

# SANTA MARGARITA RIVER Watershed Management Area

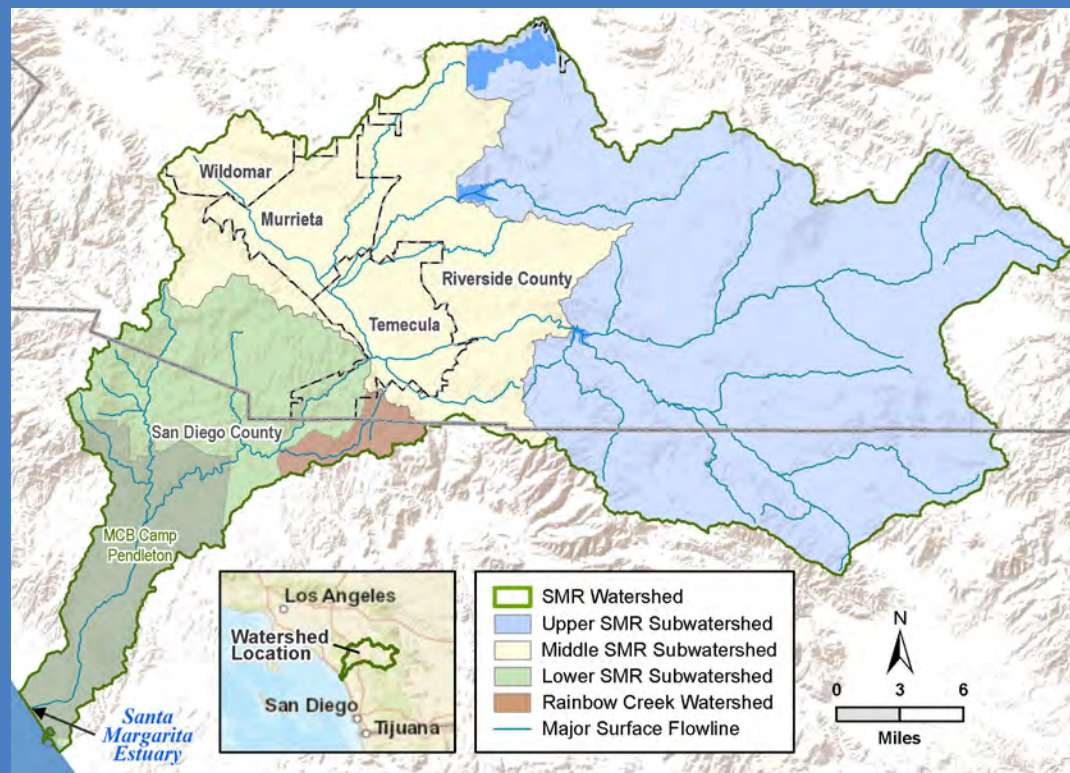
## 2018-2019 Water Quality Improvement Plan Annual Report

### Executive Summary



The Santa Margarita River (SMR) Watershed Management Area (WMA) encompasses over 740 square miles in southern Riverside County and northern San Diego County. To protect, preserve, and restore surface water quality and designated beneficial uses of water bodies in the WMA, Copermittees implement strategies through a watershed-based Water Quality Improvement Plan (WQIP) and individual Jurisdictional Runoff Management Programs. These plans were developed to meet the requirements of the San Diego Region Municipal Separate Storm Sewer System (MS4) permit (Permit) issued by the San Diego Regional Water Quality Control Board (San Diego Water Board).

The WQIP identifies eutrophication and nutrient loading as highest priority water quality conditions (HPWQCs). Goals, strategies, and schedules for addressing HPWQCs have been developed by Subwatershed area and are applicable to Copermittees within those areas. For the 2018-2019 reporting year, this executive summary highlights WQIP implementation progress and strategies, monitoring, and adaptive management. The full report provides details on this first year of WQIP implementation.



## COPERMITTEES



# Progress To Goals and Strategy Implementation

The Copermittees are implementing a variety of strategies to improve conditions identified as impacted by eutrophication and nutrient loading. Progress is measured against interim and final goals that have been established for the following Subwatershed areas in the WMA:

◆ *Middle SMR Subwatershed*

◆ *Lower SMR Subwatershed*

◆ *Rainbow Creek*

Each of these areas has several compliance pathway options. Middle and Lower SMR Subwatershed pathways include WQIP goals designed to measure progress toward dry weather numeric targets for a Total Maximum Daily Load (TMDL) Alternative for the SMR Estuary. For Rainbow Creek, the goals are intended to demonstrate compliance with the existing Nutrient TMDL.

Progress toward goals based on implementation of strategies is shown by Subwatershed area in the following three tables. No goals were due to be achieved in the 2018-2019 reporting year.

## Compliance Pathways by Watershed Geographic Area: Middle SMR Subwatershed (Riverside County Copermittees)

Compliance Pathways		2023 Goal	2018-2019 Status
<b>Receiving Water</b> Reduction in Dry Weather Nutrient Loading	Assess dry weather loading in the Santa Margarita River at the base of the Middle SMR Subwatershed	10% Reduction in Total N & P	Pathway under evaluation
<i>Or</i>			
<b>Receiving Water</b> Attainment of Estuary Targets	Assess receiving water conditions in the Estuary	Not yet determined	Pathway under evaluation
<i>Or</i>			
<b>MS4 Discharges</b> Reduction in Non-Stormwater Flows	Assess reductions in non-stormwater flows	10% Reduction	Pathway under evaluation
<i>Or</i>			
<b>MS4 Discharges</b> Reduction in Dry Weather Nutrient Loading	Assess load reductions in dry weather	10% Reduction in Total N & P	Pathway under evaluation
<i>Or</i>			
<b>Achieve Final Goal</b> Demonstrate Exceedances are due Sources Outside of Agency Control	Source investigations	Not yet determined	Pathway under evaluation
<i>Or</i>			
<b>WQIP Implementation</b> Implement the Accepted WQIP	Assess implementation of WQIP strategies	Met for FY 2019: Strategies proposed in the WQIP were implemented. See Section 2.2 and Appendix 2 for additional details.	



## Lower SMR Subwatershed (San Diego County)

Compliance Pathways		2023 Goal	2018-2019 Status
<b>MS4 Discharges</b> Eliminate Anthropogenic Dry Weather Discharge from MS4 Outfalls	Rainbow Park project completion	Turf replacement	Met: Project completed
	Percent reduction in aggregate flow volume	25% baseline flow reduction	In progress
<i>Or</i>			
Alternative TMDL Compliance Pathways		2038 Goal	2018-2019 Status
<b>Receiving Water</b> Achieve Santa Margarita River Estuary Targets	Algal biomass level in SMR Estuary	Primary numeric target	Compliance pathway not used
	<i>Or</i>		
	Algal biomass level in SMR Estuary AND SQO benthic community structure	Secondary numeric target	Compliance pathway not used
<i>Or</i>			
<b>TMDL Alternative Pathway</b> Reduction in Nutrient Load	Percent nutrient load reduction	76% Reduction	Compliance pathway not used
<i>Or</i>			
<b>TMDL Alternative Pathway</b> Attainment of Load Allocations	Nutrient loading in the SMR Estuary	Not yet determined	Compliance pathway not used
<i>Or</i>			
<b>Achieve Final Goal</b> Demonstrate Exceedances are from Non-Controllable Sources	Documentation that exceedances of the targets are due to non-controllable sources		Compliance pathway not used
<i>Or</i>			
<b>Order Implementation</b> Implement Applicable Orders to Attain Allocations	Demonstrate that proposed management actions are implemented through mechanisms defined in applicable Orders (Phase I MS4 WQIPs, Agricultural Discharger Water Quality Restoration Program, etc.)		Compliance pathway not used

Photo: Performing stream rating at Santa Margarita River at De Luz Road



# Rainbow Creek (San Diego County)

Compliance Pathways		2021 Goal	2018-2019 Status	
<b>WQIP Implementation</b> Implement the Accepted WQIP	Implementation of a WQIP that incorporates the required BMPs and performing specific monitoring and assessments to demonstrate compliance		Compliance pathway not used	
	<i>Or</i>			
<b>Receiving Water</b> Meet Receiving Water Nutrient Limitations	Nitrate (as N)	10 mg/L	Compliance pathway not used	
	Total Nitrogen	1 mg/L		
	Total Phosphorus	0.1 mg/L		
<i>Or</i>				
<b>MS4 Discharges</b> Meet Final Effluent Limitations as Concentrations in Storm Drain	Nitrate (as N)	10 mg/L	Compliance pathway not used	
	Total Nitrogen	1 mg/L		
	Total Phosphorus	0.1 mg/L		
<i>Or</i>				
<b>MS4 Discharges</b> Eliminate Storm Drain Discharges	Reduction in anthropogenic discharges from storm drain outfalls to Rainbow Creek	100% Reduction	Compliance pathway not used	
<i>Or</i>				
<b>MS4 Discharges</b> Meet Final Effluent Limitations Expressed as Annual Allowable Loads	Total Nitrogen	Commercial Nurseries	9.5 kg/yr	In progress: See Section 2.4 for additional details and proposed modifications to the allowable loads.
		Parks	0.8 kg/yr	
		Residential Areas	13.9 kg/yr	
		Urban Areas	9.8 kg/yr	
	Total Phosphorus	Commercial Nurseries	0.9 kg/yr	
		Parks	0.08 kg/yr	
		Residential Areas	1.4 kg/yr	
		Urban Areas	1.0 kg/yr	

Photo: Tributary to Rainbow Creek





## Strategy Highlights

During fiscal year (FY) 2018-2019, strategy focus areas included:

- Eliminating illicit discharges and illegal connections (ICID) to effectively prevent non-stormwater discharges from entering the MS4.
- Creating a monitoring plan and quality assurance plan in response to the 2019 Investigative Order (R9-2019-0007) for the SMR Estuary to demonstrate progress in reducing eutrophication resulting from excessive nutrients.
- Planning structural best management practice (BMP) projects to reduce flows and pollutants.
- Participating in the Santa Margarita River Nutrient Initiative Group (SMRNIG), addressing nutrient issues in the SMR Watershed. The SMRNIG is piloting alternative approaches to establish biostimulatory targets based on recent science. During FY 2018-2019, the SMRNIG held quarterly meetings and initiated Phase III of the technical work. Phases I and II provided key information used by the San Diego Water Board in developing the 2019 Investigative Order. The Riverside County Flood Control and Water Conservation District took over administering, coordinating, and providing a facilitator for the SMRNIG meetings.

**1,500**

Linear feet of new intermittent channel and seasonal wetlands designed for completion in FY 2020



**211**

Inspections of commercial nurseries and greenhouse operations were completed resulting in 45 enforcement actions



**5,631**

Residents were reached in the education and outreach program for proper residential composting techniques



**2,821**

Acres will have runoff treated by the Regional Detention Basin and four BMP retrofits



**154**

Non-stormwater discharges investigated; 101 sources of illicit discharges or connections identified and 87 eliminated



For more information on the Copermittees' Strategies and Accomplishments during the 2018-2019 reporting year see Report Section 2 and Appendix 2.

## Middle SMR Subwatershed Strategies

### Public Education and Outreach

The Riverside County Watershed Protection Program and Copermittees developed and began implementing a Five-Year Strategic Plan for Public Education and Outreach. Goals of the plan include complying with the educational requirements of the Permit, engaging with the community to foster a commitment to improve water quality, implementing measures to further modify residential behavior toward dry-weather flows, and engaging residents in litter-reduction campaigns. During FY 2018-2019, education and outreach to schools included 19 presentations at six schools in the watershed, reaching 685 students in grades K-8.

### Upper Santa Margarita River Watershed Storm Water Resource Plan (USMRW SWRP)

The 2019 USMRW SWRP is an integrated plan that focuses on regional watershed-based stormwater priorities and on developing projects with multiple benefits. The purpose of the SWRP is to guide development, facilitate implementation, and improve funding eligibility of stormwater projects that will provide benefits such as improved water quality, augmented water supply, and reduced flood risk. The SWRP also acts as a vehicle for agency collaboration for development of regional stormwater and dry weather runoff solutions. The SWRP is closely tied to the WQIP and the Integrated Regional Water Management Plan.

## Illicit Discharge Detection and Elimination (IDDE) and Major MS4 Outfall Monitoring

All Copermittees implemented programs to identify and eliminate prohibited discharges to help meet TMDL Alternative goals. The Copermittees also monitored major MS4 outfalls during dry weather and conducted IDDE investigations as needed to help identify sources of prohibited discharges. The Riverside Copermittees received letters this year describing findings from a San Diego Water Board program audit related to non-stormwater flow prohibitions with a focus on irrigation runoff. Dry weather major MS4 outfall monitoring from 2018-2019 shows that fewer than 20 of almost 200 outfalls had measurable flow in 2018-2019. The Copermittees will continue to implement improvements in response to the letter comments regarding the prohibition of irrigation runoff, including website updates, educational materials, and ordinance updates.

## Lower SMR Subwatershed and Rainbow Creek Strategies

### Agricultural Strategies

The County of San Diego's Department of Agriculture, Weights, and Measures (AWM) inspects commercial nurseries and greenhouse facilities applicable to the MS4 discharges within the County of San Diego's unincorporated area. This focuses on facilities that are designated as a high threat to water quality. AWM inspections often include outreach on stormwater ordinance requirements and information on Agricultural Orders, as well as opportunities for water conservation rebates and incentives offered by other agencies.

The County is enhancing specific strategies to help achieve water quality improvement goals in the Rainbow Creek Watershed such as increasing inspection frequencies of commercial agricultural facilities, focused investigative efforts on source identification, and raising awareness and outreach of nutrient issues and applicable BMPs.

In collaboration with AWM, the County Watershed Protection Program designed a Rainbow Creek Nutrient Reduction BMP flyer during the reporting period. The flyer uses community based social marketing principles to convey BMP information to help agricultural businesses reduce nutrient contributions to Rainbow Creek.

### Rainbow Park Turf Replacement Project

To reduce nutrient loads from park land use, the County of San Diego completed a 1.7-acre turf conversion project of grass on a multi-use sports field to artificial turf with an underdrainage system. This project reduces total nitrogen loads by 0.27 kilograms per year and total phosphorus loads by 0.01 kilograms per year, supporting the required Rainbow Creek Nutrient TMDL load reduction from park uses. This project also allows for year-round use of the field and eliminates water use and associated costs for the multi-use sports field.

### BMP Retrofits and Stream Restoration

To achieve compliance with the Nutrient TMDL and to meet the final WQIP goals by December 31, 2021, the County continues to construct water quality improvement projects and to investigate additional opportunities to construct projects that will reduce nutrient loads to Rainbow Creek. Preliminary design was completed and funding was secured for four BMP retrofits consisting of lined, subsurface wetland channels and bioretention swales within segments of the County's road drainage system (example shown to right). These four BMP retrofits are designed to treat runoff from approximately 511 acres and 68% of the total MS4 outfall drainage area within the Rainbow Creek Watershed. Public-private partnerships are also being actively pursued to add 100-foot riparian buffers, creek restoration, or re-vegetation activities near Rainbow Creek.



*Example Rendered Subsurface Wetland Channel During Wet Weather*

## MONITORING AND ASSESSMENT

### Rainbow Creek Nutrient Monitoring

#### Rainbow Creek Nutrient TMDL Compliance Monitoring

Nutrient TMDL compliance monitoring was conducted at 12 receiving water locations and two other compliance sites in the Rainbow Creek Watershed, which is located within the Lower SMR Subwatershed. Measured concentrations in 112 samples of total nitrogen and total phosphorus were above the respective receiving water limitations with the exception of one nitrogen sample and two phosphorus samples during dry weather sampling.

#### Dry Weather MS4 Outfall Monitoring

Dry weather MS4 monitoring data were collected at outfalls within the County of San Diego jurisdiction that have a potential to discharge to Rainbow Creek. This monitoring is not required by the Permit or the TMDL, but is performed to determine whether progress is being made toward MS4 compliance pathway options of the Nutrient TMDL. During 2018-2019, nearly half of the 21 monitoring sites were dry, and the majority of the samples were collected at only three locations due to lack of flow. Nutrient concentrations were above TMDL effluent limitations for total nitrogen in 25 of 31 samples and for total phosphorus in 28 of 31 samples.

### Special Studies

Special studies are conducted to provide insight to effectively address pollutants and/or stressors that cause or contribute to HPWQCs. The Copermittees use data from special studies to investigate and understand sources, target jurisdictional strategies, and ultimately to facilitate achieving compliance with the numeric goals outlined in the WQIP.

#### Santa Margarita River Nutrient Initiative Group

SMR Copermittees will continue to support the study effort under the SMRNIG by including in-kind monitoring at long-term receiving water stations during a dry weather monitoring event to collect additional parameters relevant to the Nutrient Numeric Endpoint framework, an alternative regulatory approach advocated by State Water Board staff and USEPA Region 9. During the 2018-2019 monitoring year, no work was planned for this special study. Monitoring is scheduled for WQIP year 3 (2020-2021) as described in the schedule of the WQIP Monitoring and Assessment Program. Future monitoring is intended to coincide with a dry weather monitoring event at the long-term receiving water stations.

#### Rainbow Creek Watershed Microbial Source Tracking - Dry Weather

The study which began in 2019 includes collection of dry weather samples from outfalls and receiving waters in the Rainbow Creek Watershed for analysis of fecal indicator bacteria and human-associated fecal marker HF183. This study supports the Rainbow Creek Nutrient TMDL, which identified septic systems as contributors of total nitrogen loading. Once the monitoring program has been completed, the results will be used to determine whether human sources of fecal contamination are present and their spatio-temporal patterns, and if patterns exist, to potentially identify areas with suspected septic system influence on dry weather flows and associated nutrient loading. At one outfall, a follow-up study was conducted to investigate sources of HF183 detections.

#### 2019 Post-Fire Stormwater Monitoring - Tenaja Fire

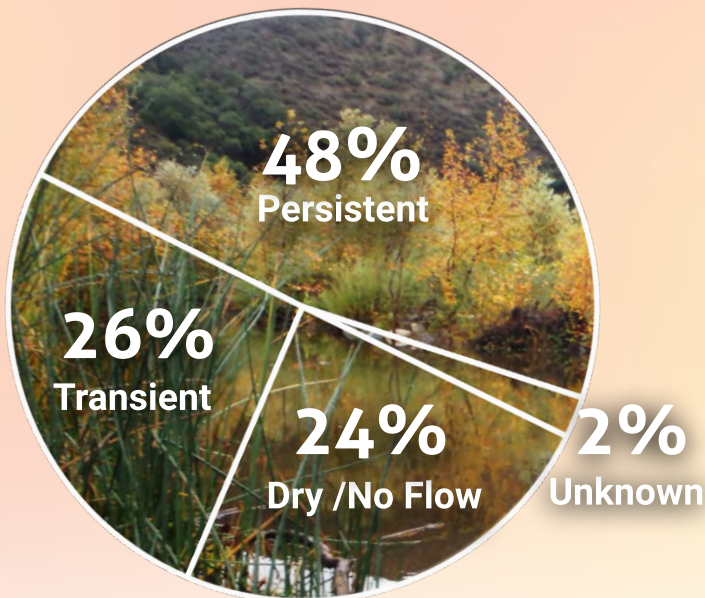
Monitoring of stormwater discharges was initiated for the area affected by the 2019 Tenaja Fire that burned approximately 1,939 acres in the Middle and Lower SMR Subwatersheds. The study was designed to assess contaminant concentration and flux by sampling stormwater runoff from the terminal end of burned catchments and compare the data to reference sites, as well as assess the potential post-fire water quality impacts with a focus on the HPWQCs in the WMA.



# MONITORING AND ASSESSMENT

## Storm Drain Outfall Monitoring

### Dry Weather



Dry weather field screening includes visual observations at MS4 outfalls regarding flowing or ponded water, or dry conditions; flow rate estimation; and identification of potential sources. During the 2018-2019 monitoring year, 24% of the outfalls visited were determined to be dry and 48% were flowing or had ponded water during the last three consecutive visits. For those outfalls with observed flow, 67% of the flows were estimated at less than one gallon per minute (trickle flow).

This monitoring year was the first year of MS4 outfall dry weather analytical sampling under the WQIP. Many outfalls had no flow or lacked sampleable flow. Of 10 outfalls that were sampled twice, both total phosphorus and total nitrogen concentrations exceeded non-stormwater action levels (NALs) two times at all stations. One outfall, which was sampled once due to ponded conditions at the second event, exceeded the NAL for total phosphorus.

### 519 Outfall Field Screenings

**30** outfalls visited twice for highest priority persistent flow discharge monitoring to better understand and target sources of persistent dry weather flow.



### Wet Weather



Photos: Wet weather monitoring equipment installed at outfalls.

During the 2018-2019 monitoring year, wet weather MS4 outfall discharge monitoring was conducted once at five locations in the Middle SMR Subwatershed and one location in the Lower SMR Subwatershed (i.e., one outfall per Copermittee). This was the third year of monitoring at all six locations. Composite samples were analyzed for constituents contributing to the HPWQC, 2014/2016 303(d) List impairments, and constituents with stormwater action levels (SALs) Flow was monitored to estimate pollutant loads.

The outfall located in Rainbow Creek Watershed (HST01) exceeded nutrient SALs and Rainbow Creek Nutrient TMDL final effluent limitations. No other outfalls exceeded SALs for nutrients.

For more information on the Monitoring and Assessment Program see Report Section 3 and Appendix 4.



# Water Quality Improvement Plan Adaptive Management

*Santa Margarita Estuary at mouth*

The SMR WMA Copermittees use an adaptive management process to evaluate and make adjustments to their WQIP as needed to improve strategies that reduce pollutants from MS4 outfalls. Triggers for adaptive management include Monitoring and Assessment Program data, new regulatory actions, requests or recommendations from the San Diego Water Board, public input, and progress to goals assessment results. Of these triggers, adaptive management following this first year of WQIP implementation is largely driven by new regulatory considerations and requests, rather than assessments of programmatic and monitoring results. During the 2018-2019 reporting year, the Copermittees received several comment letters from the San Diego Water Board, which are addressed in this 2018-2019 WQIP Annual Report as follows:

- Updates to WQIP elements based on requests in the 2017-2018 WQIP Annual Report review letter dated July 19, 2019 are generally not required until January 31, 2021 or later. However, several items were identified to be addressed in this Annual Report. These items, detailed in Appendix 5, include submittal of the Final HMP Effectiveness Assessment and HMP data for the Middle SMR Subwatershed, submittal of this WQIP Annual Report, submittal of program changes to address inspection and enforcement deficiencies for agricultural facilities as a result of Rainbow Creek Nutrient TMDL monitoring trends, and requests for additional information (i.e., outfall prioritization processes used by the Copermittees, tabulation of structural BMP information, and a monitoring completeness check). In addition, the letter specifies that the WQIP will be updated to incorporate the requirements of the 2019 Investigative Order, including the Monitoring and Assessment Workplan, by January 31, 2021.
- In response to the Compliance Pathway for Rainbow Creek TMDL letter dated September 4, 2019, updates to goals associated with Rainbow Creek Compliance Pathway 5 are proposed by the County of San Diego and enhancements to agriculture focused strategies have been identified.
- In response to the Program Audit letters regarding irrigation runoff (received in early 2019), website updates, educational materials, and ordinance updates are underway as needed. Responses to the audits are provided by Copermittee in Appendix 2.

Additional regulatory actions that may require updates to the Monitoring and Assessment Program include the Statewide Bacteria Provisions and Trash Amendments. For details, see Section 4 and Appendix 5.



**Bioassessment Monitoring**