



WATERSHED URBAN RUNOFF MANAGEMENT PROGRAM

CARLSBAD HYDROLOGIC UNIT

**City of Carlsbad
City of Encinitas
City of Escondido
City of Oceanside
City of San Marcos
City of Solana Beach
City of Vista
County of San Diego**

January 2003

EXECUTIVE SUMMARY

Introduction

This Watershed Urban Runoff Management Program for the Carlsbad Hydrological Unit (CHU) 904 includes material that describes the Carlsbad Watershed Copermittees' intended approach to meeting their watershed-related obligations, as specified under Sections J, K and L of the Municipal Permit. Pursuant to the Municipal Permit, this material is hereby submitted subject to Section R.2 concerning enforceability. Although this document also includes language describing the Carlsbad Watershed Copermittees' plans to exceed the Municipal Permit's requirements, this additional material is provided for information only and is not submitted pursuant to the Municipal Permit. These two distinct kinds of material are interwoven throughout this document.

Background

The goal of the Carlsbad Watershed Urban Runoff Management Program (URMP) is to positively impact the water quality of the receiving waters in the CHU. This goal and its supporting objectives and activities described in this document comply with the waste discharge requirements of the San Diego Regional Water Quality Control Board's (SDRWQCB's) Order No. 2001-01. More commonly called the Municipal Permit, the Order mandates the elimination or reduction of pollutants from surface urban runoff to the storm water conveyance systems, waterways, and receiving waters located in the San Diego area.

The SDRWQCB's Municipal Permit reflects the intent and scope of the federal 1987 Clean Water Act, which established requirements for storm water discharges under the National Pollutant Discharge Elimination System (NPDES) Permit Program. On February 21, 2001, the SDRWQCB adopted a new Storm Water Municipal Permit, which applies to 20 Copermittees in the San Diego region, including 18 cities, the County of San Diego, and the Port District. Comprehensive in scope and specific in direction, the Permit mandates compliance with its urban runoff principles and practices at both the jurisdictional and watershed levels. In February 2002, each Copermittee submitted its respective Jurisdictional Urban Runoff Management Plan (JURMP) to the SDRWQCB. These plans detail the jurisdictional-level response to the Permit's requirements to reduce pollutants in surface urban runoff discharges to the maximum extent practicable (MEP). However, since the Permit determines that urban runoff produced within cities and counties is often conveyed across jurisdictional boundaries, it also requires the mutual development of watershed plans by the jurisdictions located within the San Diego region's nine hydrological units, including the CHU.

The CHU encompasses approximately 211 square miles, which includes eight jurisdictions or Copermittees: Oceanside, Vista, Carlsbad, San Marcos, Escondido, Encinitas, Solana Beach, and the San Diego County unincorporated areas. Six individual watersheds are included within the CHU: Loma Alta, Buena Vista Creek, Agua Hedionda, Encinas, San Marcos Creek, and Escondido Creek. The land uses within the CHU range from urban to suburban development, from industrial/commercial to agricultural uses, from floriculture to confined animal operations, and from areas preserved for open space to areas designated for a variety of recreational uses.

To develop the collaborative foundation required to address the complex water quality issues represented by the CHU's diverse environment, the Carlsbad Watershed URMP was conceived and crafted by all eight jurisdictions. In compliance with Section J of the Permit and to improve

Carlsbad Watershed Urban Runoff Management Plan

the watershed's water quality, the Carlsbad Watershed URMP identifies and prioritizes the water quality issues that need to be addressed and designates an overarching goal and four supporting objectives:

- Goal: Positively impact the water quality in the receiving waters of the Carlsbad Watershed.
- Objective 1: Develop and expand methods to assess and improve water quality in the Carlsbad Watershed (Hydrologic Unit).
- Objective 2: Integrate watershed principles into land use planning among jurisdictions within the watershed.
- Objective 3: Increase and enhance public understanding of watershed issues and pollution prevention through a watershed-based education program.
- Objective 4: Increase opportunities for public and stakeholder involvement within the watershed.

To achieve the goal and its attendant objectives, the WURMP includes a work plan that prescribes the activities that will be undertaken by the watershed Copermittees. These activities are described throughout the various Carlsbad WURMP sections, which are each summarized below:

Carlsbad Watershed URMP Chapters

Carlsbad Watershed Description

Bordered by the San Luis Rey River Watershed to the north and by the San Dieguito Watershed to the south, the CHU is a complex community that includes a wide variety of land uses and hydrological areas. For example, the CHU is comprised of six Hydrologic Areas (watersheds): Loma Alta, Buena Vista Creek, Agua Hedionda, Encinas, San Marcos Creek, and Escondido Creek. In addition, the CHU contains four major coastal lagoons: Buena Vista, Agua Hedionda, Batiqitos, and San Elijo, as shown on Figure 2-1. The CHU also contains a population that was estimated at 500,000 in 2000 and is anticipated to increase significantly, along with the accompanying demand for new development, during the next 20 years. The Permit-required MS4 map, which details the jurisdictions' storm drain conveyance systems, is presented in Plate 1. Consistent with the SDRWQCB's request, those jurisdictions that have not yet digitized their MS4 data have provided a plan to accomplish this task.

Water Quality Assessment

Data from several routine water quality monitoring programs have been used for the initial assessment and will be considered for future evaluations, including the Core Monitoring Program, process studies, and regional monitoring programs. The Core Monitoring Program is a primary data set used for the water quality assessment and is a combination of the long-term receiving waters monitoring program collectively performed by the San Diego Storm Water Copermittees and the individual monitoring programs conducted by the various jurisdictions in the San Diego Region. Some of the components that are integral to the Core Monitoring Program include the following: urban stream bioassessment monitoring; ambient bay, lagoon, and coastal receiving waters monitoring; coastal storm drain outfall monitoring, and dry weather monitoring.

Two Mass Loading Stations (MLSs) are located in the CHU, including the Agua Hedionda Creek (AHC) MLS and Escondido Creek (EC) MLS. Data have been collected at AHC since the

1998-99 wet season. Data for the EC has only been collected during the 2001-02 wet season. This data included constituent testing, toxicity testing and bioassessment monitoring. Data were also reviewed from a process study entitled, "Evaluation of City of Escondido Baseline and Dry Weather Program", which included the dry weather testing data collected in 2000 and 2001.

In the immediate absence of long-term data, the triad of data collected in the Core Monitoring Program (i.e., toxicity, water chemistry, and stream benthic community structure analyses) is used as one step in the process of identifying water quality problems. This triad decision-making method supports an adaptive management approach that allows for the determination and direction of changes in the monitoring program using a consistent and scientific methodology. Once the Constituents of Concern (COC) are identified, a qualitative prioritization process is performed that considers watershed-specific conditions using the weight of evidence and best professional judgment to interpret the relationship between water quality problems, regulatory mechanisms, and technical solutions.

Major Water Quality Problems

The process of identifying major water quality problems in the watershed begins with the determination of COC based on the water quality assessment strategy discussed above and in Chapter 3. However, this process considers other factors, such as whether COC may cause toxicity or benthic impairment, contribute to a 303(d)-listed impairment, or impact the designated beneficial uses of a tributary water body. After examining these additional factors, if the COC are still considered an issue, they are classified as a major water quality problem and targeted for mitigation.

Based on the available data and problem-analysis strategy, the CHU was determined to have the following major water quality problems: fecal coliform or bacterial indicators and sedimentation and siltation. The evaluation of all identified water quality issues or problems in the CHU is presented in Table 4-8. These issues, along with their priority designations, determine the short- and long-term activities that the watershed copermittees will pursue to preserve and enhance the area's water quality and quality of life.

Short- and Long-Term Activities

As water quality issues and related COC are identified, validated, and prioritized, watershed Copermittees will collaborate in an interactive and iterative process to identify ways to mitigate major water quality problems. This process begins with the identification of short- and long-term activities discussed in this section to address the potential high-priority water quality problems outlined in Chapter 4. It should be noted that since mitigation efforts are watershed-based and therefore collaborative in nature, water quality problems may be identified and addressed at several levels: jurisdictional (municipal, county or other governmental entity); inter-jurisdictional (watershed); or regional. It should also be noted that an adaptive management approach will be employed so that the process of planning, prioritizing, and implementing various activities will likely change as the program develops. Some of the short- and long-term activities that are initially identified to address the watershed's major water quality problems are:

Short-Term Activities

- **Bacteria Source Investigation**—because of the initial limited amount of data available for the assessment, additional verification and validation using water quality data from a variety of sources is required.

Long-Term Activities

- Standard Urban Storm Mitigation Plan (SUSMP) Implementation—CHU Copermittees have identified addressing sedimentation and siltation as a long-term activity based on a 2002 water quality assessment. Therefore, the implementation of the SUSMP's measures to reduce pollutant loadings of sediment and silt to the watershed's MS4 will be implemented and evaluated by the watershed's Copermittees.
- Ambient Bay and Lagoon Monitoring Program - Starting in 2003, the Ambient Bay and Lagoon Monitoring (ABLM) Program will include sampling and testing in Buena Vista, Agua Hedionda, Batiquitos and San Elijo Lagoons, as well as eight other lagoons or coastal estuaries. This program is part of the Core Monitoring Program established for the San Diego Region. The program consists of collecting sediment chemistry, toxicity, and ecological community data (benthic infauna) to establish a baseline and assess overall health. In subsequent years, the data can be analyzed and compared to establish temporal trends and identify similarities and differences in conditions between each of the lagoons and bays. To help interpret the ABLM data, additional information from upstream testing, including rapid stream bioassessments, toxicity and chemical testing at the MLS's will be used. The long term goal of the ABLM Program is to determine which of these water bodies is impacted by urban runoff and to what degree. The data collected will include sediment particle size that may assist Copermittees in evaluating the sedimentation and siltation issue in Agua Hedionda and other Carlsbad Watershed Lagoons.

Carlsbad Watershed Copermittees also identified several potential long-term activities in the 2002-2003 Watershed URMP that will be tracked. Although these potential long-term activities are not associated with a high-priority water quality issue or problem, it has been deemed appropriate to track developments in preparation for the annual re-assessment and re-prioritization of water quality evaluations and corresponding activity development. These activities are related to integrated pest management (IPM), data collection and management, and tracking regional actions that pertain to municipal and domestic water supplies as they apply to total dissolved solids (TDS).

Land Use Planning Context and Processes

Some of the current intra- and inter-jurisdictional collaborative planning mechanisms and activities cited in this section include public hearings conducted by local governments prior to planning actions and noticing adjacent jurisdictions regarding proposed land uses or development that may affect an adjacent jurisdiction. Building on the existing collaborative land use mechanisms and activities within the watershed, the CHU Copermittees will consider and/or utilize some of the following methods to facilitate the integration of watershed data and information into their land use decision-making processes:

- **Formal agreements between jurisdictions**, i.e., Joint Execution Powers Agreement (JEPA), Memorandum of Agreement (MOA), or Memorandum of Understanding (MOU), etc.
- **Water Quality Assessment** will form the information basis for all watershed programs and activities to be initiated by the Copermittees.

- **Staff Training** will be based on information gathered during the Water Quality Assessment phase and will form the foundation for watershed-specific training elements developed either individually or collaboratively by the Copermitees.
- **Information/Materials-Sharing** of relevant watershed-based information or work products (e.g., grant proposals, monthly meeting notices, restoration or BMP development projects, etc.) will occur between Copermitees and with their respective land use planning staff.
- **Collaborative Assessment/Implementation Efforts** have begun and will continue to establish forums to share watershed-specific information with planning staff, both on a jurisdictional and watershed basis.

In accordance with Section J.2.f. of the Permit, the Planning section cites public participation mechanisms that will support collaborative land use planning in the CHU, including participation in regional groups and forums that represent various private and public stakeholders.

Public Participation

Some of the more recent public participation efforts undertaken as part of the Carlsbad Watershed URMP development include the creation of stakeholder lists at the regional, watershed, and jurisdictional levels; the publication of watershed-pertinent meetings and agendas on the County website, “projectcleanwater.org”; and the online-posting of the Carlsbad Draft Watershed Plan on the same website to solicit public review and comment. Future public participation efforts will include some of the following: participation and collaboration in community work groups or organizations, such as the Carlsbad Watershed Workgroup, which consists of representatives from the various cities located in the CHU; and participation in the Carlsbad Watershed Network, which includes stakeholders from public entities and private non-profit groups.

Watershed Education Program

Generally, the Watershed Education Program is based on consistent public service messages delivered through a variety of media and forums to provide the public with a better understanding of key issues associated with urban runoff, specifically as it relates to the dynamics of watersheds. In addition, the program is based on the assumption that the targeted and regular distribution of knowledge can produce behavioral changes. Moreover, the short-term education program strategy will focus on three basic concepts: 1) Defining a watershed; 2) Living in a watershed and how daily activities impact it; and 3) Caring for a watershed to preserve and enhance its health. Once this knowledge base is established, Best Management Practices (BMPs) will be incorporated into the short-term curriculum as appropriate. Long-term education program objectives will include addressing specific water quality problems based on the annual water quality assessments conducted as part of the Carlsbad Watershed URMP. Overall, the Watershed Education Program will be built as a multi-phased approach that is driven by achievement milestones and adapted to annual assessment results.

Program Effectiveness Strategy

As a first step, the Program Effectiveness Strategy developed objectives that are measurable, have an expected outcome, and a preliminary performance standard that will serve as an indicator for meeting or exceeding expectations. On an annual basis, this evaluation strategy will consider linkages between water quality and program performance. Through the use of direct and indirect measures, this linkage will be assessed. Whereas direct measures focus on

characterizing the quality of water bodies (e.g., receiving waters monitoring), indirect measures assess the performance of non-structural source control BMPs (e.g., storm drain stenciling and public education). The results from these measurements will be used to evaluate and, if necessary, alter program delivery, operations, goals, objectives, expected outcomes or other programmatic activities, where possible. Moreover, as the water quality assessment is expanded, the results will be used to develop targeted mitigation activities where and when appropriate, which, consistent with an adaptive management approach, may change the stated objectives. Therefore, the four objectives outlined in the Carlsbad Watershed URMP are dynamic and will likely be updated each year.

Summary and Conclusion

In this chapter, Tables 10-1 through 10-4 presents the Carlsbad Watershed URMP's four objectives and supporting activities that will be developed to achieve the plan's overarching goal—improved water quality. However, based on future assessments, these objectives and activities may be revised to provide better program delivery and goal achievement. Although the Watershed URMP may not include all water quality programs planned or implemented by the Carlsbad Watershed Copermittees in their jurisdictional capacities, it does demonstrate their collective commitment to improved water quality in particular and environmental policies in general.

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ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AGR	Agricultural Supply (Beneficial Use)
AQUA	Aquaculture (Beneficial Use)
Basin Plan	Water Quality Control Plan for the San Diego Basin
BIOL	Preservation of Biological Habitats of Significance (Beneficial Use)
BMI	Benthic Macro Invertebrate
BOD	Biochemical Oxygen Demand
Caltrans	California Department of Transportation
CCA	California Coastal Act
CCC	California Coastal Commission
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CFR	Code of Federal Regulations
COD	Chemical Oxygen Demand
COLD	Cold Freshwater Habitat (Beneficial Use)
COMM	Commercial and Sport Fishing (Beneficial Use)
Copermittees	The County of San Diego, the San Diego Unified Port District and the 18 local cities within San Diego County
County	County of San Diego
CWA	Clean Water Act
DEH	Department of Environmental Health
DPR	Department of Parks and Recreation
EMC	event mean concentration
EST	Estuarine Habitat (Beneficial Use)
F	Fahrenheit
GIS	Geographical Information Systems
GP2020	The County of San Diego's current project to update their General Plan
HA	Hydrologic Area
HU	Hydrologic Unit
IC/ID	Illicit Connection and Illegal Discharges Program
IND	Industrial Service Supply (Beneficial Use)
JEPA	Joint Execution of Powers Agreement
JPA	Joint Powers Agreement
JURMPs	Jurisdictional Urban Runoff Management Programs
L	liter
MAR	Marine Habitat (Beneficial Use)
MBAS	Methylene Blue – Activated Substances (Detergents or Surfactants)
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MEP	maximum extent practicable
mg	milligram
MHCP	Multiple Habitat Conservation Program
MIGR	Migration of Aquatic Organisms (Beneficial Use)
mL	milliliter
MLS	mass loading station
MPN	most probable number or colonies
MS4	municipal separate storm sewer system
MSCP	Multiple Species Conservation Program
MSL	mean sea level

ACRONYMS AND ABBREVIATIONS (continued)

MUN	Municipal and Domestic Supply (Beneficial Use)
NAV	Navigation (Beneficial Use)
NCSWP	North County Storm Water Program
NPDES	National Pollutant Discharge Elimination System
NWIS	National Water Information System
POW	Hydropower Generation (Beneficial Use)
RARE	Rare, Threatened, or Endangered Species (Beneficial Use)
RCD	Resource Conservation District
REC1	Contact Water Recreation (Beneficial Use)
REC2	Non-contact Water Recreation (Beneficial Use)
RSB	Rapid Stream Bioassessment
SANDAG	San Diego Association of Governments
SCCWRP	Southern California Coastal Waters Research Project
SDRWQCB	San Diego Region of the California Regional Water Quality Control Board
SHELL	Shellfish Harvesting (Beneficial Use)
SPWN	Spawning, Reproduction, and /or Early Development (Beneficial Use)
SUSMP	Standard Urban Storm Water Mitigation Plan
SWAMP	Storm Water Ambient Monitoring Program
SWMP	Storm Water Management Plan
SWRCB	California State Water Resources Control Board
TAC	Technical Advisory Committees
TIE	Toxicity Identification and Elimination
TMDLs	Total Maximum Daily Loads
URMP	Urban Runoff Management Program
USACOE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Survey
WARM	Warm Freshwater Habitat (Beneficial Use)
WILD	Wildlife Habitat (Beneficial Use)