	Medium	Low-Medium	Medium	Dry	Number of participating schools
Water Conservation Signs	Posted signs regarding water conservation.	Below Average	Low-Medium	Low	Medium	Dry	Number of signs installed
Outreach Campaigns							
Develop a Watershed Awareness Campaign Incorporating Key Outreach Elements to Address Bacteria and Other Pollutant Impairments in the MCW	Develop an outreach campaign to educate residents on the general watershed concept and building a sense of ownership in the watershed.	Below Average	Low	Low	Low-Medium	Both	Development of programs and number of impressions
Clean Water Program for Residents and Businesses Based on the Malibu Program	Develop a Clean Water Program for residents and businesses in Malibu with a mascot, stickers for participating businesses.	Below Average	Medium	Low	Low	Both	Number of participants
Outreach BMP Elements							
Educational Water Quality Videos with an Emphasis on Bacteria TMDLs and Water Conservation	Create a video educating residents and businesses on BMPs and water conservation.	Above Average	Low-Medium	Low	Low	Both	Number of live presentations of videos and assessment with audience.
Focused Outreach to Residents Surrounding the Lagoon	Provide direct outreach to residents surrounding the lagoon on BMPs, OWTS maintenance, water conservation, and water quality.	Above Average	Low	Low	High	Both	Number of impressions
Increase Articles in Local Newspapers on Water Quality and Water Conservation	Work closely with the press to feature articles in water conservation and water quality.	Above Average	Low	Low	Medium	Both	Number of articles published
Fact Sheets on Water Quality	Distribute fact sheets at point-of-sale facilities (e.g. Home Depot) detailing techniques that consumers can use to prevent stormwater pollution.	Below Average	Low	Low	Low	Both	Number of impressions
Billing Inserts with Water Quality Messages	Billing insert distributed with trash bills emphasizing methods to reduce stormwater pollution.	Below Average	Low	Low	Low	Both	Number of calls and webhits.
Workshops for Businesses and Residents on Septic Maintenance, Drought and Fire Resistant Plants, Water Conservation Slope Stabilization	Offer workshops on slope stabilization/erosion control, septic maintenance, drought and fire resistant plants, and water conservation; workshops targeted to businesses.	Above Average	Low-Med	Low	Low	Both	Number of workshop, number of participants, and assessment of learning.
Speakers	Stormwater/runoff presentations to various groups.	Average	Low	Low	Low	Both	number of attendees
Field Trips	Field trips for students to educate students on water quality issues.	Average	Low	Low	Medium	Both	Number of students participating

Table 4-2
Public Information and Participation Programs
Enhancements Programs Evaluation
 Page (3 of 3)

BMP Name	Description	Evaluation Criteria					
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effectiveness in Dry or Wet Weather	Performance Measures
Times-In-Education Program	Program with the L.A. Times on stormwater quality.	Below Average	Low	Low	Low	Both	Number of participants in
Water Education for Teachers	Program geared towards training teachers to teach children about water quality and water conservation.	Average	Medium	Low	Medium	Both	Number of teachers participating
Adopt-a-Waterway	Adoption of waterways.	Average	Low	Low	Medium	Both	Number of adoptions
Increase Public Awareness of BMPs for Restaurants for Citizens to Report Non-compliance	Inform the public about restaurant BMPs so they can report improper housekeeping practices.	Low-Medium	Low	Low	Both	Number of impressions, number of	PE
Creek Clean-ups	Creek clean-up day sponsored by City and coordinated with local schools.	Above Average	Low	Low	Low	Both	Number of events
Increased Coordination Between Agencies and Environmental Organizations in Preparing Outreach Materials.	Numerous efforts are continually put forth to produce outreach materials, but production is not always coordinated between organizations and agencies.	Above Average	Low-Medium	Low-Medium	Medium	Both	Number of joint outreach materials and programs, and program results.
Partnership Program PIPP							
Partner with Chambers of Commerce to Present Workshops & Outreach	Partner with our local Chambers of Commerce to present workshops, distribute materials and involve local business participation in public outreach.	Average	Low	Low	Low	Both	Number of partnerships
Partnerships with Chamber of Commerce and Contractors Association to Extend Outreach	Partnerships with the local Chamber of Commerce and Contractors Association to extend outreach.	Average	Low	Low	Low	Both	Number of partnerships
Create Sustainable Quality Awards for Businesses that Implement Certain BMPs	Create "sustainable quality awards" similar to City of Santa Monica program.	Below Average	Low-Medium	Low	Medium	Both	Number of participants.
Cross Promotions with Businesses to Increase Bacteria TMDL Awareness	Promotions in conjunction with businesses.	Average	Low	Low-Medium	Low	Both	Number of participants.
Signs On or Near Dumpsters to Keep Lids Closed	Signs on dumpsters to keep lids closed throughout the MCW.	Above Average	Low	Low-Medium	Low-Medium	Both	Number of dumpsters with labels
Media Partnership with CalTrans	Media partnership with CalTrans.	Average	Low-Medium	Low-Medium	Low	Both	Number of impressions
Large Landscape Conservation/Runoff Reduction Management and Outreach Program	West Basin Municipal Water District: Through the installation and management of landscape weather-based irrigation controllers, an estimated 20%-50% of irrigated water will be conserved, thus reducing imported water needs. A major component of this program is the development of "Ocean Friendly Garden" workshops designed to educate the public on water conservation and water quality.	Above Average	Medium	Low	High	Dry	Number of installations

4.2 Industrial/Commercial Facilities Control Programs

The Industrial/Commercial Facilities Control Programs are designed to require Permittees to inventory, track, and inspect all commercial/industrial facilities for BMP implementation. The overall goals are to improve activities at commercial and industrial sites through outreach, site visits, incentives, and/or inspections and enforcement. In this category, BMPs are designed to address the following potential bacteria sources:

- Urban runoff (from commercial/industrial sites);
- Onsite wastewater treatment systems at businesses;
- Horses and confined animal facilities (commercial); and
- Agriculture uses.

Technical Memorandum 4.1 provides a more in-depth discussion regarding the programs.

Implementation of additional BMPs in this category can potentially reduce bacterial loading by creating awareness throughout the business community of bacteria TMDLs, emphasizing the importance of compliance with BMPs to reduce bacterial loading, and changing business practices currently contributing to bacterial loading. Specific types of businesses thought to be contributing to bacterial loading include restaurants and commercial equestrian centers. Thus, industry specific BMPs have been developed for these types of businesses. Evaluations and performance measures for the non-structural BMPs are categorized within this category are presented in Tables 4-3 and 4.4, located at the end of this section.

Table 4-3
Industrial/Commercial Facilities Control Program
Existing Program Evaluation
 Page (1 of 2)

BMP Name	Description	Evaluation Criteria					
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	Performance Measures
Tracking Programs							
Update Commercial/Industrial Critical Sources Database	Update database of commercial/industrial users to incorporate all critical sources and records of inspections.	Below Average	Medium	Low	High	Both	Frequency of database updates to capture information
Targeted Business Outreach	Target businesses with the greatest potential to contribute pollutants of concern for additional outreach and education (agriculture, commercial equestrian, car washes, mobile businesses).	Above Average	Medium	Low	High	Both	Number of businesses targeted
Targeted Pollution Prevention Brochures	Brochures targeting painting contractors, landscape and pool maintenance personnel, contractors, site supervisors, and horse owners.	Above Average	Low-Medium	Low	High	Both	Number of impressions
Identify Commercial Horse Stables and Equestrian Centers for Outreach	Identify all commercial stables and centers; educate commercials stables operators on BMPs	Above Average	Low	Low	High	Both	Number of impressions
Compliance and Inspection Programs							
Inspection Program	Inspection per NPDES requirements and review of implemented BMPs.	Average	Medium	Low	High	Both	Number of inspections
Group Convenience Stores with Restaurants for Inspection Purposes	Inspect all convenience stores initially then remove those stores that do not have food preparation on-site from restaurant category.	Average	Medium	Medium	Medium	Both	Number of initial convenience store inspections
BMP Inspections Combined with Health Inspections for Restaurants	Coordination between health inspectors and BMP inspectors at restaurant and food processing facilities.	Average	Low	Medium	Medium	Both	Number of coordinated inspections
Educate and Inspect Mobile Businesses (Mobile car washes, catering trucks, etc)	Educate and inspect mobile businesses as part of normal inspection duties.	Average	Medium	Medium	High	Both	Number on inspections conducted on mobile businesses
Inspection Consistency Across Jurisdictions	Consistency in baseline elements of inspection programs across jurisdictions.	Average	Low	Medium	Medium	Both	Completion of inspection consistency
Joint Inspections with RWQCB	Joint inspections with RWQCB for regulated industrial users (that require both RWQCB and Permittee inspections) to coordinate inspections to prevent receiving conflicting information.	Average	Low	Low	Medium	Both	Number of joint inspections
Training of Staff to Conduct Inspections	Training staff that conduct inspections tailgate meetings, formal classroom training, and self-guided training.	Average	Low	Low	High	Both	Number of staff trained at each type of training program
Training & Outreach							
Business Reward/Stewardship Program	Develop business reward program to reward businesses helping keep the environment clean.	Above Average	Low-Medium	Low	Medium	Both	Number of awards awarded
Targeted BMP Material for Distribution to Businesses	Distribute targeted BMP information at public counters prepared by LA County and Malibu in conjunction with Chamber of Commerce and Malibu Contractor's Association.	Average	Low	Low	Low	Both	Number of impressions
Letters to Trash Haulers	Send letters to trash haulers. It was determined that most open trash lids were commonly caused by waste haulers not closing lids before pushing bins against walls.	Above Average	Low	Low	High	Both	Number of letters sent
Meet with Trash Haulers, Property Managers, and All Businesses	Meet with waste haulers; businesses not required to be inspected, but sharing dumpsters with those that are inspected; and property managers to discuss importance of closing dumpster lids.	Above Average	Low	Low	High	Both	Number of meetings and number of attendees

Table 4-3
Industrial/Commercial Facilities Control Program
Existing Program Evaluation
 Page (2 of 2)

BMP Name	Description	Evaluation Criteria					
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	Performance Measures
Educational Training Workshop on General Industrial Permit	Workshop to discuss requirements of General Industrial Permit and educate industries.	Average	Low	Low	Low	Both	Number of workshops and number of attendees
Outreach Material Distribution	Outreach materials are provided to businesses during inspections. Interim educational visits in target areas to supplement inspections. Send thank you letters to businesses that are in compliance with BMPs.	Above Average	Low-Medium	Low	Medium	Both	Number of impressions, number of interim educational visits, number of letters sent
Distribution of Posters	During inspections of automotive facilities, posters are handed out to provide guidance to reduce water pollution.	Average	Low	Low	Low	Both	Number of impressions
Educational Brochures for Industrial Facilities	Brochures distributed during site visits of industrial facilities that stipulate that facilities must file NOI, develop SWPPP, illegal discharges, what to do in case of spills, and penalties for non-compliance.	Average	Low	Low	Low-Medium	Both	Number of impressions
Mandatory Restaurant Training Program	Mandatory restaurant training program provided by LA County DHS on BMPs and making modifications to prevent urban runoff.	Above Average	Low	Low	Medium	Both	Number of training sessions
Other Commercial/Industrial Facilities Controls							
BMP Restaurant Practice Workshops	Workshops for restaurant chains held with the Food Sanitary Advisory Council, focus on four areas: spill prevention, control and clean-up; waste-disposal and handling; building and grounds maintenance; and employee training.	Above Average	Low	Low	Medium	Both	Number of training sessions
Retail Gas Outlet (RGO) Training Program	Workshops for RGO operators and chains, focus on four areas: spill prevention, control and clean-up; waste-disposal and handling; building and grounds maintenance and employee training	Average					
Business Assistance Clean Water Program	Initiate development of a Clean Water Program where businesses can become team members.	Average	Medium	Low	Low	Both	Number of participants
Partner with Chamber of Commerce	Partnership with the Chamber of Commerce to educate businesses on TMDLs.	Average	Low	Low	Low	Both	Number of partnerships
Establish Lines of Communication with Agricultural Community	Participate in watershed coalitions with agricultural users to develop and implement water monitoring programs.	Average	Low-Medium	Medium	Medium	Both	Development of coalition and water quality programs
Equestrian Facility Education	Educate equestrian facilities on impacts of waste.	Above Average	Low	Low	High	Both	Number of impressions
Outreach program for all commercial facilities with confined animals and equestrian centers	Conduct outreach program and handout previously produced pamphlets dealing with specific BMPs; educate owners regarding BMPs and bacteria TMDL, coordinate outreach materials among agencies	Above Average	Low	Low	High	Both	Number of impressions
Increase frequency of trash collection at restaurants and food processing facilities	Require restaurants to have refuse picked up more often if bins are overflowing	Above Average	Low	Medium	Medium	Both	Frequency of trash pick-ups
Pool Maintenance Guide Fact Sheet	Fact sheet similar to one developed by VC Environmental Health Department and Permittees containing BMPs for pool maintenance geared towards both pool service professionals and homeowners.	Average	Low	Low	Medium	Both	Number of impressions

Table 4-4
Industrial/Commercial Facilities Control Program
Enhancement Program Evaluation
 Page (1 of 3)

BMP Name	Description	Evaluation Criteria					
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	Performance Measures
Inspection and Enforcement Programs							
Pilot Inspections and Education of Convenience Stores and Other Food Marts within the Restaurant Inspection Program	Pilot inspection of convenience stores and food marts to evaluate potential for BMP improvements.	Average	Medium	Medium	Low	Both	Number of inspections and impressions
Enhance Inspection Frequency by Adding Education Visits	Interim educational visits in target areas to supplement inspections.	Average	Low-Medium	Medium	Medium	Both	Development of consistent inspection schedule and
Adopt a Uniform Fine Structure and Method to Facilitate Enforcement of BMP Requirements	Adopt a uniform fine structure and method to facilitate enforcement of BMP requirements consistent with NPDES requirements.	Average	Low	Medium	Low	Both	Adoption of uniform fine structure and methodology to enforce BMPs
Modify Inspection Staff Training to Include Bacteria Issues	Training staff that conduct inspections, tailgate meetings, formal classroom training, and self guided training.	Average	Low	Medium	Medium	Both	Completion of inspection consistency
Enforce Parking Lot Street Sweeping for Commercial Businesses	Enforce parking lot street sweeping requirements within city limits for commercial businesses (as is already required within LA County). Would potentially require ordinance modification.	Above Average	Low-Medium	Medium	Medium	Both	Number of enforcement actions
Mandatory Servicing and Inspection of Existing Septic Tank Systems	A licensed septic tank specialist would inspect the system during servicing and report the results to the Department of Health Services and to the City.	Above Average	Medium-High	Medium-High	Medium-High	Both	Number of commercial/industrial septic systems inspected; complete analysis of providing
Inspection Consistency Across Jurisdictions in MCW	Assure Consistency in baseline elements of inspection programs across jurisdictions.	Average	Low	Low	Low	Both	Development of consistent baseline elements
General Training and Outreach and Incentive Programs							
Letters to Trash Haulers to Close Lids Prior to Pushing Bins Against Walls. Send Thank You Letters to Businesses that are in Compliance with BMPs	Send letters to trash haulers to prevent lids from being pinned against walls.	Above Average	Low	Low	High	Both	Number of letters sent
Meet with Trash Haulers, Property Managers, and All Non-Inspected Businesses in Centers with Businesses Required to be Inspected to Discuss Water Quality and Importance of Closing Dumpster Lids	Meet with waste haulers; businesses not required to be inspected, but sharing dumpsters with those that are inspected; and property managers to discuss importance of closing dumpster lids.	Above Average	Low	Low	High	Both	Number of meetings and number of attendees
Targeted Pollution Prevention Brochures	Brochures targeting painting contractors, landscape and pool maintenance personnel, contractors, site supervisors, and horse owners.	Above Average	Low-Medium	Low	High	Both	Number of impressions
Business Reward/Stewardship Program	Develop business reward program to reward businesses helping keep the environment clean.	Above Average	Low-Medium	Low	Medium	Both	Number of awards awarded
Educate Businesses on Drought Landscaping Plants and Fire Resistant Native Vegetation	Educate businesses on drought landscaping plants and fire resistant native vegetation.	Average	Low	Low	Medium	Dry	Number of impressions
Provide Businesses with Outreach Materials on Reducing Runoff from Landscape Irrigation	Provide outreach materials emphasizing reducing runoff when irrigating.	Average	Low	Low	Medium	Dry	Number of impressions
Incentives program for maintenance compliance	Increase incentives, such as "seal of approval" (example LEED certifications), for compliance with stormwater and bacteria BMPs by homeowners and businesses. Categories for compliance include landscaping, containment, energy conservation, equestrian containment, etc.	Above Average	Medium	Medium	Low	Both	Number of incentives awarded
Incentives and "Emission Reduction Credit" Type Program for BMP Compliance	Provide financial incentives and credits (trading, such as allowed for air quality) for homeowners and businesses complying with BMPs.	Above Average	Medium	Medium	Low	Both	Number of incentives awarded, number of credits

Table 4-4
Industrial/Commercial Facilities Control Program
Enhancement Program Evaluation
 Page (2 of 3)

BMP Name	Description	Evaluation Criteria					
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	Performance Measures
Include Bacterial Source Loading Information in Outreach Material Distribution	Outreach materials are provided to businesses during inspections.	Average	Low	Low	Low	Both	Revision of outreach materials to include bacteria
Business Assistance Program Where Businesses Become Team Members (Malibu Clean Water Program)	Develop program similar to Malibu's Clean Water Program where businesses become team members.	Average	Medium	Low	Low	Both	Number of participants
Partner with Chamber of Commerce	Partnership with Chamber of Commerce to educate businesses on TMDLs.	Average	Low	Low	Low	Both	Number of partnerships
Conduct Additional Industry Specific Workshops on Water Quality	Conduct additional industry specific workshops and coordinate across MCW.	Average	Low-Medium	Medium	Medium	Both	Number/frequency of additional workshops
Targeted Business Outreach with Greatest Potential to Contribute Pollutants of Concern for Extended Outreach and Education (agriculture, commercial equestrian, car washes, mobile businesses)	Target businesses with the greatest potential to contribute Pollutants of Concern for outreach and education (agriculture, commercial equestrian, car washes, mobile businesses).	Above Average	Medium	Low	High	Both	Number of businesses targeted
Targeted BMP Material for Distribution to Businesses in Conjunction With Chamber of Commerce's and Local Contractor's Association	Distribute targeted BMP information at public counters in conjunction with Chamber of Commerce and Malibu Contractor's Association.	Average	Low	Low	Low	Both	Number of impressions
Commercial Equestrian Facilities							
Equestrian Facility Education	Educate equestrian facilities on impacts of waste.	Above Average	Low	Low	High	Both	Number of impressions
Develop Outreach Program for Commercial Horse Stables and Equestrian Centers	Conduct outreach program and handout previously produced pamphlets dealing with specific BMPs; educate owners regarding BMPs and bacteria TMDL; coordinate horse outreach materials among agencies.	Above Average	Low	Low	High	Both	Development of program and number of impressions
Identify/Develop a listing of Commercial Horse Stables and Equestrian Centers for Outreach	Develop a listing of all commercial horse stables for targeted outreach.	Above Average	Low	Low	High	Both	Number of impressions
Pilot Program for Commercial Horse Stables and Equestrian Centers with Pre- and Post-BMP Sampling	Establish pilot program for commercial horse stables and equestrian centers with sampling of runoff before BMP introduction and after.	Average	Medium	Medium	Medium	Both	Completion of pilot program
Restaurants/Food Processors							
BMP Inspections Combined with Health Inspections for Restaurants	Coordination between health inspectors and BMP inspectors at restaurant and food processing facilities. Stormwater Ordinance is currently being developed for industrial / commercial facility certification inspection program in Los Angeles County. Restaurant inspections will be handled by DHS. Violations will be forwarded to DPW.	Average	Low	Medium	Medium	Both	Number of coordinated inspections
Modify Health Rating Inspections for Restaurant and Food Processing Facilities to Incorporate BMP Compliance	Incorporate compliance with BMPs into health rating system for restaurants and food processing facilities.	Above Average	Low	Medium-High	High	Both	Incorporation of requirements into health rating system
Establish a BMP Grading System for business similar to Dept of Public Health ratings.	Establish a "report card" grade on BMP compliance. Post information about businesses' compliance online. Encourage business with good grades to post NON-compulsory BMP Grades in windows. Educate public about patronizing businesses with high BMP grades.						

Table 4-4
Industrial/Commercial Facilities Control Program
Enhancement Program Evaluation
 Page (3 of 3)

BMP Name	Description	Evaluation Criteria					
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	Performance Measures
Increase Frequency of Restaurant and Food Processing Material Facility Inspections	Increased inspections (such as combining w/previously mentioned health inspections).	Above Average	Medium	Medium	High	Both	Frequency of inspections
Mandatory Restaurant Training Program on BMPs Conducted in Conjunction with Health Department	Mandatory restaurant training program provided by LA County DHS on BMPs and making modifications to prevent urban runoff.	Above Average	Low	Low	Medium	Both	Number of training sessions
BMP Restaurant Practice Workshops	Workshops for restaurant chains held with the Food Sanitary Advisory Council, focus on four areas: spill prevention, control and clean-up; waste-disposal and handling; building and grounds maintenance; and employee training.	Above Average	Low	Low	Medium	Both	Number of workshops
Increase Public Awareness of BMPs for Restaurants for Citizens to Report Non-compliance	Inform the public about restaurant BMPs so they can report improper housekeeping practices.	Average	Low-Medium	Low	Low	Both	Number of impressions, number of complaints
Restaurant Reward and Recognition Program	Recognition of restaurants that implement stormwater quality BMPs including bacteria BMPs on a quarterly basis.	Above Average	Low-Medium	Medium	Medium	Both	Number of awards
Increase Frequency of Trash Collection at Restaurants and Food Processing Facilities that Commonly Have Excess Trash	Require restaurants to have refuse picked up more often if bins are overflowing.	Above Average	Low	Medium	Medium	Both	Frequency of trash pick-ups
Industrial Specific BMPs							
Joint Inspections with RWQCB	Joint inspections with RWQCB for regulated industrial users (that require both RWQCB and co-permittee inspections) to coordinate inspections to prevent receiving conflicting information.	Average	Low	Low	Medium	Both	Number of joint inspections
Educational Training Workshop on General Industrial Permit	Workshop to discuss requirements of General Industrial Permit and educate industries.	Average	Low	Low	Low	Both	Number of workshops and number of attendees
Educational Brochures for Industrial Facilities	Brochures distributed during site visits of industrial facilities stipulating that facilities must file NOI, develop SWPPP, illegal discharges, what to do in case of spills, and penalties for non-compliance.	Average	Low	Low	Low-Medium	Both	Number of impressions
Miscellaneous Business Specific BMPs							
Educate and Inspect Mobile Businesses	Educate and inspect mobile businesses as part of normal inspection duties.	Above Average	Medium	Medium	High	Both	Number of inspections conducted on mobile
Proper Management of Solid Waste Associated with Mobile Food Sales	Require mobile food vendors to dispose of solid wastes generated in the preparation process.	Above Average	Low	Medium	Medium	Both	Implementation of program
Distribution of Posters at Automotive Facilities	During inspections of automotive facilities posters are handed out to provide guidance to reduce water pollution.	Average	Low	Low	Low	Both	Number of impressions
Educate Landscape Maintenance Businesses on Pesticide Use, Fertilizers, Vegetative Matter and its Relationship to Water Quality	Educate landscape maintenance businesses on pesticide use, fertilizers, vegetative matter and its relationship to water quality.	Average	Low	Low	Medium	Both	Number of impressions
Pool Maintenance Guide Fact Sheet	Guide developed by VC Environmental Health Department and Co-permittees containing BMPs for pool maintenance geared towards both pool service professionals and homeowners.	Average	Low	Low	Medium	Both	Number of impressions

4.3 Development Planning Program

Development Planning Programs are designed to minimize water quality impacts associated with stormwater generated from development and redevelopment planning projects throughout the project life. Bacteria sources that may be affected by the Development Planning Program include:

- Urban runoff (including residential and commercial/industrial users);
- Onsite wastewater treatment systems; and
- Horse and confined animal facilities.

A more detailed description of the programs is provided in Technical Memorandum 4.2.

The suite of potential BMP enhancements and new BMPs identified for the Development Planning Program seeks to reduce bacterial loading by: requiring post-construction BMPs that must be maintained through the life of the construction project, providing more education to developers regarding the impacts of their activities on urban runoff, requiring mandatory inspections and servicing of septic tanks constructed as a part of new projects, and the incorporating programs to recognize and encourage sustainable building techniques. Tables 4-5 and 4-6 that are located at the end of this section, provide an evaluation of the non-structural BMPs and applicable performance measures that are within the classification of the Development Planning Program.

Table 4-5
New Development/Redevelopment Program
Existing Programs Evaluation
 Page (1 of 2)

BMP Name	Description	Evaluation Criteria						Performance Measures
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather		
Structural Source Control BMPs Included in Standard Urban Stormwater Mitigation Plans (SUSMPs)/Stormwater Quality Urban Impact Mitigation Plans (SQUIMPs)								
Maintain Peak Stormwater Discharge Rates	Do not allow exceedence preconstruction discharge rates where increased rates will result in increased potential for erosion.	Average	Medium	Medium-High	Medium-High	Wet	Number of development plans reviewed for BMP incorporation	
Conserve Natural Areas	Concentrate or cluster development on portions of a site while leaving the remaining land in a natural undisturbed condition.	Above Average	Medium	Medium-High	Medium-High	Both	Number of development plans reviewed for BMP incorporation	
Conserve Natural Areas	Limit clearing and grading of native vegetation at a site to minimum amount needed to build lots, allow access, and provide fire protection.	Average	Medium	Medium	Medium-High	Both	Number of development plans reviewed for BMP incorporation	
Conserve Natural Areas	Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.	Above Average	Medium	Medium	Medium-High	Both	Number of development plans reviewed for BMP incorporation	
Conserve Natural Areas	Promote natural vegetation by using parking lot islands and other landscaped areas.	Above Average	Medium	Medium	Medium-High	Both	Number of development plans reviewed for BMP incorporation	
Conserve Natural Areas	Preserve riparian areas and wetlands.	Above Average	Medium	Medium	Medium-High	Both	Number of development plans reviewed for BMP incorporation	
Minimize Stormwater Pollutants of Concern	See BMPs reference list in SUSMP and SQUIMP.	Above Average	Medium	Medium	High	Wet	Number of plans reviewed for effectiveness in removing pollutants of concern	
Protect Slopes and Channels	Convey runoff safely from the tops of slopes and stabilize disturbed slopes.	Below Average	Medium	Low	Medium	Wet	Number of development plans reviewed for BMP incorporation	
Protect Slopes and Channels	Utilize natural drainage systems.	Below Average	Medium	Low	Medium-High	Wet	Number of development plans reviewed for BMP incorporation	
Protect Slopes and Channels	Control, reduce, or eliminate flow to natural drainage systems.	Average	Medium	Low	Low-Medium	Wet	Number of development plans reviewed for BMP incorporation	
Protect Slopes and Channels	Stabilize permanent channel crossings.	Below Average	Medium	Low	Low-Medium	Wet	Number of development plans reviewed for BMP incorporation	
Protect Slopes and Channels	Vegetate slopes with native or drought tolerant vegetation.	Average	Medium	Low	Medium	Wet	Number of development plans reviewed for BMP incorporation	
Protect Slopes and Channels	Install energy dissipaters to minimize erosion.	Below Average	Medium	Low	Low-Medium	Wet	Number of development plans reviewed for BMP incorporation	
Treatment Control BMPs								
Bioretention Facilities	Create surface pond which captures first flush stormwater and treats it by allowing it to percolate into the ground and through permeable soils.	Above Average	Medium	Medium-High	High	Wet	Number and capacity of bioretention facilities reviewed during project review	
Catch Basin/Storm Drain Inserts	Any device that can be inserted into an existing catch basin/storm drain design to provide some level of runoff containment removal.	Average	Medium	Medium	Medium	Wet	Number of plans reviewed containing inserts during project review	
Cistern	Containers which capture stormwater runoff as it comes down through the roof gutter system, and the stormwater can then be used later to water the garden or lawn.	Above Average	Medium	Medium	Medium	Wet	Number and capacity of facilities reviewed during project review	
Constructed wetlands	Provide physical, chemical, and biological water quality treatment of stormwater runoff.	Above Average	Medium	High	High	Wet	Number and capacity of facilities reviewed during project review	
Dry Wells	Commonly known as sumps, French drains, drainfields, and shallow injection wells, dry well and other such devices increase stormwater percolation into the subsurface. BMP must be in compliance with Class V injection well standards, if applicable.	Above Average	Medium	Medium-High	Medium	Wet	Number and capacity of facilities reviewed during project review	
Extended/Dry Detention Basins or Underground Detention Tanks	Depressed basins that temporarily store a portion of stormwater runoff following a storm event, and the water is controlled by means of a hydraulic control structure to restrict outlet discharge.	Below Average	Medium	Medium-High	Medium	Wet	Number and capacity of facilities reviewed during project review	
Infiltration Basins	A surface pond which captures first flush stormwater and treats it by allowing it to percolate into the ground and through permeable soils.	Above Average	Medium	Medium-High	Medium-High	Wet	Number and capacity of facilities reviewed during project review	

**Table 4-5
 New Development/Redevelopment Program
 Existing Programs Evaluation**
 Page (2 of 2)

BMP Name	Description	Evaluation Criteria					
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	Performance Measures
Infiltration Trenches	An excavated trench that has been lined with filter fabric and backfilled with stone to form an underground basin.	Above Average	Medium	Medium-High	Medium-High	Wet	Number and capacity of facilities reviewed during project review
Media Filtration	Media filters that are two-stage constructed treatment systems, including a pretreatment settling basin and a filter bed containing sand or other filter media.	Above Average	Medium	Medium-High	High	Wet	Number and capacity of facilities reviewed during project review
Porous Pavement	Asphalt based paving material that allows stormwater to quickly infiltrate the surface pavement layer to enter into a high-void aggregate sub-base layer.	Above Average	Medium	Medium-High	Medium-High	Both	Number and capacity of facilities reviewed during project review
Dry Weather Flow Diversion	Devices to divert dry weather flow for treatment.	Above Average	High	Medium-High	Medium-High	Dry	Number and capacity of facilities reviewed during project review
Multi-Chamber Treatment Trains	Treatment chambers to remove pollutants from runoff.	Average	Medium	Medium-High	Low-Medium	Wet	Number and capacity of facilities reviewed during project review
Gross Solids Removal Devices (GSRDs)	Devices to remove solids from runoff. Continuous Deflective Systems (CDS) are currently used in Calabasas with hundreds of pounds of trash being removed from each of their three units each year.	Average	Medium	Medium-High	Medium-High	Wet	Number and capacity of facilities reviewed during project review
Vegetated Filter Strips	Vegetated sections of land similar to grassed swales, except they are essentially flat with low slopes, and are designed only to accept runoff overland sheet flow; serve to facilitate congenial pollutant removal through detention.	Above Average	Medium	Low	High	Both	Number and capacity of facilities reviewed during project review
Vegetated Swale	Shallow vegetated channels to convey stormwater where pollutants are removed through grass infiltration through the soil.	Above Average	Medium	Low	High	Both	Number and capacity of facilities reviewed during project review
Wet Ponds/Basins	A facility which removes sediment, biochemical oxygen demand (BOD), organic nutrients, and trace metals from stormwater runoff by slowing down stormwater using an in-line permanent pool or bond effecting settling of pollutants.	Above Average	Medium	High	High	Wet	Number and capacity of facilities reviewed during project review
Regional Stormwater Mitigation Program							
Provide Storm Drain System Stenciling	All storm drain inlets and catch basins within the project area must be stenciled with prohibitive language (such as: "NO DUMPING – DRAINS TO OCEAN") and/or graphical icons to discourage illegal dumping, legibility of stencils and signs must be maintained	Average	Medium	Low	High	Both	Number of catch basins stenciled
Provide Storm Drain System Signage	Signs, prohibitive language, and/or graphical icons, which prohibit illegal dumping, must be posted at public access points along channels and creeks within the project area.	Average	Medium	Low	High	Both	Number of sign posted basins
Site Specific Mitigation							
Properly Design Outdoor Material Storage Areas	Materials with the potential to contaminate stormwater must be placed in an enclosure or protected by secondary containment.	Above Average	Low	Medium	High	Wet	Number of facilities reviewed during plan review
Properly Design Outdoor Material Storage Areas	Storage areas must be paved and sufficiently impervious to contain leaks and spills.	Above Average	Low	Medium	High	Wet	Number of facilities reviewed during plan review
Properly Design Outdoor Material Storage Areas	Storage areas must have a roof or awning to minimize collection of stormwater within the secondary containment area.	Above Average	Low	Medium	High	Wet	Number of facilities reviewed during plan review
Properly Design Trash Storage Areas	Trash container areas must have drainage from adjoining roofs and pavement diverted around the area.	Above Average	Low	Medium	High	Both	Number of facilities reviewed during plan review
Properly Design Trash Storage Areas	Trash container areas must be screened or walled to prevent off-site transport of trash.	Average	Low	Low	High	Both	Number of facilities reviewed during plan review
Provide Proof of Ongoing BMP Maintenance	Initially the Developer's signed statement, as a condition of the project application, accepting responsibility; then when the transfer of the property to a public or private owner, included must be a condition requiring the recipient to assume responsibility in the form of legal agreements, covenants, CEQA mitigation measures, and/or Conditional Use Permits.	Above Average	Low	Low	High	Both	Number of projects with agreements secured for ongoing O&M

Table 4-6
New Development/Redevelopment Planning
Proposed Enhancements Evaluation
 (Page 1 of 2)

BMP Name	Description	Evaluation Criteria						Performance Measures
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather		
Programmatic Enhancements								
Incorporate Requirements into General Plan	Cities that have not done so to date should incorporate the SQUIMP requirements into their applicable General Plans	Average	Low	Low	Low-Medium	Both	Number of cities that have incorporated requirements into General Plans	
Incorporate TMDL requirements into CEQA process	Incorporate TMDL requirements into the CEQA process to adequately review proposed projects	Above Average	Low	Low-Medium	High	Both	Completion of incorporation	
Educate Agencies and Planning Departments on use of Initial Study Guidelines to Support the BMP Selection Process	Conduct watershed wide workshops for representatives from each of the agencies within the MCW on how to use the Initial Study Guidelines as a tool to support the BMP selection process	Average	Medium	Medium	Low	Both	Number of workshops	
Improve use of Conditions of Approval on Projects to Reduce Dry- and Wet-weather runoff	Conduct watershed wide workshops for representatives from each of the agencies within the MCW on how to improve the use of Conditions of Approval to reduce dry- and wet-weather runoff	Average	Low	Medium	High	Both	Number of workshops	
Increase Inspections of Post-Development BMPs	As part of the conditions of approval of a project or CEQA mitigation measures require project applicants and future owners to conduct inspections on a periodic basis to ensure proper maintenance of BMPs per covenant agreements with the approving agency and submit documentation to the approving agency	Above Average	Medium	Medium	Medium	Both	Number of inspections	
Identify New Techniques to Improve Monitoring and BMP Implementation	Develop techniques to monitor BMP implementation	Below Average	Medium	Medium	Low	Both	Number of new techniques identified	
Complete BMP Technical Manual for SUSMP to Provide Detailed Requirements	LA County finalize its Countywide BMP Technical Manual for SUSMP	Average	Medium-High	Low	Low-Medium	Both	Completion of manual	
Improve Consistency of SUSMP or SQUIMP Requirements and Enforcement by Individual Agencies	Ensure that enforcement and regulations are consistent across agencies in the MCW	Average	Medium	Medium	Low	Both	Complete report on review of enforcement and regulations	
BMPs								
Encourage site design techniques that promote infiltration where applicable	Encourage developers to expand the use of BMPs beyond catch basin inserts through outreach	Above Average	Low	Low	Medium	Both	Number of projects that incorporate infiltration	
Encourage infiltration of parking lot & roof runoff	Encourage regulated projects to have areas to infiltrate parking lot runoff and roof runoff	Above Average	Low	Low	Medium-High	Both	Number of projects that incorporate infiltration	
Develop vegetative filter BMP	Develop a standard Vegetative Filter Detail	Above Average	Low	Low-Medium	High	Wet	Development of BMP	
Requirement to have conservation easements	Require new projects with tenants that have a high probability of introducing bacteria into water courses to provide conservation easements between the project and water courses	Above Average	Low	Medium-High	Medium	Both	Number of projects conditioned to have conservation easements	
Minimization of directly connected impervious areas	Require projects to minimize impervious areas or break-up impervious areas with pervious surfaces in the MCW where soils are permeable. Develop a minimum requirement for impervious vs. pervious area.	Above Average	Low	Medium	Medium	Both	Number of projects conditioned to minimize directly connected impervious surfaces	
Prohibit garbage disposal installation in new buildings with septic tank systems	Require new projects with septic tank systems to not install garbage disposals	Average	Low	Medium	Low	Both	Number of projects conditioned to not have garbage disposals	
Mandatory servicing and inspection of existing septic tank systems	Condition of approval requiring a licensed septic tank specialist to inspect the system during servicing and report the results to the Department of Health Services and to the City.	Above Average	Medium	Low	Medium-High	Both	Number of projects conditioned with requirement septic systems inspected	
Training & Outreach to Public								
Educate Developers of Small Projects not Required to Comply with the SUSMP or SQUIMP on Runoff Reduction Techniques	Provide brochures to developers and discuss items the developer can do during the permitting process to reduce runoff from the project	Average	Low	Low	Medium	Both	Number of impressions	
Educate the Community on Low Impact Developments	Provide brochures and engage in other outreach mechanisms to educate the community on low impact developments	Below Average	Low	Low	Low	Both	Number of impressions	

Table 4-6
New Development/Redevelopment Planning
Proposed Enhancements Evaluation
 (Page 2 of 2)

BMP Name	Description	Evaluation Criteria					
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	Performance Measures
New Programs							
Develop seal of approval for new projects that incorporate dry- and wet-weather reductions in runoff into proposed projects	Develop a program that recognizes new projects that incorporate dry- and wet-weather reductions	Above Average	Low	Medium	Medium	Both	Number of awards
Develop Similar Program to Santa Monica Green Building Program (Stormwater Management Performance Ordinance)	Financial incentives for LEED certification, priority permit processing	Above Average	Medium	High	Medium	Both	Number of incentives awarded

4.4 Development Construction Program

Development Construction Programs target stormwater quality associated with construction sites. If existing BMPs are not adequately implemented, construction can contribute a substantial volume of sediment and other pollutants to storm drains and receiving waters since the sites are generally stripped of vegetation during construction. Construction sites can be potential sources of bacteria in the runoff. The goal of the program is to minimize the amount of bacteria in runoff from construction sites before the runoff enters the storm drain system or receiving water bodies.

BMP enhancements and new BMPs developed for the Development Construction Program are targeted towards reducing the introduction of bacteria from temporary toilets and the improper disposal of food, and increasing education of contractors on how their practices can reduce bacteria and other pollutant loading. The Development Construction Program is more fully described in Technical Memorandum 4.2. Tables 4-7 and 4-8 that are located at the end of this section, present the results of the evaluation of the non-structural BMPs within the Development Construction Program.

Table 4-7
New Development Construction Program Existing Programs Evaluations
 Page (1 of 2)

BMP Name	Description	Evaluation Criteria					
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	Performance Measures
Treatment Control BMPs							
Scheduling	Develop written plan of activity for sequencing and planning BMPs	Below Average	Low	Low	Low	Wet	Complete Plan
Preservation of Existing Vegetation	Minimize removing or injuring existing vegetation	Above Average	Low	Low	Low-Medium	Both	Number of acres of existing vegetation removed each year
Hydraulic Mulch	Apply mixture of shredded wood fiber or a hydraulic matrix and a stabilizing emulsion or tackifier	Below Average	Low	Low-Medium	Low-Medium	Wet	Number of plans reviewed that contain this item as a BMP
Hydroseeding	Applying a mixture of wood fiber, seed, fertilizer, and stabilizing emulsion	Below Average	Low	Low-Medium	Low-Medium	Wet	Number of plans reviewed that contain this item as a BMP
Soil Binders	Applying and maintaining a soil stabilizer	Below Average	Low-Medium	Low-Medium	Low-Medium	Wet	Number of plans reviewed that contain this item as a BMP
Straw Mulch	Placing a uniform layer of straw and incorporating it into the soil with a studded roller or anchoring it with a tackifier stabilizing emulsion	Below Average	Low	Low	Low-Medium	Wet	Number of plans reviewed that contain this item as a BMP
Geotextiles and Mats	Placing a matting of natural materials to cover the soil surface.	Below Average	Low	Low	Low-Medium	Wet	Number of plans reviewed that contain this item as a BMP
Wood Mulching	Applying a mixture of shredded wood mulch, bark, or compost to disturbed soil.	Below Average	Low	Low	Low-Medium	Wet	Number of plans reviewed that contain this item as a BMP
Earth dikes and Drainage Swales	Constructing a temporary berm or ridge of compacted soil to divert runoff or channel water to a desired location.	Below Average	Low	Medium	Medium	Wet	Number of plans reviewed that contain this item as a BMP
Velocity Dissipation Devices	Installing a physical device composed of rock, grouted riprap, or concrete rubble at the outlet of a pipe or channel to prevent scouring.	Below Average	Low	Low	Medium	Wet	Number of plans reviewed that contain this item as a BMP
Slope Drains	Installing pipe to intercept and direct surface runoff or groundwater into a stabilized water course, trapping device, or, stabilized area.	Below Average	Low	Low	Medium	Wet	Number of plans reviewed that contain this item as a BMP
Stream Bank Stabilization	Using other identified BMP to stabilize the banks of a stream channel.	Below Average	Low	Low	Medium	Wet	Number of plans reviewed that contain this item as a BMP
Silt Fence	Installing filter fabric that has been entrenched and attached to supporting poles, and sometimes backed by a plastic or wire mesh for support.	Below Average	Low	Low	High	Wet	Number of plans reviewed that contain this item as a BMP
Sediment Basin	Installing a temporary basin by excavating or constructing an embankment so that sediment-laden runoff is detained, allowing the sediment to settle from the runoff before it is discharged.	Below Average	Medium	Low	High	Wet	Number of plans reviewed that contain this item as a BMP
Sediment Trap	Installing a sediment basin across a waterway or low drainage area.	Below Average	Medium-High	Low	High	Wet	Number of plans reviewed that contain this item as a BMP
Check Dam	Installing a small barrier of rock, gravel bags, sandbag, or reusable product across a constructed swale or drainage ditch	Below Average	Low	Low	High	Wet	Number of plans reviewed that contain this item as a BMP
Fiber Rolls	Placing a tight tubular roll of straw, flax, or other material at the toe and on the face of a slope to intercept runoff, reduce runoff velocity, and remove sediment.	Below Average	Low	Low	High	Wet	Number of plans reviewed that contain this item as a BMP
Gravel Bag Berm	Installing a series of gravel-filled bags placed on a level contour to intercept sheet runoff flows, allowing sediment removal and to prevent erosion.	Below Average	Low	Low	High	Wet	Number of plans reviewed that contain this item as a BMP
Street Sweeping and Vacuuming	Using self-propelled and walk- behind equipment to remove sediment from streets and roadways.	Average	Low	Medium	High	Both	Number of inspections and number of sites complying

Table 4-7
New Development Construction Program Existing Programs Evaluations
 Page (2 of 2)

BMP Name	Description	Evaluation Criteria					Performance Measures
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	
Sandbag Barrier	Installing a sandbag barrier on a level contour to intercept sheet runoff flows, allowing sediment removal	Below Average	Low	Low	High	Wet	Number of inspections and number of sites complying
Straw Bale Barrier	Installing a straw bale barrier on a level contour to intercept sheet runoff flows, allowing sediment removal	Below Average	Low	Low	High	Wet	Number of inspections and number of sites complying
Storm Drain Inlet Protection	Installing a sediment filter or an impounding area around or upstream of a storm drain, drop inlet, or curb inlet, allowing sediment to settle.	Below Average	Low	Low	High	Wet	Number of inspections and number of sites complying
Wind Erosion Control	Applying water or other dust palliatives to prevent or alleviate dust nuisance generated by construction activities.	Below Average	Low	Low	High	Both	Number of inspections and number of sites complying
Stabilized Construction Entrance/Exit	Installing a pad of aggregate material underlain with a filter cloth located at any point where traffic enters or leaves the construction site.	Below Average	Low	Medium	High	Both	Number of inspections and number of sites complying
Stabilized Construction Roadway	Installing aggregate material underlain with a filter cloth located on roadways within in the construction site.	Below Average	Low	Low	High	Both	Number of inspections and number of sites complying
Entrance/Outlet Tire Wash	Installing a tire wash facility at the exits from the site with appropriate drainage and containment of the washdown water.	Below Average	Low	Low	High	Both	Number of inspections and number of sites complying
Water Conservation Practices	Minimizing water usage in construction activities to minimize erosion and sediment transport.	Above Average	Low	Low	High	Both	Number of inspections and number of sites complying
Dewatering Operations	Appropriate handling of nonstormwater that must be removed to accomplish the construction work.	Above Average	Low	Low	High	Both	Number of inspections and number of sites complying
Paving and Grinding Operations	Appropriate scheduling and operations during paving, surfacing, resurfacing, and sawcutting activities to prevent runoff pollutants.	Below Average	Low	Low	High	Wet	Number of inspections and number of sites complying
Temporary Stream Crossing	Installing a temporary culvert, ford, or bridge across a waterway to provide access for construction purposes for less than one year.	Below Average	Low	Low	High	Both	Number of inspections and number of sites complying
Clear Water Diversions	Diverting surface water around the work area and discharging it downstream with minimal water quality degradation	Average	Low	Low	High	Both	Number of inspections and number of sites complying
Illicit Connection/Discharge	Procedures and practices designed for construction contractors to recognize illicit connections or illegally dumped or discharged materials.	Above Average	Low	Low	Low	Both	Number of contractors educated
Stockpile Management	Procedures and practices designed to prevent or reduce discharge of pollutants to stormwater from stockpiled materials	Below Average	Low	Low	Low-Medium	Both	Number of inspections and number of sites complying
Solid Waste Management	Procedures and practices designed to prevent or reduce discharge of pollutants to stormwater from all solid waste, including construction and food-related waste by providing designated waste collection area and containers, arranging for regular disposal, and training employees and subcontractors	Above Average	Low	Low	Medium-High	Both	Number of inspections and number of sites complying
Sanitary/Septic Waste Management	Providing convenient, well maintained facilities to prevent discharge of sanitary waste from portable lavatory facilities. Contain and clean-up any spills around facilities	Above Average	Medium	Medium	High	Both	Number of inspections and number of sites complying
Liquid Waste Management	Procedures and practices designed to prevent or reduce discharge of pollutants to stormwater while handling non-hazardous liquid waste	Above Average	Low	Low-Medium	High	Both	Number of inspections and number of sites complying

Table 4-8
Development Construction Program
Enhanced Programs Evaluation
 Page (1 of 1)

BMP Name	Description	Evaluation Criteria					
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	Performance Measure
Increase Frequency of Inspections During Construction	Increase the frequency of stormwater related inspections during wet weather beyond the minimum requirements in the NPDES Permits, for example, twice per rainy season.	Below Average	Medium-High	Low	Medium	Both	Number of inspections at each site
During Inspections Increase Emphasis on BMPS that can Reduce Bacteria Loading (such as temporary toilets, waste management, and runoff management)	Increase emphasis on BMPS such as proper handling of temporary toilets, proper disposal of refuse including food; reduction dry- and wet-weather runoff	Above Average	Low	Low	Medium	Both	Less repeat violations for non-compliance with BMPS related to bacteria.
Increased Contractor Education	Increase education of contractors through workshops, interaction during the permit process, and brochures.	Below Average	Low	Low	Low	Both	Number of workshops and attendance

4.5 Public Agency Activities Program

The Public Agency Activities Program addresses stormwater quality as it relates to activities, such as routine maintenance of public facilities and construction of public facilities. The applicable programs for the agencies provide guidance in addressing the existing BMPs required under the applicable NPDES Permits and thus do not specifically target bacteria, but rather pollutants in general. Enhancements to the existing BMPs and new BMPs in key areas of public agency activities can potentially reduce bacterial loading. The Public Agency Activities Program is more thoroughly described in Technical Memorandum 4.3. Evaluations of the non-structural programs and applicable performance measures are provided in Tables 4-9 and 4-10 located at the end of this section.

Table 4-9
Public Agency Activities
Existing Programs
 Page (1 of 3)

BMP Name	Description	Evaluation Criteria					
		Effectiveness	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	Performance Measures
Public Construction Activities Management							
Construction Program	Construction program for permittee owned construction projects.	Average	Medium	Low	High	Both	Completion of construction program for permittee owned construction projects
Construction BMP Manual	Procedures for implementation and maintenance of temporary BMPs for construction.	Average	Medium	Low	High	Both	Completion of procedures
Storm Water Pollution Prevention Plan (SWPPP) Manual	Detailed procedures and reviews of SWPPP. Electronic SWPPP templates also made available.	Average	Medium	Low	High	Both	Number of SWPPPs reviewed and creation of templates
Water Pollution Control Program (WPCP) Manual	Details procedures and reviews of WPCP, electronic WPCP templates also made available.	Average	Medium	Low	High	Both	Number of WPCPs reviewed and creation of templates
Compliance with SUSMP/SQUIMP	Compliance with the SUSMP for construction sites.	Average	Low	Low	High	Both	Number of inspections and correction notices
Planning Program	Implement a planning program for permittee owned construction projects.	Average	Low	Low	High		Completion of planning program
Project Delivery Process - Design BMP implementation	The process for identification and incorporation of design BMPs is detailed in the Stormwater Quality Practice Guidelines and Project Planning Design Guidelines. Proposed innovative design approaches are evaluated and included in the Treatment Technology	Average	Low	Low	High	Wet	Completion of project delivery process and design BMP implementation process
Stormwater Data Report (SWDR) Process (Part of Project Delivery Process)	Reviews treatment BMP implementation and is required for all projects. The report requires that BMPs be implemented during all phases of a project	Average	Low	Low	High		Number of projects complying with BMP requirements
Storm Drain Operation and Management							
Cleaning of Catch Basins	Clean up of catch basins based on priority designation as they reach capacity (as determined by each agency).	Above Average	Medium	Low	High	Both	Number of catch basins cleaned for each priority level
Removal of Trash and Debris From Open Channel Storm Drains	Remove trash and debris from open channel storm drains a minimum of once a year before storm season.	Above Average	Medium	Low	High	Both	Number of open channel cleaned before the storm season
Catch Basin and Drain Designation/Prioritization	Designation of catch basins as priority A, B, or C.	Above Average	Low	Low	High	Both	Number of catch basins designated with priority levels
Catch Basin Stencil/Labels	Inspect the legibility of catch basin stencils/labels and re-stencil if needed.	Average	Low	Low	High	Both	Number of basins inspected for legibility of stencils and number of basins re-stenciled
Sewage Systems Maintenance, Overflow, and Spill Prevention							
Preventative Maintenance Program for Sanitary Sewers	A preventative program consisting of regular inspections and periodic maintenance of the sewer system and appurtenances, including regular inspections and a 24-hour spill reporting hotline.	Above Average	Medium	Low	High	Both	Number of miles inspected, number of miles repaired, number of phone calls to hotline
Program to Prevent Sewage Spills or Leaks From Entering MS4	Development and implementation of a program to prevent sewage spills or leaks from sewage facilities entering the MS4.	Above Average	Medium	Low	High	Both	Development of program and number of sewage spills or leaks that enter the MS4
Response Plan for Sanitary Sewer System Overflows	Development and implementation of a response plan for sanitary sewer overflows.	Above Average	Medium	Low	High	Both	Development of program and number of sanitary sewer overflows

Table 4-9
Public Agency Activities
Existing Programs
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BMP Name	Description	Evaluation Criteria					
		Effectiveness	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	Performance Measures
Streets and Roads Maintenance							
Roadway Operation and Maintenance	Roadway maintenance operation BMPs; street sweeping periodically based on traffic usage (LA County specifies once per week).	Average	Medium	Low	Medium	Both	Number of times streets swept according to traffic usage
Street and Road Maintenance Materials Management BMP	Manage street and road maintenance materials and wastes to prevent pollutant discharges.	Above Average	Medium	Low	Medium	Both	Number of pollutant discharges
Parking Facilities Management							
Publicly Owned Parking Lots	Inspect publicly owned parking lots twice per month and clean a minimum of once per month.	Above Average	Medium	Low	Medium	Both	Number of inspections completed and number of times lots cleaned
Vehicle Maintenance/Material Storage Facilities/Corporation Yards Management							
Corporation Yards/Maintenance Facilities (Activities)	Storm Water Pollution Control Program (SWPCP)/SWPPP implementation at all Co-Permittees facilities, compliance with all permit required BMPs and additional site specific BMPs.	Average	High	Low	High	Both	Number of facilities with SWPCP/SWPPP implementation, number of BMP inspections
Clean Up of Leaks and Spills	Prompt clean up of leaks and spills and addition of spill pans underneath permanent parking stalls for maintenance trucks.	Average	Medium	Low	High	Both	Number of leaks and spills responded to and timeframe in which they were responded
Outdoor Material Storage Facilities	Covering of outdoor material storage facilities.	Below Average	Medium	Low	High	Wet	Number of outdoor material storage facilities covered
Vehicle/Equipment Wash Areas	Vehicle/equipment wash areas are self-contained, covered, equipped with a clarifier, and connected to the sewer.	Above Average	Medium	Low	High	Dry	Number of wash area facilities that meet requirement
Landscape and Recreational Facilities Management							
Landscape and Recreational Facilities Management	Development of a standard protocol for routine and non-routine application of pesticides, herbicides, and fertilizers.	Below Average	Low	Low	Low-Medium	Both	Number of Procedures Implemented
E Family (Landscaping) Programs	Vegetation and slope control programs to manage pests and monitor chemical usage.	Below Average	Low	Low	Low	Both	Number of programs implemented
Integrated Pest Management Program	Use of beneficial species and bio and mechanical methods in an Integrated Pest Management system.	Below Average	Low	Low	Low	Both	Number of beneficial species released
Aquatic Pesticide NPDES Program, Aquatic Pesticide Protocol Program	Guidelines for the use of pesticides that will impact aquatic species.	Average	Medium				Number of programs implemented
Drought-Resistant Landscaping	Incorporate plants that are drought resistant in landscaping projects.	Average	Low	Low-Medium	Low	Dry	Number of projects incorporating drought resistant plants
Irrigation Timers with Rain/Moisture Sensors	Adjustment of irrigation timers produces irrigation error reports to allow for timely corrections to over watering. Rain/moisture sensors turn off water cycles when ground exceeds a specific moisture content.	Above Average	Medium	Low	Low-Medium	Dry	Number installed
Monthly Inspections of Public Irrigation Systems	Conduct monthly inspections and improvements to public irrigation systems to reduce water waste.	Above Average	Low	Low	Low-Medium	Dry	Number of inspections
Training and Other							
Stormwater Quality Staff Training	Identification of targeted staff for training; training on prevention and identification of IC/ID and Public Agency permit requirements in addition to other stormwater issues.	Above Average	Medium	Low	High	Both	Number of trained staff

Table 4-9
Public Agency Activities
Existing Programs
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BMP Name	Description	Evaluation Criteria					
		Effectiveness	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	Performance Measures
Inspection: Self-Audit program	Self-auditing program provides quality control to "ensure effective implementation of the SWPPP". Compliance monitoring programs were conducted for construction, maintenance, and design activities individually.	Average	Low	Low	Low	Both	Number of programs monitored
Review of Maintenance Activities	Review maintenance activities to assure that appropriate storm water BMPs are being utilized.	Average	Low	Low	Low	Both	Number of maintenance activities reviewed
Airspace Lease Review and Revision	Inclusion of stormwater pollution guidelines and regulations in new and renewing air space lease permits from Caldrons.	Average	Low	Low	Low	Both	Number of new lease permits or renewals including stormwater pollution guidelines and regulations
Research Program	Program includes monitoring to evaluate existing and new potential BMPs and reports on on-going activities.	Below Average	Medium	Low	Low	Both	Number of monitoring activities
Review of Existing BMPs	Conduct review of existing BMPs to assure they are utilized appropriately and evaluate new and improved BMPs.	Average	Medium	Low	Low	Both	Number of BMPs reviewed
Solid Waste Collection/Recycling	Solid waste collection programs for residential and commercial sources. Also includes educational programs.	Below Average	Medium	Low	Low	Both	Number of impressions
Trash Receptacles at Transit Stops	Placement of trash receptacles at all transit stops with shelters.	Average	Medium	Low	Low	Both	Number of receptacles

Table 4-10
Public Agency Activity
Enhancement Programs
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BMP Name	Description	Evaluation Criteria					Performance Measures
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	
Public Construction Activities Management							
Require SWPPP/WPCP for All Construction Sites	Sites with over 1 acre of disturbed land require filing of NOI for State General Construction Permit and a State SWPPP. All other sites will require a Local SWPPP or WPCP.	Average	Medium	Medium	Medium	Both	Number of construction sites with approved SWPPP/WPCP
Storm Drain Operation and Management							
Standardize Training, Inspection, and Reporting Methods	Establish standard training and inspection reporting methods.	Below Average	Medium	Low	Low	Both	Completion of standardized inspection and reporting program
Establish Optimal Cleaning Cycles for Drainage Facilities	Cleaning drainage facilities regularly at optimal intervals removes trash, sediments, and debris that may carry bacteria into the storm drain.	Above average	Medium-High	Low	Low	Both	Frequency of cleaning
Treatment Feasibility Study							
Watershed Inventory of Potential Pollutant-Causing Facilities/Activities	Develop a detailed watershed-wide inventory of existing facilities and activities that may generate pollutant laden runoff to the MS4. The inventory should include tables and figures with facility locations, uses, pollutant potential, contact persons, and applicable/required BMPs (both public and private).	Below Average	Medium	Low	Low	Both	Number of facilities inventoried
Database Program to Standardize Inventories	Investigate feasibility of implementation of a watershed-wide stormwater program software that will manage and standardize BMP inventories.	Below Average	Medium	Low	Low	Both	Completion of report on feasibility of watershed wide database
Sewage Systems Maintenance, Overflow, Spill Prevention, and Septic							
Inventory of Sanitary Sewer Systems	Develop a watershed-wide inventory of sanitary sewer systems and require regular reporting and updates from local sewer agencies	Average	Low	Medium	Low	Both	Completion of inventory and frequency of updates
Emergency Equipment or Contracts	Assure that emergency equipment or contracts are locally and immediately available, even during high-traffic hours, to address overflows or spills.	Above average	Low	Low	High	Both	Availability of Equipment
Review Existing Emergency Operation Plans	Review and update current emergency operating plans for sewage spills or other overflow/spill cases.	Above average	Low	Low	Medium	Both	Completion of review of emergency operating plans, frequency of updates
Investigate Incentive Programs for Replacing Improperly Operating Septic Tanks	Investigate cost and benefits of incentive programs to businesses and residents for replacing septic tanks with on-site wastewater treatment plants.	Above average	Low	Medium	Medium-High	Both	Completion of investigation
Septic Inspections Upon Change in Ownership	Develop program that requires septic tank inspection and maintenance when a property is sold.	Average	Medium	Low	Medium	Both	Completion of program
Assure Coordination During Emergency or Other Spill Clean-up Events	Assure coordination during emergency or other spill clean-up events.	Above Average	Medium	Low	Medium	Both	Completion of coordination agreements among agencies
Streets and Roads Maintenance							
Investigate Street Sweeping Practices & Equipment Improvements; Establish Standard Prioritized Sweeping Schedule for All Jurisdictions	Review and update current street sweeping programs to identify effectiveness. Investigate the feasibility of combining resources and cost sharing among the watershed cities to contract higher end street sweepers. Investigate impact of parked cars, types of sweepers (steam cleaning/vacuum options), and contract requirements for operation of sweeper.	Average	Medium	Medium	Medium	Both	Completion of program updates; Completion of standardized prioritized street sweeping for all MCW watersheds
Evaluate Street and Road Maintenance BMP Programs to Assure Consistency Across Jurisdictions.	Evaluate BMPs and implementation to assure consistency in implementation	Below Average	Low	Medium	Low	Both	Completion of consistent street and road maintenance BMPs for MCW
Investigate Street Washing Programs	Investigate feasibility of citywide street washing programs.	Above average	High	Medium	Medium	Both	Completion of feasibility study on street washing programs

Table 4-10
Public Agency Activity
Enhancement Programs
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BMP Name	Description	Evaluation Criteria					Performance Measures
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	
Vehicle Maintenance/Material Storage Facilities/Corporation Yards Management							
Evaluate Consistency of BMPs at Corporate Yards Across Jurisdictions	Review BMP programs in other jurisdictions and modify programs to assure consistency across jurisdictions.	Low	Medium	Medium	Low	Both	Completion of consistent BMP program for all MCW agencies
Inspect Corporate Yards for BMP Implementation and Improvements and Share Lessons Learned Across Jurisdictions	Implement routine and consistent inspections of corporate yards and share BMP improvements across agencies.	Average	Low-Medium	Low	Medium	Both	Number of inspections completed; number of meetings held to share lessons learned
Assure that Contractors Providing Maintenance Services Adhere to BMPs Required for Corporate Yards Through Lease Language and Inspections	Implement contract language with contractors providing maintenance services to assure implementation of BMPs in work activities and at facility storage locations. Inspect to assure compliance.	Average	Low	Low	High	Both	Number of updated contracts, number of inspections
Landscape and Recreational Facilities Management							
Installation of Doggy Loos or Pooch Patches	Install doggy loos or pooch patches at recreational facilities.	Average	Medium	Low	Low	Both	Number of Doggy Loos installed
Creation of Riparian Buffers and/or Wetlands in Flood Plain Areas	Create riparian buffer and/or wetlands between flood plane areas and direct pathways to drainage areas.		High	Medium	Medium	Both	Number of acres of buffers installed.
Locate recreational areas away from water courses or create buffers	Locate recreational areas, such as urban parks and picnic areas, away from water courses or create buffers.	Above average	Medium	Low	Medium	Both	Number of new recreational areas located away from water courses
Contract Language to Ensure Contractor Compliance with NPDES Requirements; Implement Inspection Program to Assure Compliance	Incorporate landscaping fertilizer/pesticide usage, native planting requirements into Contracts; Standardize language to be regionally consistent.	Average	Low	Low	High	Both	Number of updated contracts, number of inspections
Public Industrial Activities Management							
Additional Trash Pick Up During High Use Periods in High Use Sites	Empty trash cans during high use times during weekends or holidays and coordinate volunteer cleanups of sites heavily littered.	Above Average	Low-Medium	Low	Medium	Both	Frequency of trash pick-ups in high use areas, number of volunteer clean-ups

4.6 Illicit Connections/Illicit Discharges Program

The purpose of the Illicit Connections/Illicit Discharges Program under the NPDES Permit is to inspect, remove, and prohibit illicit connections and illicit discharges to the storm drain system and receiving water bodies. Illicit connections/illicit discharges (IC/ID) potentially provide both a conveyance mechanism for bacteria in the form of runoff and/or act as a source of bacteria dependent upon the location of the upstream illicit connection. A more detailed description of the existing program is provided in TM 4.3

Modifications to the existing BMPs under this program can be considered to further reduce the potential bacteria transmittal through IC/ID. Any reductions associated with IC/ID will reduce bacterial and other pollutant loadings. Numerous BMP enhancements are suggested to bolster the existing programs, including standardized inspections and enforcement. Existing BMPs, enhancements, and new BMPs within this program are evaluated in Tables 4-11 and 4-12, that are located at the end of this section.

Table 4-11
Illicit Connection/Illicit Discharge
Existing Programs
 Page 1 of 1

BMP Name	Description	Evaluation Criteria					
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	Performance Measures
Illicit Connection/Illicit Discharge Programs							
IC/ID Guidance Program	Preparation of a IC/ID Model or Guidance Program to provide guidance.	Average	Medium	Low	High	Both	Completion of Model or Guidance Program
Enforcement Program	Establish enforcement program for illicit connections, including an inspection program.	Average	Medium	Low	High	Both	Number of inspections/violations
Education and Outreach: IC/ID	Provide educational material on non-stormwater discharges; target groups within the community for additional education on stormwater regulations and prevention of ID.	Average	Medium	Low	Low	Both	Number of impressions
Spill Response	Respond promptly to any spills as soon as notification occurs and ensure spill area is secured and cleaned.	Above Average	Medium	Low	High	Both	Number of spills
Public Reporting	Program to receive calls for public reporting of IC/ID.	Average	Low	Low	High	Both	Number of calls
Database for Permitted Storm Drain Connections	Create a database to document permitted storm drain connections and illicit connections.	Above Average	Low	Low	High	Both	Number of IC/ID permits
Pilot BMPs	Implementation of pilot BMPs including trash nets, secondary containment, full capture trash separation unit, and catch basin inserts.	Above Average	High	Low	High	Both	Number of pilot programs

Table 4-12
Illicit Connection/Illicit Discharge
Enhancement Programs
 Page (1 of 1)

BMP Name	Description	Evaluation Criteria					Performance Measures
		Effectiveness for Reducing Bacteria	Cost	Risk of Implementing	Risk of Not Implementing	Effective in Dry or Wet Weather	
Illicit Connection/Illicit Discharge Programs							
Guidelines to Prevent Non-Stormwater Discharges from Public Events	Develop and implement guidelines to prevent non-stormwater discharges from entering the storm drains during/after parades, community events, etc.	Above Average	Medium	Medium	Medium	Dry	Completion of guidelines to prevent non-stormwater discharges from public events
Designate Primary & Secondary Staff for IC/ID	Maintain assigned staff to respond to IC/ID reports during business hours. When the primary IC/ID responder is out of the office, an alternate shall be designated.	Average	Low	Low	Low	Dry	Complete designation of staff
Standardize Training, Inspection, and Reporting Methods	Develop and use watershed wide standardized IC/ID investigation report forms for documentation of reports and investigations.	Average	Low	Medium	Low	Dry	Program Development, Use of standardized forms
Develop a Common Database and Map of Storm Drain Structures	Develop and maintain a map of all storm drain infrastructure watershed wide. This map shall include enough information to identify what receiving water a discharge will be released into from any point of discharge.	Average	Medium-High	Low	Low	Dry	Completion of database and maps, date since last update
Video Monitoring at High Priority Storm Drains	Monitor discharges at high priority drains to identify IC/ID. Four years ago, the City of Malibu monitored two of the Civic Center drains using video surveillance.	Average	Medium-High	Low	Medium	Dry	Number of priority drains monitored
Recreational Vehicle (RV) Disposal Site Outreach Program	Outreach program designed to encourage and teach RV owners to properly dispose of holding tank waste.	Average - Above Average	Low-Medium	Low	Medium	Both	Number of impressions
Equestrian-Related Waste-Management Plan	Develop a method/plan to manage equestrian waste on public properties.	Average - Above Average	Medium	Medium	Medium	Both	Development and implementation of a plan

5.0 Next Steps

The above listings and preliminary evaluation of potential new and enhanced programs or BMPs will serve as a menu of potential options to address the MCW Bacteria TMDL using an integrated non-structural approach. Using feedback from agency review of Technical Memorandums 4.1, 4.2, 4.3, and this Technical Memorandum; feedback from workgroup meetings and other stakeholders; and the evaluation criteria listed above, a prioritized listing of suites of BMPs to carry forward for further consideration will be developed. Selected suites of BMPs will be incorporated into individual subwatershed plans for the MCW Bacteria TMDL, similar to the subwatershed plans developed for the Jurisdiction 1/4 Wet-Weather Bacteria TMDL Implementation Plan. BMPs that have the greatest overall support and relative ratings will be incorporated into the subwatershed plans based on subwatershed priorities and specific characteristics. These BMPs will be identified in the Plan for implementation in the near-term or considered for later implementation based on feedback from pilot studies or other conditions.