TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Executive Summary

This "Watershed Chapter", Appendix D-6 of the Drainage Area Management Plan (DAMP) serves as the Watershed Urban Runoff Management Plan (WURMP) for the **San Mateo Creek Watershed** in southern Orange County, California. This document was prepared to meet the requirements of, Section J and L of the municipal NPDES Stormwater Permit - Order R9-2002-0001.

The purpose of this document is to present a planning framework to identify the most significant water quality issues related to urban runoff sources that can addressed at a multi-jurisdictional watershed-scale, to focus jurisdictional pollution prevention and source control programs on local constituents of concern, to identify treatment control opportunities, to incorporate prior data from planning studies, to identify indicators to track progress, and ultimately to develop an integrated plan of action that results in meaningful water quality improvement in the San Mateo Creek Watershed.

The San Mateo Creek Watershed within Orange County covers about 20 square miles, and is located approximately 50 miles south of Los Angeles and 65 miles north of San Diego. The portion of the San Mateo Creek Watershed within Orange County is located inland from the City of San Clemente and drains into San Diego County, discharging into the Pacific Ocean at San Onofre State Beach. San Mateo Creek within Orange County flows through unincorporated Orange County before entering the City of San Clemente. Tributaries to San Mateo Creek include Gabino Canyon, Paz Canyon, and Blind Canyon, which combine and flow into Cristianitos Creek. The tributaries are also joined by several small, unnamed drainages as they make their way through the watershed. The Paz Canyon tributary flows into Gabino Canyon before combining with the Blind Canyon tributary. The Watershed Permittees include the County of Orange, the City of San Clemente, and the Orange County Flood Control District.

Section 1.0 describes the environmental setting of the watershed, discusses program coordination between the Watershed Permittees, and outlines the approach taken in plan development. Section 2.0 provides an assessment of current water quality conditions and identifies issues and constituents of concern. Section 3.0 provides the plan of action for the watershed, relating specific constituents of concern to pollution prevention and source control BMPs. It also includes the plan of action for watershed-scale collaborative projects, and public education and participation. Section 4.0 describes the program effectiveness assessment and potential future revisions of the Watershed Chapter, including an implementation schedule.

Cert1

Cert2

D-1.0 Introduction

The San Mateo Creek Watershed within Orange County is largely unincorporated territory under the jurisdiction of the County of Orange, but includes parts of the City of San Clemente in its downstream-most area (the Watershed Permittees). The Donna O'Neill Land Conservancy is located toward the southwestern side of the watershed at Rancho Mission Viejo. The majority of the San Mateo Creek Watershed is within the San Diego County. The Watershed Permittees (the County of Orange, the City of San Clemente, and the Orange County Flood Control District) understand that while the portion of San Mateo Creek Watershed within Orange County is largely undeveloped, there are some recognized water-resource-related problems within the watershed as a whole. The Watershed Permittees recognize that the management of water resources is most appropriately dealt with within the hydrologic boundaries of the watershed, rather than solely on the jurisdictional basis of political boundaries.

Based on the experience of the Watershed Permittees in other watersheds, the San Mateo Creek Watershed Chapter of the Drainage Area Management Plan has been developed to attain the following multiple objectives:

- To meet the requirements for a Watershed Urban Runoff Management Plan (WURMP) contained in the municipal National Pollution Discharge Elimination System (NPDES) stormwater permit (Order R9-2002-0001, Section J).
- To identify the most significant water quality issues and constituents of concern on a watershed scale and relate these to urban sources.
- To focus the pollution prevention and source control programs implemented at an individual jurisdiction level on the identified constituents of concern and to identify any jurisdiction-specific treatment control opportunities.
- To identify the water quality issues that are the most appropriately addressed through a multi-jurisdictional watershed-scale approach.
- To incorporate information obtained from prior planning studies.
- To develop an integrated plan of action that results in meaningful water quality improvement in the San Mateo Creek Watershed at a watershed scale that balances economic, social and environmental constraints.
- To identify indicators to track progress.

The County of Orange (with the Orange County Flood Control District) and the City of San Clemente have each developed a Local Implementation Plan (LIP) as part of the countywide Drainage Area Management Plan (2003 DAMP) addressing programs and activities implemented and being pursued on a jurisdictional basis. These include the following major initiatives:

- Since 1990, the Watershed Permittees have developed and implemented common water quality programs within their respective jurisdictions in response to the requirements of the municipal National Pollutant Discharge Elimination System (NPDES) stormwater permit.

- In February 2003, an updated version of the 2003 DAMP was provided to the San Diego Regional Water Quality Control Board (Regional Board), including the LIPS (2003 DAMP Appendix A). The LIPs are detailed plans that focus on specific areas required by the NPDES permits including the legal authority to detect and eliminate pollutant discharges; public education; enhanced standards for new development / significant redevelopment; implementation of best management practices (BMPs) at municipal facilities, construction sites, and commercial and industrial facilities; and water quality monitoring. The BMPs can, in most cases, be focused on targeted constituents of concern to be identified through the monitoring program.

The organization of the San Mateo Watershed Chapter borrows much of its organization, structure and terminology from the 2003 DAMP of which it is an appendix:

- Section D-1.0 describes the watershed and environmental setting, the program management coordination between the Watershed Permittees and other stakeholders, and the approach taken to develop the plan.

- Section D-2.0 assesses the water quality information available and identifies the water quality issues and constituents of concern.

- Section D-3.0 provides the plan of action relating the constituents of concern to specific pollution prevention and source control BMPs at a jurisdictional level as well as any jurisdiction-specific treatment control BMPs. This section also includes the plan of action for watershed-scale collaborative projects. Section D-3.0 meets the permit requirement for the inclusion of recommendations.

- Section D-4.0 describes the program effectiveness assessment to be undertaken and the future revision of the Watershed Chapter. Water quality outcomes may still be some years away from accurate prediction and achievement, as the state of source

identification, pursuit, and treatment are still evolving. However, this section lays the foundation for that outcome and includes an implementation schedule. Section D-4.0 meets the permit requirement for the inclusion of conclusions, which are forthcoming in future assessments.

In developing the San Mateo Creek Watershed Chapter, the Watershed Permittees have addressed the specific permit requirements of the Regional Board. These include the expectation of the degree of future land-use changes (illustrated in **Figure D-5.0**); the assessment, identification, and prioritization of major water quality problems (**Section D-2.0**); a time schedule of short- and long-term recommended activities (**Section D-3.0**); short- and long-term assessment effectiveness strategies (**Section D-4.0**); a watershed-based public education effort (discussed in **Sections D-1.3** and **D-3.2**); and a basis for facilitating collaborative "watershed based" land use planning, which is discussed in **Section D-3.0** and is essentially the purpose of this document.

The San Mateo Creek Watershed Chapter is intended as a living document, one capable of being modified as new information becomes available and problems are addressed. It identifies the current state of knowledge on the issues facing the San Mateo Creek Watershed and also sets the stage for future activities intended to address water quality issues in various stream reaches and subwatersheds of the watershed. Figures enclosed represent available information in the GIS mapping format and some additional inventory information as supplied by the Watershed Permittees. The plan of action contained in this Watershed Chapter will be reviewed for effectiveness and applicability on a regular basis. As problems are addressed and the state of knowledge about sources and causes becomes better defined, it is expected that the process will become more streamlined and make more efficient use of limited resources.

D-1.1 Watershed Setting

The San Mateo Creek Watershed within Orange County covers about 20 square miles, and is located approximately 50 miles south of Los Angeles and 65 miles north of San Diego (**Figure D-1**). Most of San Mateo Creek and its outlet to the Pacific Ocean are actually located in San Diego County, but the upstream-most portion of the San Mateo Creek Watershed is located in Orange County. The portion of San Mateo Creek within Orange County flows through unincorporated Orange County before entering the City of San Clemente. It then re-enters San Diego County, ultimately discharging into the Pacific Ocean at San Onofre State Beach.

The San Mateo Creek tributaries include Gabino Canyon, Paz Canyon, and Blind Canyon, which combine and flow into Cristianitos Creek. The tributaries are also joined by several small, unnamed drainages as they make their way through the watershed. The Paz Canyon tributary flows into Gabino Canyon before combining with the Blind Canyon tributary. This tributary then flows through the area proposed for the Foothill Transportation Corridor and flows into Cristianitos Creek, which ultimately discharges into San Mateo Creek within San Diego County (**Figure D-2**).

Figure D-1 Location Map

Figure D-2a School Districts & Cities

Figure D-2b Water Providers & Parks

Figure D-3 Major Transportation Routes

Figure D-4 Land Use - Existing

Figure D-5 Land Use - Future

D-1.2 Water Quality Control Plan for the San Diego Region

Beneficial Uses

The San Mateo Creek Watershed is within the jurisdiction of the San Diego Regional Water Quality Control Board (Regional Board). The Regional Board has placed San Mateo Creek under the Orange County Coastal Streams subunit of the San Juan Hydrologic Basin (designated Hydrologic Sub Area 1.40). The Water Quality Control Plan (Basin Plan) lists San Mateo Creek and its mouth as receiving waters. There are both existing and potential beneficial uses as described in the Basin Plan for the San Diego Basin (CSWRCB 1994), listed in **Table D-1**.

The following existing potential beneficial uses are designated in the Basin Plan for the receiving waters listed above:

COLD – Cold water habitat
RARE – Rare species habitat
REC1 – Contact water recreation
REC2 – non-contact water recreation
SPWN – Spawning habitat
WARM – Warm water habitat
WILD – Wildlife Habitat

The following is a description of the relevant beneficial use designations:

Cold Freshwater Habitat (COLD) – Includes uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.

Rare, Threatened, or Endangered Species (RARE) – Includes uses of water that support habitat necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered. Among plants or animal species which were used in the designation of specific water bodies with RARE beneficial uses are: least Bell's vireo (bird), California least tern (bird), light-footed clapper rail (bird), California brown pelican (bird), Belding's savannah sparrow (bird), willowy monardella (plant), humpback and blue whale (mammals), bald eagle (bird), tidewater goby (fish), southwestern willow flycatcher (bird), salt-marsh bird's beak (plant), Pacific green sea turtle (reptile), and western snowy plover (shore bird). The RARE designation is placed on water

bodies where the protection of a threatened or endangered species depends on the water either directly, or to support its habitat.

Contact Water Recreation (REC1) – Includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, white water activities, fishing, or use of natural hot springs.

Non-Contact Water Recreation (REC2) – Includes uses of water for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beach combing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

Spawning, Reproduction, and/or Early Development (SPWN) – Includes uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish. This use is applicable only for the protection of anadramous fish.

Warm Freshwater Habitat (WARM) – Includes uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.

Wildlife Habitat (WILD) – Includes uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Table D-1 Beneficial Uses of Water Bodies in the San Mateo Creek Watershed

Water Body[1]	Hydrologic Subunit	Beneficial Use													
		MUN	IND	PROC	GWR	FRSH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
San Mateo Creek *	1.40	+						P	E		E	E	E	E	E
Devil Canyon	1.40	+						P	E		E	E	E		E
Cold Spring Canyon	1.40	+						P	E		E	E	E		
San Mateo Canyon	1.40	+						P	E		E	E	E	E	E
Los Alamos Canyon	1.40	+						P	E		E	E	E		E
Wildhorse Canyon	1.40	+						P	E		E	E	E		
Tenaja Canyon	1.40	+						P	E		E	E	E		E
Bluewater Canyon	1.40	+						P	E		E	E	E		
Nickel Canyon	1.40	+						P	E		E	E	E		
Cristianitos Creek *	1.40	+						P	E		E	E	E		
Gabino Canyon *	1.40	+						P	E		E	E	E		
La Paz Canyon *	1.40	+						P	E		E	E	E		
Blind Canyon	1.40	+						P	E		E	E	E		
Talega Canyon	1.40	+						P	E		E	E	E		
San Mateo Creek Mouth	1.40	+						P	E		E	E	E		

E – Existing Beneficial Use
P – Potential Beneficial Use
+ - Exempt from municipal use designation under State Board Resolution NO. 88-63, Sources of Drinking Water Policy.
* - Waterbodies with reaches within Orange County
[1] – Waterbodies are listed multiple times if they cross hydrologic area or sub area boundaries.
Source: CSWRCB, 1994

D-1.3 Watershed Program Management

Program management of various water quality improvement programs within the San Mateo Creek Watershed occurs at two distinct levels: (1) activities conducted by the Watershed Permittees individually in implementing jurisdictional programs in their LIPs based on the model programs in the DAMP in compliance with the municipal NPDES stormwater permit and (2) activities conducted by the Watershed Permittees and others collectively to address specific water quality issues on a watershed scale identified through the Water Quality Planning Process (see **2003 DAMP Section 3** and **Section D-1.4**), and other planning initiatives.

The Watershed Permittees intend to coordinate the program management of the San Mateo Creek Watershed through the program agreements and coordination meetings, which are described below.

NPDES Coordination

The Orange County Stormwater Program is underpinned by an Implementation Agreement between the County of Orange, the Orange County Flood Control District and the 34 cities of Orange County. The Agreement provides a funding formula and budgeting process for shared countywide and monitoring costs by Regional Board area.

The Orange County Stormwater Program also has an extensive committee structure that is described in the DAMP (**2003 DAMP Section 2**) and in the LIPs of the Watershed Permittees (**2003 DAMP Appendix A-2**). Each of the Watershed Permittees participates in the General Permittee meeting and selectively in the other oversight and technical committees.

Watershed Management Framework

The majority of the San Mateo Creek Watershed is undeveloped, with no plans for future use at this time. The small portion being developed within the San Clemente city boundaries will be subject to the LIP developed by the City of San Clemente. Due to the current undeveloped nature of the San Mateo Creek Watershed within Orange County, County-led efforts focusing on the establishment of a long-term Watershed Management Framework have been limited. The future Watershed Management Framework could take many forms, among them a Resource Conservation District Committee with select powers of coordination with on-going activities of the Land Conservancy, or participation in the broader San Mateo Creek Watershed initiatives with State Parks, the U.S. Marine Corps, and San Diego County. Because the process of watershed management is new and differs so much from watershed to watershed, there is no standard structure for this entity. Therefore, responsibilities, and powers must be carefully worked out before its organization and mandate can be established.

A watershed management group will be established to continue coordination between the Watershed Permittees in the watershed and to engage the public. Given the strong implementation orientation of these groups, it is expected that members of the public may choose to participate on an advisory basis or in sub-committees formed for specific tasks, rather than as regular members of the group. It is also expected that continued media dissemination on the meeting times and locations of the group will be a standard feature.

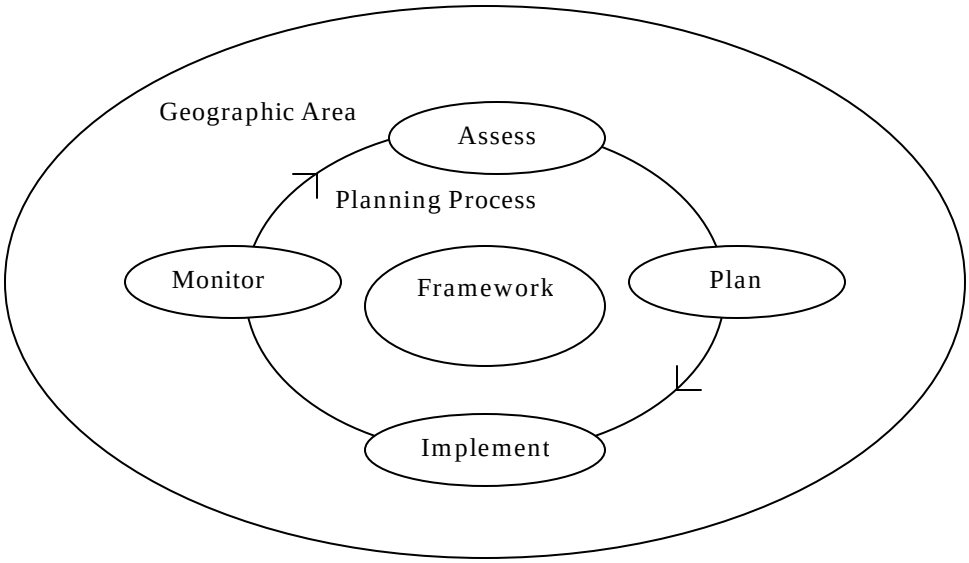
The formation of special task groups or continued participation of individuals in the process is vital to the long-term viability of the water quality improvement process (and by extension, watershed management) in the San Mateo Creek watershed group. Consideration of protection of environmental resources, and not just water quality issues, needs to be constantly integrated into this process. The interdependency of many resources requires that public understanding of potential issues related to single-purpose projects must be sought and integrated into the planning process.

It is expected that one of the functions of the management group will be the continued education of the participants and general public on the progress of water quality improvement efforts. The means by which to disseminate information may take the same form as that established during the Corps of Engineers Watershed Management Studies in the San Juan and Aliso watersheds. Depending on the nature of the information, a suitable venue may take the form of general public education meetings, presentations at the regularly scheduled meetings of the group, or distribution by other means such as newspapers, television, or ad campaigns. This will be up to the group to determine and may change dramatically during the course of future efforts.

D-1.4 Plan Development

The approach taken to develop the San Mateo Creek Watershed Chapter recognizes that the LIP and this Watershed Chapter represent the principal planning documents for two separate but nonetheless similar and highly interdependent water quality planning processes targeting the control of pollutants in urban runoff. These iterative processes can be represented in each case as shown in the figure below.

Figure D-6 Water Quality Planning Process



The processes are characterized as indicated below:

Table D-2 Watershed Management Process

	Local Implementation Plan	Watershed Chapter
Geographic Area Covered by Plan	Defined by political (city / county) boundaries	Defined by hydrologic boundaries
Planning Process	Focused on reducing discharges of pollutants in urban runoff and stormwater pollution on a uniform countywide basis. Directed by DAMP / LIP in conformance with NPDES permits requirements	Focused on improving local receiving water quality where it is adversely impacted by urban runoff and stormwater pollution. Directed by NPDES permit requirements and 303(d) list / TMDLs
Framework	Directed by Orange County Stormwater Program committee structure and Regional Board review. Public consultation principally through CEQA process / Regional Board review	Directed by municipal and public agency stakeholders. Characterized by public participation.
Assessment	Based on information from countywide municipal and regional cooperative investigations of stormwater and receiving water quality. Assessments are undertaken on an annual and 5 year basis.	Based on information from watershed specific investigations. Assessments are undertaken on an annual basis.
Planning	Broad based approach with emphasis on well established pollution prevention and source control measures	Pollutant specific approach with emphasis on treatment controls and consideration of innovative regional solutions
Implementation	Individually by the Watershed Permittees	Individually and collaboratively by Watershed Permittees and other agencies
Monitoring	Considers pollutant load reduction	Considers beneficial use attainment

Based upon the annual watershed assessment, the Watershed Permittees and other participating jurisdictions will work together to address the priority water quality issues identified through this watershed planning process. It is anticipated that water quality issues that are determined to be specific to a jurisdiction would be referred to that jurisdiction and thereafter be addressed as a jurisdictional program initiative through the LIP. Alternatively, the issue may originate from multiple jurisdictions within the watershed. In this instance, the problem would be addressed as a watershed cooperative effort.

Updates to this program will be the subject of annual reporting, starting in November 2004, which will include a water quality assessment and revisions to the listed water quality improvement initiatives.

D-2.0 Water Quality Assessment

The NPDES permit includes the requirement to monitor and assess the water quality associated with urban runoff. Due to the vastly undeveloped nature of the San Mateo Creek Watershed, water quality data has not been collected and that part of the program is unavailable.

The following section provides additional background for the program.

D-2.1 Water Quality Monitoring and Assessment

NPDES Monitoring and Assessment Program

NPDES permits are issued for a five-year term. MS4 permits are issued on an area-wide basis. The first municipal NPDES Stormwater Permit was for the period 1990-1996; the Second Term Permit covered 1996-2002; and the Third Term Permit covers 2002-2007.

First Term Permit

The monitoring program for the First Term Permit consisted of four elements. These elements were Field Screening, Channel Monitoring, Harbor/Bay Monitoring, and Sediment Sampling.

- Field Screening was performed to detect the presence of illegal discharges or illicit connections. Physical and chemical analyses were conducted in the field. The annual evaluation of each station included two dry weather samplings and one storm sampling. No Field Screening monitoring stations are located within the San Mateo Creek Watershed.

- Channel monitoring focuses on specific watercourses with beneficial uses identified in the Basin Plan. Stations were monitored monthly and/or during storms. Samples were collected using automatic samplers. Samples were analyzed for pH, electrical conductivity, turbidity, nutrients, total suspended solids, volatile suspended solids, and total recoverable metals. None are located in the San Mateo Creek Watershed.

- Harbor/Bay sites were monitored semiannually and during storms. The monitoring included sampling for nutrients in the water column and trace metals and organics in the sediment. No Harbor/Bay Monitoring is directly associated with the San Mateo Creek Watershed.

- Sediment sampling was conducted semiannually from designated channels and several bays and harbors. Samples were evaluated for metals, pesticides, herbicides, PCBs, and PAHs.

Second Term Permit

The First Permit Term monitoring program was continued into the second permit term. However, in 1999, the 99-04 Monitoring Plan was developed and implemented. This plan revised the geographic focus of the monitoring effort by designating "warm spots" (where constituents are substantially above system-wide averages) and "Critical Aquatic Resources" or CARs. The CARs were prioritized and additional monitoring stations selected to gather data at those sites. None were established in the San Mateo Creek Watershed.

Third Term Permit

This current permit period is the most comprehensive monitoring effort to date. It extends the monitoring program to a broader range of locations and to a wider array of methods for measuring impacts. Investigation of the effects of stormwater plumes on the nearshore marine environment has been added to the program. Inland, the new plan is expanding to include bioassessment of creeks, along with more consistent use of toxicity testing. The bioassessment, toxicity testing, and measurement of chemical parameters is referred to as the "triad" approach. Three kinds of monitoring are considered for this plan.

- Core Monitoring – routine and related to small-scale or site-specific problems and processes
- Regional Monitoring – periodic, collaborative and larger-scale surveys
- Special Studies – tightly focused and relatively short-term studies.

The following is a list of the four Program Elements. Each of the 3 types of monitoring listed above are considered and incorporated as appropriate into each of the program elements.

Urban Stream Bioassessment – includes 12 sites plus 3 reference sites.

Long-term Mass Loading – includes measurements of key pollutants at 6 sites. Monitoring sites include the sites designated in the 99-04 monitoring program plus additional sites. A total of 6 stations were selected across Orange County. No stations were selected in the San Mateo Creek Watershed.

This monitoring program superceded the 99-04 monitoring programs.

Pre-NPDES Program

Prior to the beginning of the NPDES program, there was no monitoring program established in the San Mateo Creek Watershed.

Local Monitoring

No water quality data has been collected within the Orange County portion of the San Mateo Creek Watershed.

City of San Clemente:

To conduct increased activities necessary to protect local water quality and to comply with the permit issued by the Regional Board, the City adopted a temporary, five-year Urban Runoff Management Fee which is in effect from January 1, 2003, through December 31, 2007. This fee was adopted in compliance with Proposition 218 (California Constitution Article XIII D Section 6) which requires voter approval for such property-related fees. The revenue from this fee is placed in a restricted Clean Ocean Enterprise Fund and can only be used for activities to support implementation of the City's urban runoff management/stormwater permit compliance program.

Dry Weather Monitoring Program

In July 2003, the City of San Clemente began sampling 15 locations throughout the San Clemente Coastal Streams Watershed as part of a dry-weather water quality monitoring program. The developers of Talega (a large construction site within the City) are sampling two additional sites at the downstream boundary of their project. The program is being conducted in accordance with the City's LIP and guidance included in the permit issued by the Regional Board. Once collected, the data will help the City in characterizing dry weather flows and detecting illegal discharges into the City's storm drainage system.

D-2.2 Water Quality Assessment

NPDES Monitoring and Assessment Program

There are currently no 303(d) impaired waterbodies in the San Mateo Creek Watershed and no water quality data are available with which to conduct an assessment.

Constituents of Concern

No constituents of concern have been identified for the portion of the San Mateo Creek Watershed within Orange County.

Monitoring List

In addition to the 303(d) list discussed in Section 1.2, a Watch List has been developed by the State Water Resources Control Board. This list indicates those waterbodies that are being monitored or investigated for potential pollutants of concern but have not been included on the 303(d) list. The following table shows the Watch List for the San Mateo Creek Watershed.

Table D-3 Monitoring List for San Mateo Creek Watershed

Name	Pollutant / Stressor	Estimated Size Affected
San Mateo Creek	Exotic Species Total Dissolved Solids	18 miles

Figure D-7A includes a GIS map that shows receiving waters within the San Mateo Creek Watershed. **Figure D-7B** shows the subwatersheds and the monitoring locations within San Mateo Creek Watershed.

D-2.3 Identification and Prioritization of Major Water Quality Problems

No major water quality problems have been identified for the portion of the San Mateo Creek Watershed within Orange County.

Figure D-7A Receiving Waters

Figure D-7B Subwatersheds & Monitoring Locations

D-3.0 Plan of Action

The Watershed Permittees have developed and are in the process of implementing pollution prevention and source control programs within their jurisdictions. However, beyond the programs implemented at the jurisdictional level, the Watershed Permittees recognize that certain issues need to be addressed at a watershed scale utilizing a cross-jurisdictional approach. It should be noted that within the San Mateo Creek Watershed, the City of San Clemente is the sole city and includes the only small developed area of the watershed. Therefore, the Plan of Action for this watershed is largely based on the San Clemente LIP.

The following describes the plan of action at the jurisdiction and watershed cooperative levels.

D-3.1 Jurisdictional Program

The LIP provides details of the implementation of the local jurisdictional plan. This section focuses on those activities specific to the San Mateo Creek Watershed. The following figures are provided:

- Figure D-8 – a map displaying the inventoried commercial and industrial sites
- Figure D-9 – a map displaying the inventoried municipal sites and priority construction areas

Existing Development Program

The LIP contains an inventory of municipal, commercial, industrial, and residential sites subject to program directives. In the San Mateo Creek Watershed, municipal sites consist of a few storm drains and open space. The main activities that would be expected at these sites include recreational use such walking, picnicking, and bike riding.

Because each Common Interest Area (CIA) conceivably contained within the San Mateo Creek Watershed is also within the City of San Clemente, measures directed at management of CIAs and HOAs are contained within the City LIP.

Figure D-8 Commercial and Industrial Sites

Figure D-9 Municipal Sites and Priority Construction Sites

Future revisions of the City LIP will contain a description of the Designated Minimum BMPs that apply to each of these sites, as well as the inspection and public education program that relates to the sites. Significant focus will be placed on those BMPs identified in the LIP that target the specific constituents of concern for the San Mateo Creek Watershed, if, and as, those are identified. For each BMP listed, the training and public education associated with that BMP would also have a likelihood of contributing significantly to the reduction of the constituents of concern.

New Development and Construction Areas

The LIP contains information related to new development and construction areas. This information includes a review of the General Plan; to include the requirement for a Water Quality Management Plan (WQMP); revision of the CEQA Environmental Review Process; and the Review, Approval, and Permitting Process. A map (**Figure D-9**) showing the priority construction sites for the entire watershed was included in the previous section. The LIP discusses the inclusion of non-structural and structural source control BMPs, site design BMPs that focus on pollution prevention, and treatment control BMPs in the WQMP. At least one treatment control BMP is required at all priority projects. There will be a significant focus on those BMPs that target the constituents of concern in the watershed, if, and as, those are identified.

Hydro-Modification

There is a need to protect natural channels from hydro-modification and losses of beach sand replenishment. Urban development of a landscape increases the percentage of impervious area. Studies have shown that starting with at least 5% impervious area, the hydrograph for urban streams begins to change. Typical changes in the hydrology include sharper runoff peaks and higher sustained volumes. This may impact stream structure, causing bank erosion and scouring. As the percentage of impervious area increases, the storm water washes across pavement and ceases to carry the sediment load that replenishes the beach sand. The storm event runoff carries pollutants from the washed surfaces to the stream channel, often impacting the stream ecology, wildlife habitat, and downstream human recreation opportunities.

Within the San Mateo Creek Watershed, the streams are not showing significant erosion behavior. Therefore, it is assumed at this point in time that hydro-modification is not an issue of concern in this watershed.

Peak Discharge Impact Study

SCCWRP is conducting a Peak Discharge Impact Study to assess the potential cause and effect relationships between stream erosion in natural ephemeral drainage systems and urbanization in watersheds in Los Angeles County. The results of the Los Angeles County analysis will be incorporated and related to other watersheds in Southern California. This study is at the initial stages. Representative sites are now being selected. As of July 2003, three sites have been tentatively selected in the northern portion of Orange County. Once site selection is complete, reconnaissance surveys will be completed to assess the existing conditions of each site.

Watershed-Wide Land Use Planning

One of the most important responsibilities of local government is to provide a decision making and approval processing framework for the new development and re-development that occurs within its boundaries. This primacy in land use planning enables jurisdictions to control the types and intensities of particular activities that may be allowed within specified geographic areas and consequently land use decisions can play an important role in addressing *point and nonpoint sources* of pollution.

State law requires that each jurisdiction adopt a comprehensive, long-term general plan to guide the physical development of its community. The General Plan is the official document that outlines the long term plans and policies regarding the location of housing, business, industry, roads, parks, and other land uses. Additionally, the General Plan addresses broad issues such as provision of infrastructure and conservation of natural resources. It reflects the community's long-term vision and the community's needs.

The Watershed Permittees are required by the area-wide NPDES permit to minimize short and long-term impacts on receiving water quality from new development and redevelopment. Further, with regard to their general plans specifically, the Watershed Permittees must at a minimum review and update their general plans as necessary to ensure watershed and stormwater quality and quantity are considered (see Section 7.4 DAMP).

Upon completion of the necessary general plan updates, the Watershed Permittees will have common plan elements addressing urban and stormwater runoff management and water quality protection. These common elements will provide the basis for collaborative watershed-based land use planning. The schedule for the process of plan update is discussed in Section A-7.0 of each jurisdiction's LIP.

The mechanisms used to facilitate watershed-based land use planning relate to the use of the water quality assessment findings to inform decision making and the dissemination of this information.

The annual watershed-based water quality assessment will provide a major part of the informational basis for all watershed activities initiated by the Watershed Permittees, including land use planning. On an annual basis, or as key findings are developed, information, and/or recommendations will developed during the water quality assessment process and distributed to each jurisdiction's planning department for consideration by land use decision makers to ensure that water quality issues are addressed.

The Watershed Permittees will establish mechanisms, such as meetings and internet based resources, as they determine necessary to ensure effective communication with staff both jurisdictionally and on an inter-jurisdictional basis. In both instances, the purpose of the meetings will be to facilitate the exchange of watershed-specific information and to explore the collaborative development of water quality management and protection initiatives.

BMP Effectiveness Investigations

The Watershed Permittees together with the Permittees County-wide, are currently coordinating with one another on a BMP effectiveness study. In addition, there are several other studies underway that are testing the efficacy and cost-effectiveness of various water quality improvement measures. It is anticipated that these studies will result in proposed modifications to the list of recommended BMPs and other measures contained in the 2003 DAMP and later incorporated into the LIP. Studies directed at all jurisdictions within the county that are currently underway include the following:

- BMP Effectiveness Study (Orange County)
- Trash and Debris BMP Evaluation
- Erosion Control BMP Effectiveness Evaluation
- Septic System Assessment on Stormwater Quality Evaluation
- Portable Toilet Oversight Program Evaluation
- Fats, Oils and Grease (FOG) Program for Restaurants Evaluation
- Bacterial "Warm Spot" Elimination for City Storm Drains Evaluation

Ongoing BMP evaluation of a non-traditional nature includes:

- Conduct of surveys to determine if public outreach efforts are having the desired effect of increasing household awareness of water quality issues
- Monitoring of oil delivery to household hazardous waste collection centers
- Monitoring of materials removed from catch basins, retarding structures, and the like

D-3.2 Watershed Cooperative Efforts

Watershed-Wide Public Education

The goal of watershed-wide public education is to spread knowledge of the water quality protection practices to municipalities, agencies, businesses owners and employees, individuals, and other interest groups within the San Mateo Creek Watershed. Education is intended to both pass on knowledge of the issues facing San Mateo Creek and its watershed and to encourage activities that will promote improvement of water quality.

Water quality education will occur at three distinct geographic scales: Countywide, watershed-scale, and jurisdictional. Watershed-scale efforts would focus on the constituents of concern within the San Mateo Creek Watershed, if, and as, these are identified. While continuing public education efforts reflect the evolving state of knowledge by residents and visitors, the primary goal of watershed-wide public education is to provide the larger environmental picture and enhance the sense of land and water stewardship by adding to the knowledge base of individuals. The ultimate goal of education is to encourage action and changes in the habits and behavior of those that work and live within the watershed.

Environmental education efforts at the watershed scale are novel and should be organized to include participation from many broad groups within the watershed such as municipal agencies, military, hospitals, schools, city and federal government, businesses, and residences. Watershed-wide efforts will focus on education at all these levels, although it should again be noted that the population within the Orange County portion of the San Mateo Creek watershed is extremely small.

Additional public education materials will continue to be developed by the County. These will be used to support outreach strategies for local efforts that watershed groups are best positioned to implement, such as at festivals, markets, and fairs.

Public education through school activities is an additional source of education of all residents. School children take home the messages they learn and educate other members of the household. Volunteer or mandated school curricula that include activities and scientific investigations that lead to sound environmental behaviors will be encouraged at all levels of school education. Currently volunteer efforts by educators within several cities have introduced environmentally oriented classroom and field activities that promote environmental stewardship and further public participation. Public involvement in the pursuit of funding for these programs is a long-term effort, and is being encouraged at schools throughout the San Mateo Creek Watershed.

Adult environmental education through courses and public events has lead to positive outcomes on the constituents of concern in the San Mateo Creek Watershed. The Master Gardener program and the University of California's Agricultural Extension Integrated Pest Management programs provide classes and distribute information to the public, municipal employees, and landscape firms on biologically effective and appropriate pest management and fertilization techniques.

Environmental Education Survey

One outcome of the recognition of the role of public education in water quality improvement efforts was the formation of the Orange County Stormwater Public Education Committee, composed of the County of Orange and its 34 cities. In 2003, a survey designed to serve as a "baseline" upon which changes in public knowledge, behaviors, and public opinion can be periodically measured was conducted.

The survey results indicate the need for further public education on water quality issues. While many respondents understand the connection between pollution and beach closures, few make the connection between local urban runoff and beach closures. Furthermore, most believe that urban runoff flows into sewer systems, and not necessarily down storm drains that lead into natural channels or the beach. Public focus seems to be more on oil and grease than on activities such as sweeping, gardening, landscaping, car washing, or other everyday activities. When asked about information dissemination, the public believes that biologists and scientists are the most credible people for spreading messages about the effects of urban runoff pollution on the environment.

Focused education in communities such as the San Mateo Creek Watershed should incorporate experts and agencies to explain new information and answer questions. The focus of continuing public education efforts within the San Mateo Creek Watershed will reflect the changing state of

knowledge of residents and visitors. Based on the findings of the 2003 survey, public education initiatives will have the following areas of emphasis:

- Explanation of the link between urban runoff and stream pollution and beach closures
- Explanation of the separate function of the storm drain and sanitary sewer systems
- Identification of the principal causes of stream and ocean pollution
- Explanation of the potential link between urban runoff and the environment
- Explanation that all residents and visitors to the watershed affect water quality through their actions
- Explanation of the value of carefully selecting and applying fertilizer and pesticides
- Explanation of the importance of pet waste clean-up
- Expansion of the range of "message sources" from storm drain stenciling and newspaper articles to other types of media

Watershed-Wide Public Participation

A "watershed" scale education effort is not only to impart important environmental information but also to engage individuals, groups, businesses, and agencies in pollution prevention programs and clean up activities that promote water quality improvement and watershed health. While initial participation may occur at organized events, the goal is to empower individuals to identify and change their activities that could result in detrimental impacts on the San Mateo Creek Watershed, with a focus on the watersheds constituents of concern; bacteria, phosphorus, and toxin (resulting from pesticide and fertilizer over-application or misuse) contamination.

City-based participation in events at the watershed scale, such as sponsorship of the "Trails for All" event and others, encourages attendees to learn about water quality issues and further fosters participation by individuals and groups in events with a similar outcome. Collaboration has the effect of changing passive acceptance of messages to community or individual action. Direct public participation in the improvement of the creek and its watershed is encouraged by the organization of annual or bi-annual "Clean Up" days. Typically, volunteers collect thousands of pounds of debris that would otherwise make its way into watercourses and eventually the ocean, and properly dispose of the waste.

Participation by businesses in local partnerships may also yield positive effects at the watershed scale. Business participation and potential sponsorship of local events may have a positive effect on both the business and also the individual participants. For instance, the sponsorship of a home improvement center in education on integrated pest management techniques may encourage both smaller landscaping firms and individuals to carry forward that education and apply it within their service area or at home. A future Business Education Awards Program is another venue for business participation.

Participation in the clean up of animal wastes, discarded organic materials, yard and landscaping waste, and unused fertilizer and pesticides contributes to improvement of individual pollutant impairments, as well as overall water quality in the San Mateo Creek Watershed. Even clean up of materials that do not constitute designated impairments contributes to the general aesthetic quality of the environment and fosters the development of an environmental ethic on the part of individuals that leads to consistent behaviors that positively contribute to the improvement of water quality over the entire spectrum of constituents.

Finally, the Watershed Permittees can make available scientists, biologists, and others knowledgeable on watershed planning for public speaking programs at special events. The speakers can be specifically chosen for their knowledge of how behaviors and activities impact water quality and what the attendees may do to promote improvement.

City of San Clemente

The City of San Clemente is participating in the copermittee public education/outreach program. Additionally, the City is also participating in local outreach activities such as educating 100 percent of 2nd and 3rd grade students about urban runoff and water usage, providing a booth for the San Clemente Ocean Festival, and drafting articles for the City's quarterly publications. The City is currently in the process of hiring a consultant to assist with public education efforts to supplement the countywide program. It is anticipated that the expanded program will include comprehensive updates to the City's water quality website, videos for display during City Council meetings, volunteer opportunities, additional training for City employees and interested public, and bi-monthly press releases.

Illicit Discharge / Illegal Connection (ID / IC) Investigation

Investigation of illicit discharges and illegal connections is currently described in the LIP. Illicit discharges and illegal connections to city storm drains are being dealt with by individual jurisdictions, and information on this program is contained within each LIP. If a problem is identified that crosses jurisdictional boundaries, it will be collaborated on between Watershed Permittees. A study on illicit discharges and illegal connections is currently underway.

D-4.0 Program Effectiveness Assessment

A principle objective of the Watershed Chapter is to present an integrated plan of action that results in meaningful water quality improvement in the San Mateo Creek Watershed while balancing economic, social and environmental constraints. The program effectiveness assessment strategy requires the identification and thereafter annual consideration of measures that indicate whether progress is being made toward attainment of this objective and the other program objectives discussed in Section D-1.0. In considering program approaches to program assessment, it is recognized that both short- and long –term strategies are needed to assess the effectiveness of the Watershed Chapter.

D-4.1 Short Term Strategy

The short-term strategy initially focuses on the implementation of the watershed planning framework and the outcomes that are expected to be achieved within the first 5-year Permit period (2002-2007). The programmatic activity to be discussed in the first annual report will therefore specifically relate to:

- The meetings of a Watershed Management Group and the actions arising from its deliberations;
- The extent of public participation in watershed issues, through Permittee and public interaction at watershed events, annual / semi-annual "Clean Up Days", and other activities;
- Education of the public regarding water quality issues;
- Modification of jurisdictional plans and policies to reflect potential impacts to water quality at watershed-scale.

In addition, while water quality data is currently limited, annual results from any water quality assessments undertaken will be integrated into the evaluation of program effectiveness in successive years. It is anticipated that this information will, towards the end of the permit term, start to inform the Watershed Permittees as to whether specific programmatic initiatives are contributing or are capable of contributing towards the attainment of the Watershed Chapter's objectives. Direct methods (water quality data) of assessment to be considered in the short term strategy will include relevant findings from the monitoring initiatives and any individual investigations of BMP performance. The findings from evaluations of non-structural BMP initiatives (indirect measures i.e non-water quality indicators of BMP performance),

documented in the Watershed Permittees Annual Progress Reports, will be presented in the watershed annual report where appropriate. It is anticipated that the emphasis of the short-term strategy will be on jurisdictional programs

D-4.2 Long-term Strategy

Long term strategies for assessing effectiveness apply to programs and activities conducted with the expectation that outcomes will occur outside of the 5-year Permit period (2007 on). Long-term assessment strategies focus on direct measures of performance that will validate the long-term progress of the Watershed Chapter towards achieving protection of existing water quality or improvements in receiving water quality impacted by urban runoff and urban stormwater discharges. The long-term strategy includes consideration of the findings from the water quality monitoring initiatives principally related to the detection of improvements in receiving water quality and reductions in pollutant loading. The emphasis of the long-term strategy will be on watershed cooperative efforts and the overall success of the Watershed Chapter in realizing its objectives.

D-4.3 Review of Management Program

In each future year the short-term and long-term effectiveness assessment strategies will be used to verify and ultimately validate the implementation of the watershed program. It is expected that the program objective and supporting management actions will be revised as the program evolves. Specifically, the annual assessment of effectiveness will be used to inform and direct the watershed planning process to ensure cost effective water quality improvement.