

C-12.0 WATERSHED PLANNING

C-12.1 Introduction

Watershed management is the term used for the approach to water quality planning that places an emphasis on the watershed (the area draining into a river system, ocean or other body of water through a single outlet) as the planning area and looks to multi-jurisdictional solutions to problems that cut across programs and jurisdictional boundaries.

The Permits have, with varying degrees of specificity, required the Permittees to develop and implement a watershed-based aspect to urban stormwater management to complement the established jurisdictional-based approaches. In the area of the County under the jurisdiction of the San Diego Regional Board, initial Watershed Workplans will now be foundational to the Water Quality Improvement Plan under the 5th Term Permit. In the Santa Ana Regional Board area of the County, the Permittees initial progress with watershed master planning will be incorporated in the anticipated Watershed Management Plans in the Fifth Term Permit.

There are five distinct watersheds within the Santa Ana Regional Board area which are identified below in **Table 12.1.** and are the focus of watershed planning.

Table 12.1: Santa Ana Region Watersheds

Watershed Planning Area	Major Watercourses
San Gabriel River/Coyote Creek	Coyote, Carbon, Fullerton, and Brea Creeks
Anaheim Bay/Huntington Harbour	East Garden Grove Wintersburg Channel, Bolsa Chica Channel
Santa Ana River (within Orange County)	Talbert Channel, Santiago Creek and Santa Ana River
Newport Bay	San Diego Creek, Santa Ana Delhi Channel
Newport Coastal Streams (Often combined with Newport Bay)	Buck Gully, Los Trancos Canyon Creek, Muddy Canyon Creek

C-12.2 Accomplishments

C-12.2.1 Watershed Management/Planning Initiatives

- **Watershed Master Planning**

Order R8-2009-0030 requires the Permittees to prepare master plans, termed Watershed Infiltration and Hydromodification Management Plans (WIHMPs), for the Coyote Creek-San Gabriel River, Anaheim Bay-Huntington Harbor, Santa Ana

River, and Newport Bay-Newport Coast watersheds. These plans shall include the following principal components:

- Maps to identify areas susceptible to hydromodification including downstream erosion, impacts on physical structure, impacts on riparian and aquatic habitats and areas where stormwater and urban runoff infiltration is possible and appropriate.
- A hydromodification model to make available as a tool to enable proponents of land development projects to readily select storm water preventive and mitigative site BMP measures.

Draft WIHMPS were completed during the prior reporting period.

- **Watershed Management Areas (WMAs)**

Recognizing the need for a coordinated approach to resource management and capital improvement planning, leveraging partnerships with regional stakeholders and developed programs and plans (such as TMDLs and consolidated grants) the governance for water quality programs has been organized around two geographic sub-areas, or watershed management areas (WMAs) (**Figure C-12.2**). The San Gabriel River/Coyote Creek, Anaheim Bay/Huntington Harbour, Newport Bay, Newport Coastal Streams, and Santa Ana River (within Orange County) watersheds comprise the North Orange County WMA; and the Aliso Creek, San Juan Creek, Laguna Coastal Streams, Dana Point Coastal Streams, San Clemente Coastal Streams and San Mateo Creek (within Orange County) watersheds comprise the South Orange County WMA which falls wholly under the jurisdiction of the San Diego Regional Board.

The governance structure of each WMA is different. Participants may include cities, water and wastewater agencies, private and public interests, academia, State and Federal agencies, and non-governmental organizations with various missions, including, but not limited to, ecosystem restoration and open space and coastal protection. Involvement of diverse stakeholders promotes integration and maximizes potential benefits through increased communication and collaboration.

Integrated Regional Water Management (IRWM)

The State of California promotes IIRWM planning as a means of achieving more sustainable water use. IRWM represents an efficient and effective way to manage water resources, providing a framework for prioritizing regional watershed issues through a consensus-building and stakeholder-driven process. IRWM planning fosters development of holistic solutions to water resource issues, and integrates projects and programs throughout the region that have logical overlaps. Ultimately, IRWM planning promotes sustainable resource management.

Whereas watershed planning for stormwater management is focused on enhanced BMP implementation targeting specific constituents of concern within a watershed,

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an IRWM Plan is an integrated plan for all water resources projects, including water supply, wastewater, flood management, stormwater and urban runoff, aquatic habitat, and recreation.

IRWM Planning in North/Central Orange County

The Central Orange County IRWM Plan incorporates goals, objectives, research, strategies, and projects that have been identified and received stakeholder support. Some of these efforts are driven by regulations and others are the result of regional vision and goals for the quality and function of the Newport Bay and Newport Coast Watersheds.

During 2008-09, the Central Orange County WMA joined with the Santa Ana Watershed Project Authority (SAWPA) as part of one region for the Department of Water Resources' Proposition 84 IRWM grant program.

The purpose of the North Orange County WMA IRWM Plan is to maximize the utilization of local water resources by providing for more effective collaboration through the application of multiple water management strategies. This is accomplished through implementation of multi-purpose projects that will fulfill the needs of the region. The North Orange County WMA IRWM Plan was completed in March 2011 with an updated project list for the region.

The North and Central IRWM Plans are considered local IRWM Plans, focused on establishing local priorities for and implementation of projects. The Permittees in each WMA and other stakeholders initiated a process to update and merge these plans to cover both WMAs during the reporting period. The updated plan will be open for public review in late 2017 and finalized in 2018.

Orange County Stormwater Resource Plan (OC SWRP)

Per the requirements of SB 985 (Pavley), the County of Orange developed the OC SWRP on behalf of cities, water agencies and stakeholders throughout the three WMAs. The OC SWRP is a functionally equivalent document, representing significant planning efforts conducted by the Permittees, other agencies and stakeholders. These planning efforts include and/or closely align with IRWM Plans and NPDES compliance programs discussed in this report. Indeed, it is important for project funding to be available for cities to implement projects that assist with controlling pollutants within the MS4; the OC SWRP provides that mechanism for voter-approved bond funding.

Four primary, significant planning efforts referenced throughout this OC SWRP are used for functional equivalency to meet the SWRP guidelines. These include (1) the 2013/2014 Reports of Waste Discharge (ROWDs), (2) Integrated Regional Watershed Management Plans for North, Central and South Orange County, (3) Watershed Infiltration and Hydromodification Management Plan (WIHMP) mapping tools, and (4) the South Orange County Water Quality Improvement Plan (WQIP). In addition

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to meeting the SWRP guidelines, these four primary documents also provide the basis for project identification and prioritization in this OC SWRP. The OC SWRP, functionally equivalent documents associated with the WMAs and other planning efforts, mapping tools and the project list materials can be found on the [OC Watersheds website](#).

The OC SWRP was submitted to the North/Central and South WMAs and SAWPA for incorporation in the applicable IRWM Plans per SB 985.

C-12.2.2 Environmental Restoration Efforts

- **Santa Ana River:** Fairview Park Wetlands and Riparian Habitat Project

The City of Costa Mesa's Fairview Park Wetlands and Riparian Habitat Project includes the restoration of approximately 30 acres containing the following four major design elements, all of which have been completed:

- 17-acre riparian habitat area;
- 6-acre area of water treatment ponds for water quality improvement and percolation;
- 13-acre area of CSS, native grasslands, and an oak woodland; and
- Water delivery system to the ponds and riparian area from a modified pump station along the Greenville-Banning Channel.
- Ongoing biological monitoring of the ponds to ensure native plant establishment and minimize invasion by non-native plants

The City of Costa Mesa implements ongoing biological monitoring of the ponds to ensure native plant establishment and minimize invasion by non-native plants.

C-12.2.3 Watershed-Based Water Quality Planning Efforts

- **San Gabriel River/Coyote Creek:** San Gabriel River Regional Monitoring Program

The Sanitation Districts of Los Angeles County are required, as a condition of their NPDES Permit, to work with all agencies and interested parties in developing a watershed-wide monitoring program for the San Gabriel River Watershed. The County, as Principal Permittee, is participating in this workgroup which is facilitated by Aquatic Bioassay & Consulting, Inc. The Principal Permittee provided sample collection and analysis for up to three sites in Orange County per year since the beginning of the monitoring program. The data are presented in annual reports available through Aquatic Bioassay & Consulting.

For 2016-17, one trend site on Fullerton Creek, on revisit site on Moody Creek, and one non-perennial site on La Mirada Creek were sampled. Results of this monitoring effort can be found in **Section C-11.0**.

- **San Gabriel River/Coyote Creek: Coyote Creek Metals TMDL**

The San Gabriel River and Impaired Tributaries TMDLs (Coyote Creek Metals TMDL) established mass-based WLAs for total copper, total lead, and total zinc in wet weather and total copper in dry weather. The TMDLs were established by the Los Angeles Region since most of the San Gabriel River watershed lies within that region, but 54% of the Coyote Creek watershed lies in Orange County within the jurisdictional boundary of the Santa Ana Regional Board. While the Los Angeles Regional Board has no jurisdiction over portions of Coyote Creek within Orange County, the Santa Ana Regional Board deferred to the findings of Los Angeles Regional Board and incorporated some TMDL requirements into the Orange County MS4 Permit, particularly the development of a Source Control Plan and Monitoring Program (SCP).

In 2009, the County initiated SCP development. A Work Group was convened, consisting of the County and the cities of Anaheim, Brea, Buena Park, Cypress, Fullerton, La Habra, La Palma, Los Alamitos, Placentia, and Seal Beach (watershed cities), to help guide SCP development. The SCP was finalized and approved by the Work Group in June 2010. In July 2010, the County initiated monitoring activities under the SCP on behalf of the watershed cities. Since then, a total of six sites have been monitored monthly for total and dissolved metals, hardness, and other parameters. These sites will continue to be monitored to establish baseline water quality conditions in the watershed and to track progress in attaining TMDL goals.

- **San Gabriel River/Coyote Creek: Coyote Creek Bacteria TMDL**

On June 10, 2015, the Los Angeles Regional Water Quality Control Board (Los Angeles Regional Board) adopted Resolution No. R15-005 to establish a TMDL for Indicator Bacteria in the San Gabriel River, Estuary and Tributaries to restore REC-1 beneficial use of these waters. The target indicator for the TMDL is *E. coli*.

Coyote Creek, as tributary to the San Gabriel River, is subject to the TMDL. However, the Orange County portion of the watershed lies within the jurisdiction of the Santa Ana Regional Board. While the TMDL is now fully approved, the State Water Board has not yet adopted TMDL provisions into the new Orange County Stormwater Permit.

No historical data on *E. coli* exist for the Coyote Creek watershed. Therefore, monthly monitoring of six sites began in July 2015 to provide baseline *E.coli* data at the confluences of major tributaries in the watershed.

- **Santa Ana River: Talbert Channel and Lower Santa Ana River Water Quality Diversions and Investigation**

On October 15, 1999, the Santa Ana Regional Board issued a Section 13267 Directive to the County of Orange and five cities concerning bacteriological water quality impairments in the Talbert and Lower Santa Ana River watersheds that may be

affecting surfzone water quality. In response to the Regional Board's Directive, the County of Orange constructed dry weather urban runoff diversion projects in four flood control facilities [Huntington Beach Pump Station (D01PS1), Talbert Channel (D03), Santa Ana River (E01); and Greenville Banning Channel (D03)] for the diversion of dry weather urban runoff, an area of 16,575 acres. Runoff is diverted to the sanitary sewer collection system for conveyance to OCSD, where it is treated prior to offshore ocean outfall discharge. Similar diversion actions were taken by the City of Huntington Beach at a number of pump stations. The project goals were to divert all dry weather urban runoff from the watershed year-round and reduce the number of beach postings and closures due to high bacteria counts at the Huntington Beach State Beach.

Greenville Banning Channel and Huntington Beach pump station diversion facilities have been continuously operational, excepting periods of rainfall and subsequent storm runoff. The Santa Ana River diversion was generally operated only during the dry season (May – October) due to operational issues during the rainy season. As a result of these diversion programs, there has been no re-occurrence of the extensive beach closures of 1999.

- **Newport Bay Watershed:** Trash Management Plan Framework

In December 2012 the County was awarded a grant from the CIAP, administered by the US Fish & Wildlife Service, to implement a project that would offer Orange County municipalities with a substantially improved ability to manage trash in the environment. The goals of the project are to 1) develop and implement tools needed to understand and remediate trash, and 2) apply these tools towards developing a trash management plan for the Newport Bay Watershed. The report was completed in the reporting period and discussed in **Section C-3.0.** and in **Exhibit 27 – County Of Orange/OCFCD PEA.**

- **Newport Bay:** Nitrogen and Selenium Management Program

The Newport Bay Nitrogen and Selenium Management Program (NSMP) was created in 2004 in response to a general NPDES permit (Order No. R8-2004-0021, which was replaced by R8-2007-0041 and amended by R8-2009-0045) issued to establish waste discharge requirements for certain groundwater-related discharges and to regulate *de minimus* discharges. The NSMP is a collaborative effort of stakeholders, including the Santa Ana Regional Board, the County, and local agencies, and private entities with the goal of developing management strategies and treatment technologies for both selenium and nitrogen for the watershed. Since the permit expiration in December 2009, a Time Schedule Order (TSO) R8-2009-0069 (and subsequently R8-2013-0060 and amended by R8-2014-0025) has been in place to provide interim coverage for the NSMP stakeholders. Currently, NSMP stakeholders are working on the tasks outlined in the BMP Strategic Plan which includes several pilot testing efforts and diversion projects. The revised Selenium TMDL was adopted by the Regional Board in August 2017 and is expected to be

fully adopted in 2018. Among the implementation measures outlined in the TSO and the TMDL, three projects are in implementation phase:

1. Peters Canyon Channel Water Capture and Water Reuse Pipeline Project – This project is designed to capture groundwater dewatering or seepage-related discharges from four locations in the lower Peters Canyon Wash. The construction of the project was completed in the summer 2016 and is currently operating normally.
 2. Santa Ana Delhi Channel Diversion Project – similar to the Peters Canyon Channel project, but diverting surface water rather than groundwater, will divert dry weather base flow from Santa Ana-Delhi Channel to the Orange County Sanitation District (OCSD) to remove about 40 lbs. of selenium per year, among other pollutants. The construction of the project started in late 2016 and is expected to be completed in the spring of 2018.
 3. Big Canyon Wash Comprehensive Selenium Management Program – This program includes many projects to reduce selenium loads in this small watershed (2 square miles) located entirely within the city of Newport Beach. The construction is expected to complete in spring of 2018.
- **Newport Bay:** Newport Bay Watershed Nutrient TMDL

The nutrient TMDL for the Newport Bay watershed was approved in 1999. In February 2000, the County on behalf of the Watershed Permittees, initiated the Regional Nutrient Monitoring Program (RMP) for the Newport Bay watershed pursuant to requirements established by the Santa Ana Regional Board (Resolution 99-77).

Current analysis of the RMP watershed and Bay data indicate the overall TMDL reduction targets are being met. The urban runoff waste load allocation for both nitrogen and phosphorus, however, has not been consistently achieved. Nutrient levels at Santa Ana-Delhi Channel and San Diego Creek Reach 2 are influenced by rising groundwater, which has been documented as a significant source of nitrogen. As rising groundwater has a separate load allocation under the TMDL, revisions of the TMDL have been recommended to the Santa Ana Regional Board to address this issue. For phosphorus, the current allocation would require sustained drought conditions (<5 inches of rain per year) to meet the urban runoff target since phosphorus loads are highly correlated with rainfall. The total phosphorus load to Newport Bay has recently been in attainment of the overall TMDL as shown in the *2015-16 Annual Data Report for the Newport Bay Watershed Nutrient TMDL* (December 15, 2016), available at <http://prg.ocpublicworks.com/DocmgmtInternet/Download.aspx?id=1296>.

Revisions to the TMDL have been recommended in the annual data report to address the issue. The 2016-17 Newport Bay Nutrient TMDL Annual Data Report will be submitted to the Santa Ana Regional Board on December 15, 2017.

- **Newport Bay:** Newport Bay Watershed Sediment (TMDL)

The sediment TMDL for the Newport Bay watershed was approved in April 1999. Analysis of the past 17 years of monitoring data indicates that sediment loads in the Newport Bay Watershed have been reduced significantly from rates recorded in the pre-TMDL period and that compliance with the 50% reduction (62,500 tons per year) is being achieved.

In February 2014, the Santa Ana Regional Board approved requested modifications to the Monitoring and Reporting Program for the Sediment TMDL. The revisions were based on the extensive monitoring data collected to date and reflect the changing nature of the watershed in response to sediment control initiatives and efforts put in place over the past 30 years. The revised Monitoring Program aligns monitoring with current conditions in the watershed.

A comprehensive review of sediment loading rates and status was completed in 2015-16. The County and TMDL funding partners are actively working with the Regional Board and utilizing this report to make revisions to the TMDL.

- **Newport Bay:** Fecal Coliform TMDL

The fecal coliform TMDL for Newport Bay was adopted in 1999 to improve bacterial water quality and water contact recreational activities and reduce public health risks. Based on evaluation of trends in data since 2001 from Newport Bay sites, average fecal coliform concentrations have decreased substantially and the TMDL targets for recreation have been met. The TMDL requires that a TMDL Revisions Report be prepared to direct the revision of the TMDL based upon findings from a Source Identification Plan and recommendations in the Source Management Plan, which have both been completed. During the reporting period, a facilitated stakeholder process was initiated with the overarching goal of producing the TMDL Revisions Report based on input from all stakeholders, including MS4s, developers, environmental groups, and the Regional Board, with SCCWRP providing technical guidance. The 2016-17 Newport Bay Fecal Coliform TMDL Annual Data Report (submitted to the Santa Ana Regional Board on September 1, 2017) is available at: <http://prg.ocpublicworks.com/DocmgmtInternet/Download.aspx?id=1370>.

- **Newport Bay:** Newport Bay Watershed Toxics TMDL

On June 14, 2002, EPA Region 9 established the Toxics TMDL for the Newport Bay Watershed. The Santa Ana Regional Board is currently splitting the EPA promulgated Toxics TMDL into five separate constituent and geographically specific TMDLs. The five resulting TMDLs will include (1) diazinon and chlorpyrifos, (2) organochlorine compounds, (3) selenium, (4) metals, and (5) Rhine Channel. Each of these individual TMDLs must proceed through the full approval process before they are officially adopted and effective and the EPA TMDLs will need to be depromulgated. To date, the Santa Ana Regional Board has adopted two of the five

TMDLs - one for diazinon and chlorpyrifos (organophosphate pesticides), and one for organochlorine compounds.

In response to the organochlorine compounds TMDLs the County formed a stakeholder working group, the Toxicity Reduction and Investigation Program (TRIP). Stakeholders include watershed cities, the Santa Ana Regional Board, environmental representatives and local business interests. A TRIP Work Plan was submitted to the Santa Ana Regional Board detailing watershed-wide efforts needed to address issues related to sources and effects of toxicity in the San Diego Creek and Newport Bay watershed. The Work Plan focuses primarily on the indirect effects of organochlorine pesticides and other toxic constituents on key wildlife species of concern that consume contaminated prey items, on humans consuming contaminated seafood from the Bay and on the causes of direct toxicity to sediment dwelling organisms. A reassessment of the Work Plan is ongoing with the County, funding partners and Santa Ana Regional Board participating.

- **Newport Coastal Streams:** City of Newport Beach Initiatives

The Newport Coast Watershed area covers about 10 square miles and eight coastal canyons; it extends south of Corona Del Mar in Newport Beach to El Morro Canyon in Crystal Cove State Park. Two of the canyons are 303(d) listed and the entire watershed drains to one of two Areas of Special Biological Significance (ASBS's) (the Newport Beach Marine Life Refuge and/or the Irvine Coast Marine Life Refuge). In addition to the DAMP/LIP BMPs, the following actions are under way by the City of Newport Beach to address canyon degradation, ASBS concerns and the 303(d) listing:

- o Continued catch basin screening program and street sweeping program;
- o Sanitary System Overflow (SSO) prevention plan;
- o Continued production of The Village Green program;
- o Continue to create numerous water conservation and water quality PSA's;
- o "Zero Trash Newport" program for trash and debris removal on many of the ocean and bay beaches;
- o Residential Water Quality letter and fact sheets;
- o Buck Gully Resource Management Plan;
- o Harbor Area Management Plan (HAMP);
- o Participant in the county Rebate Program (Turf removal, WBICs, Drip conversion, LF Toilets, Rain Barrels);
- o Newport Beach Trash Wheel to be installed in the San Diego Creek collecting trash from upstream prior to entering the Newport Bay;
- o Big Canyon Treatment Wetland -A constructed wetland designed specifically to remove transportation-related contaminants (*e.g.*, metals, nutrients, organics, bacteria) from two types of flow conditions: dry weather (ambient) flows from Big Canyon Creek and wet weather stormwater flows from the Jamboree Road drainage area as well as a portion of the stormwater flows from Big Canyon; and
- o Runoff Diversion (Arches) In Design - Divert urban runoff flows in the Arches

drain to the Orange County Sanitation District sewer system. The diversion will help to reduce fecal indicator loading into the Bay.

C-12.3 Assessment

The Permittees' environmental restoration efforts focused on ecological outcomes are, in the main, broad stakeholder initiatives rather than permit compliance driven planning processes. In contrast, the Permittees' watershed-based water quality planning efforts are focused on water quality standard attainment; involve the Permittees and other regulated entities, and principally represents cooperative compliance efforts to address TMDLs. The focus on specific pollutant-waterbody combinations will continue to define watershed-based water quality planning in the Fifth Term Permit. However, a shift in the Countywide program toward addressing the priority water quality constituents of concern, the possible introduction of new WMP or WQIP requirements, and the burgeoning interest in integrated water resource management, will likely combine to ensure that watershed-based planning becomes a more defining characteristic of stormwater management and water quality planning.

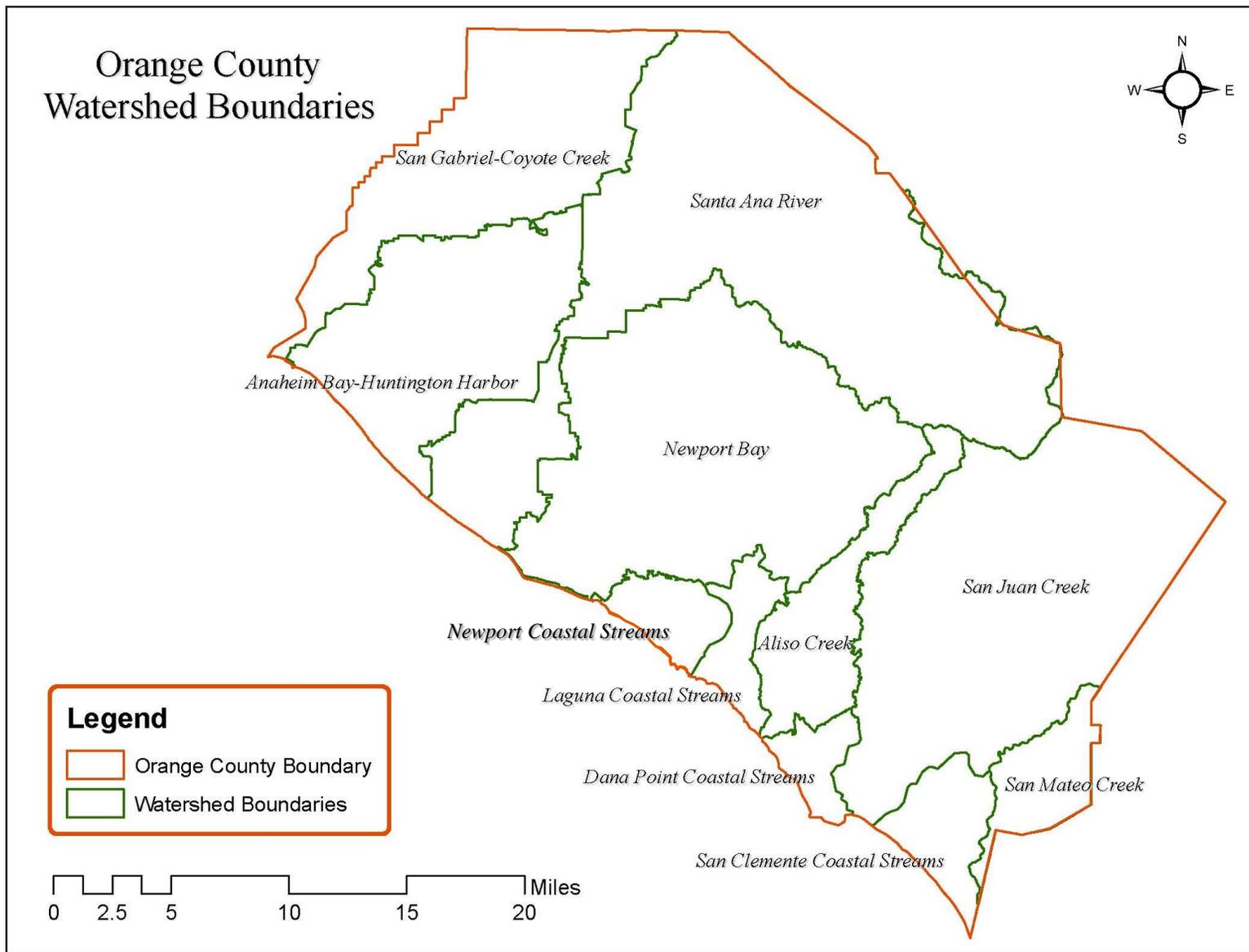
2017-18 Program Focus

- Continue pre-planning of Watershed Management Plans for North Orange County

C-12.4 Summary

The Permittees' watershed-based water quality planning efforts are principally focused on water quality standard attainment; involve the Permittees and other regulated entities, and represent collective and cooperative compliance efforts. The further development of the watershed planning approach will enable water quality, watershed restoration and current integrated water resource management imperatives to be more synergistically addressed and will be a focus of further plan development in the Fifth Term Permit period.

Figure C-12.1: Orange County Watershed Boundaries



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Figure C-12.2: Watershed Management Areas

