JASON E. UHLEY
General Manager-Chief Engineer

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951.955.1200
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www.rcflood.org

RIVERSIDE COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT

January 29, 2021

Via Electronic Submittal to: SanDiego@waterboards.ca.gov

Mr. David Gibson, Executive Officer
Northern Watershed Unit
CRWQCB-San Diego Region
2375 Northside Drive, Suite 100
San Diego, CA 92108

Dear Mr. Gibson:

Re: 2019-20 WQIP Annual Report for the Santa Margarita River Watershed Management Area: Order No. R9-2013-0001 (as amended); ERyan: CW# 794828

The National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System Permit: Board Order No. R9-2013-0001, as amended by R9-2015-0001 and R9-2015-0100 (Provision F.3.b and Attachment B) requires the Co-permittees for each Watershed Management Area (WMA) to annually submit a WQIP Annual Report (Report). This year, as directed by the San Diego Water Board, the Co-permittees are accomplishing the electronic submittal by posting the Report on our Regional Clearinghouse webpage and herein providing a link to the Report. The 2019-20 Report for the Santa Margarita River (SMR) WMA has been posted to:

http://content.rcflood.org/npdes/SMRWMA.aspx.

The 2019-20 Report is submitted/posted to the website on behalf of the SMR WMA Co-permittees (the Cities of Murrieta, Temecula, and Wildomar, the Counties of Riverside and San Diego, and the Riverside County Flood Control and Water Conservation District). The Co-permittees have provided certification statements for the Report pursuant to 40 C.F.R Section 122.41(k), which are attached to this letter. The Report has been posted with the appendices and attachments as separate, downloadable files. Individual Place ID and WDID numbers for each Co-permittee are listed below in the c section of this letter.

The Report includes these key components:

1. Appendix 2 includes the following Co-permittee-specific Jurisdictional Runoff Management Program (JRMP) information as applicable:
    a. Completed JRMP Annual Report Forms pursuant to Provision F.3.b.(3)(e);
    b. Fiscal Analysis pursuant to Provision E.8.c;
    c. Proposed modifications or updates to the Co-permittee's JRMP document pursuant to Provision F.2.a.(3); and
    d. Updates to the WQMP (BMP Design Manual) pursuant to Provision F.2.b.(2);
2. Appendix 4 (Attachment 4J): Monitoring and Assessment Results) includes the monitoring results, and analytical results in the same Excel format as submitted to CEDEN, as requested by the letter, dated July 19, 2019, sent to the Co-permittees by the San Diego Water Board: Annual Report Review for Year 2017-2018: Santa Margarita River Watershed Management Area Water Quality Improvement Plan (WQIP)[1]. These results are posted as separately downloadable files.

[1] Item 11.c in the letter states: "In all future annual report submittals beginning with January 31, 2020, the San Diego Water Board is requiring Co-permittees to provide electronic copies of all monitoring results as a separate submittal turned in concurrently with the WQIP Annual Report. For each WMA, provide a copy of the analytical results for all outfalls and receiving waters in the same Excel format as submitted to CEDEN."

3. Appendix 5 addresses adaptive management of the WQIP and includes these attachments:
   a. Attachment 5A (Santa Margarita River WMA WQIP 2017-2018 Annual Report Review Letter Responses) addresses the adaptive management topics from the WQIP Annual Report Review Letters.
   b. Attachment 5B includes the updates to the SMR Water Quality Improvement Plan, which has been updated to incorporate the final numeric targets, strategies, monitoring and assessment activities, schedules and reporting as specified in the Investigative Order No. R9-2019-0007[2].

If you have any questions regarding this report, please feel free to call Aldo Licitra at 951.955.0842 or me at 951.955.0843.

Very truly yours,

Matt Yeager

Digitally signed by Matt Yeager
DN: cn=Matt Yeager, o=Riverside County Flood Control and Water Conservation District, ou=Watershed Protection Division, email=myeager@rivco.org, c=US
Date: 2021.01.27 12:23:34 -08'00'

MATT YEAGER
Senior Flood Control Planner

Attachments:
(6 pages) pdf copies of the Certification Statements for the WQIP Annual Report and attached WQIP Update for each of the SMR Co-permittees: Counties of Riverside and San Diego; Cities of Murrieta, Temecula, and Wildomar; and the Riverside County Flood Control and Water Conservation District.

c: Erica Ryan, San Diego Water Board
Aldo Licitra, Riverside County Flood Control and Watershed Conservation District; Place ID 252906; WDID 9 0000512S4
Rania Odenbaugh, County of Riverside; Place ID 252901; WDID 9 0000512S1
Scott Bruckner, County of Riverside
Jan Bulinski, Riverside County Transportation Department
Brianna Martin, County of San Diego; Place ID 255223; WDID 9 0000510S1
Mai Son, City of Murrieta; Place ID 214653; WDID 9 0000512S3
Stuart Kuhn, City of Temecula; Place ID 214666; WDID 9 0000512S2
Jason Farag, City of Wildomar; Place ID 762396; WDID 9 0000512S5

MY:mc
P8/236481

[2] An Order Directing the Cities of Murrieta, Temecula, and Wildomar, the Counties of San Diego and Riverside, the Riverside Flood Control and Water Conservation District, and the United States Marine Corps Base Camp Pendleton to Design and Implement a Water Quality Improvement Monitoring and Assessment Program for Eutrophic Conditions in the Santa Margarita River Estuary and Watershed, California.

CERTIFICATION

SANTA MARGARITA RIVER WATERSHED MANAGEMENT AREA
WATER QUALITY IMPROVEMENT PLAN
ANNUAL REPORT
FOR FISCAL YEAR 2019-2020

AND

WATER QUALITY IMPROVEMENT PLAN UPDATE

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Matt C.

MATT YEAGER, D. Env
Senior Flood Control Planner
Riverside County Flood Control
And Water Conservation District

1-19-21

DATE

CERTIFICATION

SANTA MARGARITA RIVER WATERSHED MANAGEMENT AREA
WATER QUALITY IMPROVEMENT PLAN
ANNUAL REPORT
FOR FISCAL YEAR 2019-2020

AND

WATER QUALITY IMPROVEMENT PLAN UPDATE

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RANIA ODENBAUGH
Deputy County Executive Officer
County of Riverside

1/26/21
DATE

County of San Diego

SARAH E. AGHASSI
DEPUTY CHIEF ADMINISTRATIVE OFFICER

LAND USE AND ENVIRONMENT GROUP
1600 PACIFIC HIGHWAY, ROOM 212, SAN DIEGO, CA 92101
(619) 531-6256 • Fax (619) 531-5476
www.sdcounty.ca.gov/lueg

STATEMENT OF CERTIFICATION

SANTA MARGARITA RIVER WATERSHED MANAGEMENT AREA WATER QUALITY IMPROVEMENT PLAN ANNUAL REPORT FOR FISCAL YEAR 2019-2020 AND WATER QUALITY IMPROVEMENT PLAN UPDATE PROVISION B SUBMITTAL IN ACCORDANCE WITH PROVISION F.2.C.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations [40 CFR 122.22(d)].

Sarah Aghassi Digitally signed by Sarah Aghassi Date: 2021.01.15 14:56:37 -08'00'

SARAH E. AGHASSI
Deputy Chief Administrative Officer
Land Use and Environment Group
County of San Diego

January 15, 2021
Date

CERTIFICATION

SANTA MARGARITA RIVER WATERSHED MANAGEMENT AREA
WATER QUALITY IMPROVEMENT PLAN
ANNUAL REPORT
FOR FISCAL YEAR 2019-2020

AND

WATER QUALITY IMPROVEMENT PLAN UPDATE

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Robert K. Moehling

ROBERT K. MOEHLING, P.E.
Director of Public Works / City Engineer
City of Murrieta

January 22, 2021

DATE

CERTIFICATION

SANTA MARGARITA RIVER WATERSHED MANAGEMENT AREA
WATER QUALITY IMPROVEMENT PLAN
ANNUAL REPORT
FOR FISCAL YEAR 2019-2020

AND

WATER QUALITY IMPROVEMENT PLAN UPDATE

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Patrick Thomas
Director of Public Works/City Engineer

Date 1/26/2021

Dustin Nigg, Mayor, Dist. 2
Ben J. Benoit, Mayor Pro Tem, Dist. 1
Bridgette Moore, Council Member, Dist. 4
Joseph Morabito, Council Member, Dist. 3
Marsha Swanson, Council Member, Dist. 5

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Wildomar, CA 92595
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CERTIFICATION

SANTA MARGARITA RIVER WATERSHED MANAGEMENT AREA
WATER QUALITY IMPROVEMENT PLAN
ANNUAL REPORT
FOR FISCAL YEAR 2019-2020

AND

WATER QUALITY IMPROVEMENT PLAN UPDATE

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1/27/2021

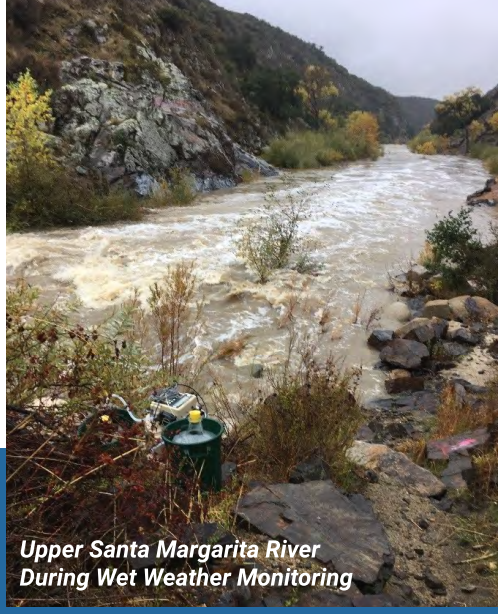
DANIEL A. YORK, P.E.
Assistant City Manager,
Public Works Director/City Engineer
City of Wildomar

DATE

SANTA MARGARITA RIVER
Watershed Management Area

2019-2020 Water Quality Improvement Plan Annual Report

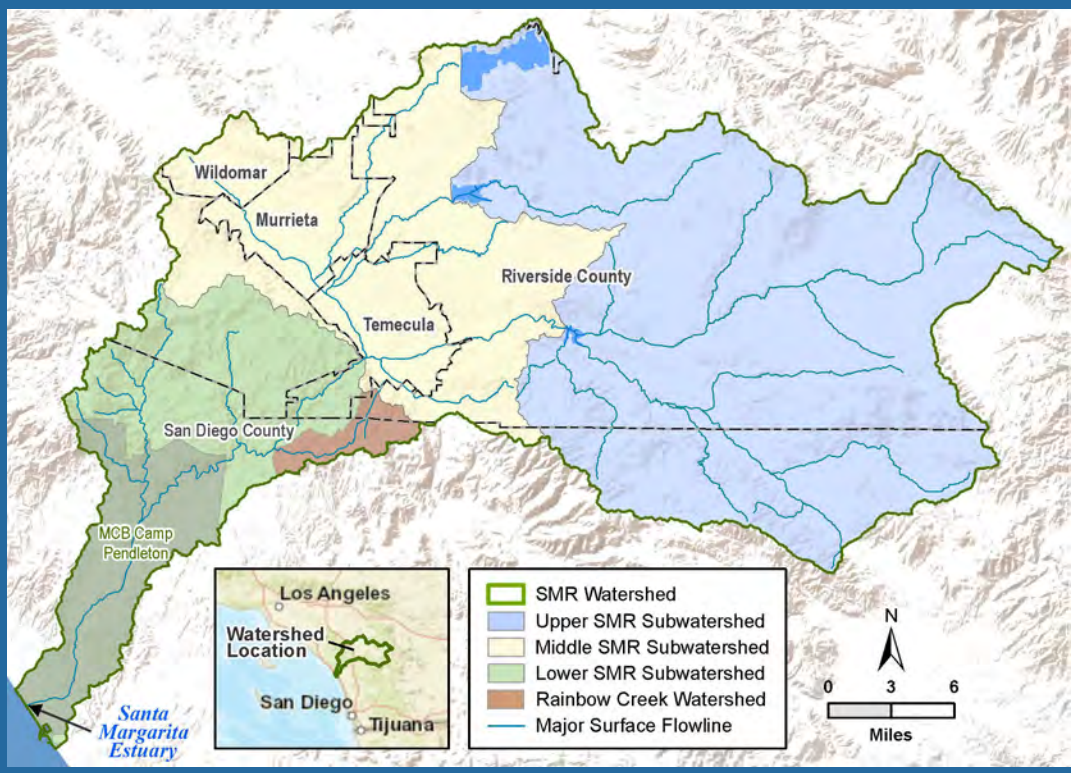
Executive Summary



Upper Santa Margarita River During Wet Weather Monitoring

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 2019-2020 reporting year, this executive summary highlights WQIP implementation progress and strategies. The full report provides details on program implementation including monitoring and adaptive management elements.



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. Goals have not yet been established for the Upper SMR Subwatershed because a HPWQC has not yet been assigned due to insufficient data. Water quality data are scarce due to historically ephemeral conditions. However, a focused data collection effort has been initiated and strategies are being implemented in this Subwatershed.

Progress toward goals based on implementation of strategies and other selected compliance pathways is shown by Subwatershed area in the table below. No goals were due to be achieved in the 2019-2020 year.

Summary of Progress Toward Achieving WQIP Goals

Spatial and Temporal Extent	Regulatory Driver	Goal	Due Date	Selected Compliance Pathway	Status
Upper SMR Subwatershed	TBD	TBD - Copermittees in the Upper Watershed are collecting additional data. Goals will be developed if a HPWQC is identified after data collection and analysis is completed.			
Middle SMR Subwatershed[1] (Dry Conditions)	SMR Estuary TMDL Alternative and WQIP[3]	Interim	Fiscal Year (FY) 2023	WQIP Implementation through strategies in the JRMPs (Pathway 6). See Annual Report Section 2, Table 2-3.	Met for FY19-20. WQIP strategies were implemented and will continue to be
Lower SMR Subwatershed[2] (Dry Conditions)		Interim	FY 2023	Reduce the baseline aggregate flow volume by 25% (Pathway 1). See Annual Report Section 2, Table 2-4.	In progress
				Turf replacement in Rainbow Park (Pathway 1). See Annual Report Section 2, Table 2-4.	Achieved. Project completed (1.7 acres of grass replaced with artificial turf)
Rainbow Creek[2] (Year Round)	Rainbow Creek Nutrient TMDL	Final	December 31, 2021 (TMDL Final Goal)	WQIP Implementation (Pathway 1). See Annual Report Section 2, Table 2-13 and Appendix 5B to Appendix 5.	In progress

1. Copermittees responsible are County of Riverside, Riverside County Flood Control and Water Conservation District, City of Murrieta, City of Temecula, and City of Wildomar.

2. Copermittee responsible is County of San Diego.

3. The Riverside County Copermittees and the County of San Diego are all responsible parties for meeting the goals related to the SMR Estuary TMDL Alternative. The WQIP has different sets of goals for these two groups, the actions taken by the Riverside County Copermittees and the County of San Diego are both designed to meet the SMR Estuary TMDL Alternative objectives, as set forth in Investigative Order No. R9-2019-0007.

Regional Strategy Implementation

Strategies implemented regionally within the WMA during FY19-20 included:

- Irrigation runoff reduction efforts through overwatering prevention webpages, creation of an overwatering doorhanger, and public reporting tools.
- Identification and elimination of non-stormwater runoff through implementation of robust illegal discharge detection and elimination (IDDE) programs.
- Implementation of the Five-Year Public Education and Outreach Strategic Plan, developed proactively by the Copermitees, including outreach to students and businesses; creation of a public education strategic task force; and use of digital news and social media to engage citizens and stakeholders.
- Increased opportunities for funding water quality projects in accordance with the Copermittees' new Upper Santa Margarita River Watershed Storm Water Resource Plan.

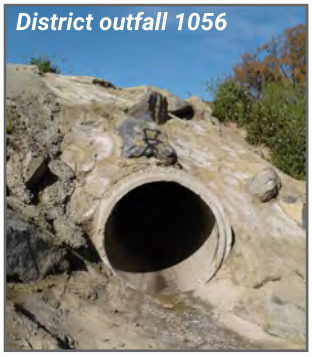
Doorhanger created by the District for Riverside Copermittees. (County of San Diego also has a doorhanger).

- Participation by both Riverside Copermittees and County of San Diego in the Santa Margarita River Nutrient Initiative Group (SMRNIG), addressing nutrient issues in the SMR Watershed. The technical work is currently in Phase III and expects to identify potential restoration actions to improve biointegrity, reduce eutrophication, and calculate load and waste load allocations required to meet the proposed biostimulatory targets.

Strategy Highlights by Copermittee

A strategy implementation highlight is provided below for each Copermittee. Additional details and other strategies implemented are provided in Section 2 and Appendix 2 of this Annual Report. Copermittees implemented their jurisdictional programs with adaptations as needed due to the COVID-19 pandemic.

District outfall 1056



Riverside County Flood Control and Water Conservation District (District)

At a frequency greater than required by the Permit, the District conducted field screening at District outfalls during the 2019-2020 reporting year to identify and eliminate illegal discharges and reduce dry weather flow. Accessible major outfalls with the presence of flow at the time of inspections were prioritized for additional field screening during dry weather as a targeted approach to flow source tracking. All identified dischargers were notified of the discharge prohibitions, either through direct contact or provided with educational materials, to assist in correcting the condition causing the discharge.

County of Riverside

The public can now report pollutant issues with the County's new "RivCo" mobile application (app). The app (image shown to right) facilitates public reporting and includes options to report illegal dumping and necessary maintenance to storm drains. Service requests can also be submitted on the County of Riverside's website.

City of Murrieta

To ensure the contractors are prepared to implement appropriate best management practices (BMPs) prior to the rainy season, the City distributed public information letters to the responsible parties of active construction sites. The letters emphasized the City's expectations for compliance and compliance areas that require additional attention to reduce sources of sediment and other construction-related pollutants.

City of Temecula

In response to Trash Amendments requirements, the City of Temecula initiated the installation of media filtration devices (image to right) that provide treatment for nutrients and other pollutants in addition to trash. Because of this additional treatment, the City generates alternative compliance credits that can be used for its own capital improvement projects or that it can sell to private developers. Therefore, in addition to providing additional water quality benefits as compared to installing only the basic trash controls, this approach generates a funding source to pay for the BMP installation and maintenance. The City also collaborated with community, local, and federal agencies on the Meadowview Creek Restoration Project, which is improving public safety and water quality.

City of Wildomar

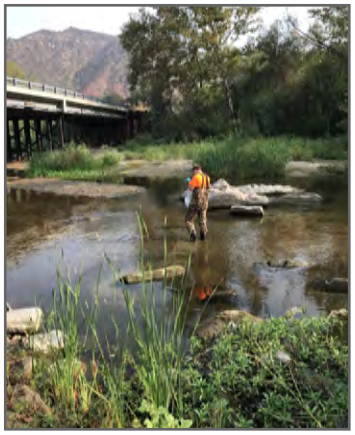
The City of Wildomar has been working with Home Owner Associations (HOAs) to eliminate dry weather flows. During the 2019-2020 reporting year, the City sent specific letters and an Irrigation Runoff BMP fact sheet to multiple HOA Managers throughout the City to highlight the City's recent National Pollution Discharge Elimination System ordinance update and the over-irrigation prohibition. The City requested that HOAs share the information with their communities to inform residents. Based on FY19-20 dry weather MS4 outfall monitoring, many of the City's major outfalls remained dry.

County of San Diego

Example Rendered Subsurface Wetland Channel During Wet Weather

To meet Rainbow Creek Nutrient TMDL requirements, the County of San Diego is implementing and planning structural and non-structural BMPs. The County is pursuing stream restoration and BMP retrofits, or their equivalent, consisting of subsurface wetland channels and bioretention swales within segments of the County's road drainage system in the Rainbow Creek Watershed. The Rainbow Creek Water Quality Improvement Project consists of four planned BMP retrofits. Preliminary design was completed, and funding was secured for these four BMP retrofits. The figure to the right is a rendering of the proposed subsurface wetland channels during wet weather. The BMP retrofits will treat runoff from approximately 324.6 acres based on the drainage areas of four MS4 outfalls. During FY19-20, project design was initiated and the 30% design deliverables were in process of internal review. The goal for FY20-21 is to complete the project design, obtain Board of Supervisor approval for the Bid and Award of construction contract, and begin coordination of utility relocations. Project construction is expected to begin in FY21-22. Total project costs (soft costs and construction costs) are $11.4 million.

MONITORING AND ASSESSMENT



Monitoring was conducted during the 2019-2020 reporting year in accordance with the WQIP and Permit. The table below provides an overview of the monitoring accomplished including long term receiving water (LTRW) monitoring, Nutrient TMDL monitoring, MS4 outfall field screening and discharge monitoring, progress to goals monitoring and special studies. By conducting multiple types of monitoring, the Copermittees collect data to evaluate progress toward achieving numeric goals and determine if modifications to jurisdictional and WMA strategies or monitoring activities are necessary.

Section 3 of this Annual Report provides high level results for the HPWQCs. Monitoring methods and detailed results are presented in Appendix 4 and its attachments. Data are assessed per Permit requirements including comparison of receiving water to water quality objectives, Nutrient TMDL receiving water limitations for Rainbow Creek, dry weather outfall discharge to non-stormwater action levels and stormwater discharge to stormwater action levels. Trend results and estimates of discharge volumes and loads for monitored outfalls are also provided as required.

Monitoring Program	Monitoring Component	2019-2020 Monitoring Requirement	Completed?
Receiving Water Monitoring	Long Term Receiving Water Monitoring (LTM)	3 Wet weather events at three LTRW stations[1] 3 Dry weather Events at one LTRW station[2]	✓ 1
	Rainbow Creek Nutrient TMDL Monitoring	County of San Diego: Monthly dry weather sampling at 13 TMDL compliance stations if measurable flow is present	✓
	SMC Bioassessment Monitoring Program	Two trend and two condition sites	✓
MS4 Outfall Monitoring	Wet Weather	By Copermittee: Wet weather sampling at one major MS4 outfall during one storm event of the wet weather season	✓
	Dry Weather	By Copermittee: Field screening at 80% of outfalls 2x per year, dry weather discharge monitoring at five highest priority outfalls 2x per year if measurable flow is present. Flow source investigations as needed.	✓
	Rainbow Creek Progress to Goals Monitoring	County of San Diego: Dry weather monitoring at 21 outfalls in the Rainbow Creek Watershed (not required by Permit or TMDL)	✓
Special Studies		At least two special studies focused on HPWQCs 9 special studies were completed or remain ongoing	✓

1. Per the Monitoring and Assessment Program (MAP) of the WQIP, wet weather monitoring at all three LTRW monitoring stations was conducted for all three events required during the Permit term. The Upper SMR Subwatershed station did not flow during five monitored storm events. Monitoring will be conducted during the 2020-2021 year in further attempts to collect samples using site specific mobilization criteria recently developed for this LTRW monitoring station.

2. The County of San Diego conducted dry weather LTRW monitoring at SMR-MLS-2 in the Lower SMR Subwatershed during the 2019-2020 monitoring year. Dry weather monitoring also included hydromodification monitoring and bioassessment monitoring. The Riverside Copermittees will conduct dry weather monitoring, hydromodification monitoring and bioassessment at their two LTRW monitoring stations during the 2020-2021 monitoring year per the WQIP MAP.

Special Studies

Special studies are focused on the HPWQCs and address data gaps and/or develop information necessary to more effectively address the pollutants and/or stressors that cause or contribute to HPWQCs. These studies supplement Permit prescribed receiving water and storm drain outfall monitoring; they provide additional information about dry weather flows, likely sources of nutrients and spatial and temporal patterns. The Copermittees use data from special studies to improve and adapt the implementation of their jurisdictional strategies and refine or develop new special studies, and ultimately to achieve compliance with the numeric goals outlined in the WQIP. The Copermittees are required to conduct two special studies during the Permit term. During the 2019-2020 reporting year, the Copermittees completed or continued ten special studies, which are listed below. These special studies are summarized in Appendix 4 and special study reports are provided in Attachment 4I:

- Dry Weather MS4 Outfall Monitoring in the Rainbow Creek Watershed (County of San Diego)
- Rainbow Creek HF183 Monitoring (County of San Diego)
- Rainbow Creek Wet Weather Pre-BMP Monitoring (County of San Diego)
- HF183 Follow-up Monitoring at MS4-SMG-095 (County of San Diego)
- Dry Weather MS4 Outfall Flow Source Study (County of San Diego)
- Dry Weather Low-Flow Monitoring Equipment Testing and Uncertainty Estimation (County of San Diego)
- Post-Fire Stormwater Monitoring Study – 2019 Tenaja Fire (District)
- Santa Margarita River Nutrient Initiative Group (District on behalf of all Copermittees)
- Participation in SMC California LID Evaluation and Analysis Network Project (Riverside Copermitttees)
- Wilson Creek Flow Simulation Modeling - Technical Memorandum (Riverside Copermitttes)

WQIP Adaptive Management

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. Drivers 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. The adaptive management process and results of the 2019-2020 evaluation are presented in Section 4 and Appendix 5 of this Annual Report.

Updates to WQIP elements based on San Diego Water Board requests in the 2017-2018 WQIP Annual Report review letter are provided as a WQIP update with this Annual Report. The San Diego Water Board also required the WQIP to be updated to incorporate the final numeric targets of the SMR Estuary TMDL Alternative, strategies, monitoring and assessment activities, schedules and reporting. Proposed WQIP updates were presented to the Consultation Committee on October 22, 2020. The updates were subject to a 30-day public review period from November 5 to December 7, 2020 to satisfy the public participation requirements of Permit Provision F.2.c. They will be deemed acceptable for inclusion in the WQIP 90 days after the submission of the updates with this Annual Report (Attachment 5B to Appendix 5) on January 31, 2021. The new Permit is anticipated after this WQIP Update and will likely incorporate new regulations to be addressed.

The Copermittees will continue to make improvements by applying lessons learned from implementing their programs. Of note, the latter portion of the 2019-2020 year brought incredible challenges due to the COVID-19 pandemic and necessitated rapid adaptations to the way work is conducted to meet requirements. The next couple of years will likely present further challenges due to economic and social impacts of the pandemic, and further adaptations are anticipated to address resulting conditions.

SANTA MARGARITA RIVER
WATERSHED MANAGEMENT AREA
2019-2020
WATER QUALITY IMPROVEMENT PLAN
ANNUAL REPORT

FINAL REPORT

Prepared for the following Santa Margarita River WMA Copermittees:

County of Riverside
County of San Diego
Riverside County Flood Control and Water Conservation District
City of Murrieta
City of Temecula
City of Wildomar

Order No. R9-2013-0001, as amended by Order Nos. R9-2015-0001 and R9-2015-0100

Prepared by:

Weston Solutions, Inc.
5817 Dryden Place, Suite 101
Carlsbad, California 92008

D-Max Engineering, Inc.
7220 Trade Street, Suite 119
San Diego, CA 92121

January 2021

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LIST OF ACRONYMS AND ABBREVIATIONS

2014 and 2016 303(d) List	Clean Water Act 2014 and 2016 Section 303(d) List/305(b) Integrated Report
AFDM	ash-free dry mass
AWM	Agriculture, Weights, and Measures
AWQ	Agricultural Water Quality
Basin Plan	Water Quality Control Plan for the San Diego Basin
BMI	benthic macroinvertebrate
BMP	best management practice
BMP DM	BMP Design Manual
$CaCO_3$	calcium carbonate
CCC	criterion continuous concentration
CASQA	California Stormwater Quality Association
CC&Rs	Covenants, Conditions, and Restrictions
CEDEN	California Environmental Data Exchange Network
CEP	Community Events Permit
CEQA	California Environmental Quality Act
CGP	Construction General Permit
CIP	Capital Improvement Plan
CMP	Consolidated Monitoring Program
COA	Conditions of Approval
COC	chain-of-custody
CRAM	California Rapid Assessment Method
CSCI	California Stream Condition Index
CSP	Cleanup and Sanitation Program
CWA	Clean Water Act
cy	cubic yard
DEH	Department of Environmental Health
District	Riverside County Flood Control and Water Conservation District
DO	dissolved oxygen
DPR	Department of Parks and Recreation
DPW	Department of Public Works
EMC	event mean concentration
EMWD	Eastern Municipal Water District
EPT	Ephemeroptera, Plecoptera, and Trichoptera
ERP	Enforcement Response Plan
EVMWD	Elsinore Valley Municipal Water District
F3P	Facility Pollution Prevention Plan
FIB	fecal indicator bacteria
FY	fiscal year
GIS	Geographic Information System
HA	hydrologic area
HF183	human associated fecal marker
HMP	hydromodification management plan
HOA	homeowner's association

HOT	Homeless Outreach Team
HSA	hydrologic subarea
HSPF	Hydrologic Simulation Program-FORTRAN
HPWQC	highest priority water quality condition
HU	hydrologic unit
IBI	Index of Biotic Integrity
IC/ID	illegal connection and illicit discharge
ID	identification
IDDE	illegal discharge detection and elimination
IGP	Industrial General Permit
IO	Investigative Order No. R9-2019-0007
IRWMP	Integrated Regional Water Management Plan
JRMP	Jurisdictional Runoff Management Program
LAMP	Local Area Management Plan
LID	low impact development
LTRW	long-term receiving water
MAP	Monitoring and Assessment Program
MBAS	methylene blue active substance
MLS	mass loading station
MRCD	Mission Resource Conservation District
MRP	Monitoring and Reporting Program
MS4	municipal separate storm sewer system
MST	microbial source tracking
MWD	Metropolitan Water District
NA	not applicable
NAL	non-stormwater action level
ND	not detected
NEPA	National Environmental Policy Act
NNE	nutrient numeric endpoint
NPDES	National Pollutant Discharge Elimination System
NR	not required
NRCS	National Resources Conservation Service
NRMP	Nutrient Reduction and Management Plan
NS	not sampled
O&M	operations and maintenance
OAL	Office of Administrative Law
O/E	observed to expected ratio
OWTS	onsite wastewater treatment system
PAH	polycyclic aromatic hydrocarbon
PBDE	polybrominated diphenyl ether
PCB	polychlorinated biphenyl
PGA	pollutant generating activity
pH	log of hydrogen ion concentration
pMMi	predictive multi-metric index
Permit	Order No. R9-2013-0001, as amended by Order Nos. R9-2015-0001 and R9-2015-0100

PEST	Public Education Strategic Taskforce
PRP	Pesticide Regulation Program
PWQC	priority water quality condition
PWQP	Priority Water Quality Pollutant
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
HMP Monitoring	Geomorphological and Habitat Assessments required by Appendix K of the Riverside County SMR Hydromodification Management Plan
Rainbow Creek Nutrient TMDL	*Amendment to the Water Quality Control Plan for the San Diego Basin to Incorporate Total Maximum Daily Loads (TMDLs) for Total Nitrogen and Total Phosphorus in the Rainbow Creek Watershed*
RCWD	Rancho California Water District
RFP	Request for Proposals
RWMG	Regional Water Management Group
SAG	Stakeholder Advisory Group
SAL	stormwater action level
San Diego Water Board	San Diego Regional Water Quality Control Board
SANGIS	San Diego Geographic Information Source
SCCWRP	Southern California Coastal Water Research Project
SM	Standard Methods
SMC	Southern California Stormwater Monitoring Coalition
SMC CLEAN	SMC California LID Evaluation and Analysis Network
SMC Regional Monitoring	SMC Regional Bioassessment and Water Quality Monitoring Program
SMC Workplan	*Bioassessment Survey of the Stormwater Monitoring Coalition. Workplan for Years 2015 through 2019*
SMR	Santa Margarita River
SMRNIG	Santa Margarita River Nutrient Initiative Group
SSO	sanitary sewer overflow
State Water Board	State Water Resources Control Board
SVD	Self-Verification Determination
SWAMP	Surface Water Ambient Monitoring Program
SWEEP	State Water Efficiency and Enhancement Program
SWPPP	Storm Water Pollution Prevention Plan
SWRP	Storm Water Resource Plan
TAC	Technical Advisory Committee
TBD	to be determined
TDS	total dissolved solids
TIE	toxicity identification evaluation
TKN	total Kjeldahl nitrogen
TMDL	total maximum daily load
TN	total nitrogen
TP	total phosphorus
TRE	toxicity reduction evaluation

TTWQ	Threat to Water Quality
UCCE	University of California Cooperative Extension
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
USMRW SWRP	Upper Santa Margarita River Watershed Storm Water Resource Plan
UTC	unable to calculate
VNS	Visited Not Sampled
WASP	Water Quality Analysis Simulation Program
WESTON®	Weston Solutions, Inc.
WMA	Watershed Management Area
WMAA	Watershed Management Area Analysis
WPO	Watershed Protection Ordinance
WPP	Watershed Protection Program
WQBEL	water quality based effluent limitation
WQE	Water Quality Equivalency
WQMP	Water Quality Management Plan
WQIP	Water Quality Improvement Plan
WQO	water quality objective
WRCOG	Western Riverside Council of Governments
WY	water year

UNITS OF MEASURE

µg/L	micrograms per liter
µS/cm	micro Siemens per centimeter
°C	degrees Celsius
°F	degrees Fahrenheit
cf	cubic feet
cfs	cubic feet per second
cm	centimeter
g/m²	grams per square meter
g d-w/m^2	grams dry weight per square meter
gpm	gallons per minute
kg/yr	kilograms per year
mg/m^2	milligrams per square meter
mg/L	milligrams per liter
MPN/100 mL	most probable number per 100 milliliters
NTU	Nephelometric Turbidity Units
ppt	parts per thousand
%	percent
<	less than
>	greater than
≥	greater than or equal to
≤	less than or equal to

1.0 INTRODUCTION

This 2019-2020 Water Quality Improvement Plan (WQIP) Annual Report presents the implementation status and progress that the Santa Margarita River (SMR) Watershed Management Area (WMA) Copermittees have achieved during the second year of WQIP implementation in accordance with Order No. R9-2013-0001, as amended by Order Nos. R9-2015-0001 and R9-2015-0100 (Permit).[1] The Permit requires the development of watershed-specific WQIPs through a collaborative effort by the WMA's Copermittees and other key stakeholders. Order No. R9-2015-0100, which enrolled the Riverside County Copermittees in the Permit, was adopted on November 18, 2015 and became effective January 7, 2016. The development of the WQIP for the SMR WMA did not begin until the Riverside County Copermittees were enrolled in the Permit. The WQIP was accepted by the San Diego Regional Water Quality Control Board (San Diego Water Board) on November 27, 2018. Administrative updates to the WQIP were submitted with the 2018-2019 WQIP Annual Report. Additional updates are submitted with this WQIP Annual Report, including those to incorporate the requirements of Investigative Order No. R9-2019-0007[2] (IO) into the WQIP (see **Attachment 5B** to **Appendix 5**).

This WQIP Annual Report covers two separate reporting periods corresponding to two major Permit programs: the Jurisdictional Runoff Management Program (JRMP); and the Monitoring and Assessment Program (MAP). Each Copermittee JRMP requires facility inventories and inspections, new development and redevelopment planning, public education and outreach, and means of enforcement. The JRMP reporting period extends between July 1st and June 30th. The MAP requires outfall and receiving water monitoring during the dry and wet weather seasons, sampling and assessments, and data compilation and reporting. The MAP reporting period extends between October 1st and September 30th.

The Copermittees in the SMR WMA include the Counties of Riverside and San Diego, the Riverside County Flood Control and Water Conservation District (District), and the Cities of Murrieta, Temecula, and Wildomar. A map of the WMA is shown in **Figure 1-1**. The WMA is described in detail in Section 1 of the WQIP.

A small portion of the City of Menifee lies within the geographic jurisdictional boundaries of the San Diego Water Board. However, the City of Menifee is largely regulated by the Santa Ana Water Board pursuant to an October 26, 2015 agreement between the Santa Ana Water Board and the San Diego Water Board.[3] Although the City of Menifee is required to actively participate in the development and implementation of the WQIP for the SMR WMA,[4] the City of Menifee is not required to submit an

[1] The Permit expired on June 27, 2018; the term of the Permit is automatically extended until the new permit is issued.
[2] An Order Directing the Cities of Murrieta, Temecula, and Wildomar, the Counties of San Diego and Riverside, the Riverside Flood Control and Water Conservation District, and the United States Marine Corps Base Camp Pendleton to Design and Implement a Water Quality Improvement Monitoring and Assessment Program for Eutrophic Conditions in The Santa Margarita River Estuary and Watershed, California (San Diego Water Board, 2019).
[3] Letter from David Gibson, Executive Officer, to Robert K. Moehling, Daniel A. York, and Jonathan G. Smith regarding: Regional Water Board Designation for Regulating Municipal Separate Storm Sewer System Discharges in the Cities of Murrieta, Wildomar, and Menifee in Riverside County, dated October 26, 2015.
[4] See Finding 29.b of the Permit (Order No. R9-2013-0001, as amended by Order Nos. R9-2015-0001 and R9-2015-0100).

Annual Report to the San Diego Water Board.[5] Therefore, this WQIP Annual Report does not include information from the City of Menifee.

[5] Condition 12 of the October 26, 2015 letter states: "Annual Reports prepared by each City pursuant to its Phase I MS4 Permit requirements shall be a single report encompassing the entire geographic jurisdictional area of the City, using the format prescribed in the applicable Phase I MS4 Permit. The Annual Reports shall be submitted to the Regional Water Board that issued the applicable Phase I MS4 NPDES Permit."

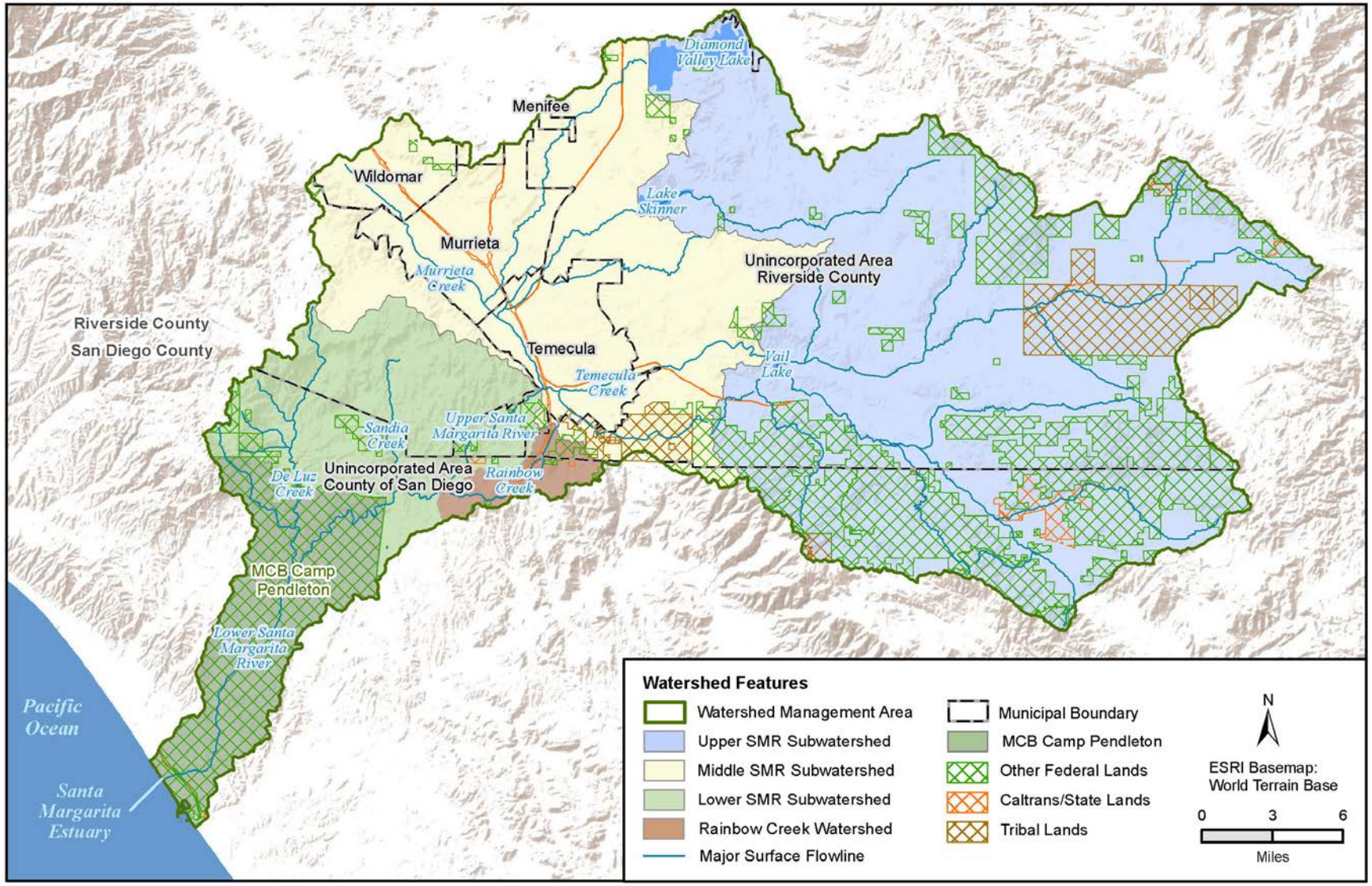


Figure 1-1. Santa Margarita River Watershed Management Area

The WQIP identifies priority water quality conditions (PWQCs), highest priority water quality conditions (HPWQCs), and known and suspected sources of stormwater and non-stormwater pollutants contributing to the HPWQCs. The HPWQCs, as given in Section 2 of the WQIP, are summarized in **Table 1-1**. PWQCs include toxicity, physical habitat, trash, indicator bacteria, iron, manganese, and total dissolved solids (TDS) and were identified for waterbodies in the Lower and Middle SMR Subwatersheds.[6] The PWQCs are given in Section 2 of the WQIP and are summarized in **Appendix 4**. The Copermittees developed numeric goals, schedules, and strategies to address eutrophication and nutrient loading HPWQCs within the WMA. Although a HPWQC and goals have not been established for the Upper SMR Subwatershed, the Copermittees are implementing strategies to protect beneficial uses in this significantly less-developed portion of the watershed. To better understand water quality and flow conditions, monitoring at a long-term receiving water (LTRW) station on Wilson Creek was initiated during this reporting period although no surface flows were observed during the five storm mobilization events conducted during the 2019-2020 monitoring year. Consequently, the Copermittees conducted hydrologic modeling and developed site-specific mobilization criteria for Wilson Creek to facilitate capture of long-term monitoring data in the Upper Subwatershed in future monitoring years.

Table 1-1. HPWQCs in the SMR WMA

Beneficial Use Category	Water Quality Condition	Wet	Dry	Geographic Area[3]
Aquatic Life: Eutrophication	Eutrophication Impacts (elevated algal biomass)		✓	Santa Margarita River Estuary,[1] Warm Springs, Redhawk Channel[2]
	Nutrient loading to waterbodies with an adopted TMDL or listed as impaired		✓	All Middle and Lower SMR Subwatershed subareas, except Fallbrook Creek and Sandia Creek[1]
		✓		Rainbow Creek

TMDL – total maximum daily load

[1] MS4 discharges within the following subareas may reach the SMR Estuary during dry weather and contribute to the Eutrophication HPWQC in the SMR Estuary: Upper Murrieta Creek and Tributaries, Warm Springs, Santa Gertrudis, Murrieta Creek and Long Canyon, Temecula Creek and Redhawk Channel, Upper Santa Margarita River, Lower Santa Margarita River, Rainbow Creek, and De Luz Creek.

[2] Other subareas may be added as a result of the TMDL Alternative during adaptive management process.

[3] A HPWQC has not been assigned for the Upper SMR Subwatershed due to insufficient data. See **Section 2.0** and WQIP Section 2.2.1 for additional information.

The San Diego Water Board conducted reviews of the 2017-2018 and 2018-2019 WQIP Annual Reports for the San Diego Region, and provided Copermittees with the results of these reviews and deadlines for addressing the items. The itemized results of their reviews and deadlines for addressing the items were provided in a July 19, 2019 letter for the 2017-2018 report and in a September 10, 2020 letter for the 2018-2019 report. Requested items requiring a response by January 31, 2021 (i.e., with this Annual Report[7]) are listed in **Table 1-2**. Items addressed in the 2018-2019 WQIP Annual Report are identified as "Previously Completed" in **Table 1-2**. The location of the response is also given in **Table 1-2**.

[6] PWQCs have not been assigned for the Upper SMR Subwatershed due to insufficient data. Further evaluation of the subwatershed will be conducted as additional data become available. See WQIP Section 2.2.1 for additional information.

[7] A January 11, 2021 email from Laurie Walsh states "Since the due date January 31, 2021 falls on a Sunday, the required deadline would be extended to Monday February 1, 2021."

Table 1-2. Responses to San Diego Water Board 2017-2018 and 2018-2019 WQIP Annual Report Reviews

Location in Letter	Requested Item	AR Sections Where Addressed	Copermittee Response
2017-2018 WQIP Annual Report Review Letter Received July 24, 2019			
Items due by January 31, 2020			
Item 2.b.2, Page 3	The Western Riverside Copermittees are to submit the Final HMP Effectiveness Assessment and HMP Data.	Previously Completed	
Item 3, Page 4	Provide a WQIP Annual Report for the 2018-2019 reporting period.	Previously Completed	
Item 6.a, Page 4	Rainbow Creek TMDL Monitoring Trends: The County of San Diego is required to submit program changes with the January 31, 2020 JRMP annual report to address the identified program inspection and enforcement deficiencies for agricultural facilities in coordination with the San Water Board staff implementing the Agricultural Orders.	• 2018-2019 WQIP Annual Report • Appendix 2	A summary of Agriculture, Weights, and Measures (AWM) program changes (i.e., enhanced strategies) to help achieve water quality improvement goals in the Rainbow Creek Watershed, was provided with the 2018-2019 WQIP Annual Report. The update to the County of San Diego's JRMP is summarized in **Section 7.4** in **Appendix 2** to this WQIP Annual Report.
Item 6.b, Page 5 & Attachment 1, Item 9.b, Page 10	Conduct a completeness check of the required monitoring.	Previously completed and will be conducted annually (see response for Attachment 1 Item 9.b)	
Item 6.c, Page 5 & Attachment 1, Item 11.b, Page 11	Adaptively manage programs based on outfall exceedances in accordance with Item 11.b of Attachment 1: CT-SMG07: Nutrients (TN) CT-SMG18: FIB and Nutrients (TN)	Previously Completed	
Items due by January 31, 2021			
Item 5, Page 4	The revised due date for the WQIP Update to incorporate the final I/O numeric targets, strategies, monitoring and assessment activities, schedules and reporting is now on or before January 31, 2021.	• 2021 WQIP Update - Attachment 5B to Appendix 5	The Copermittees updated the WQIP to incorporate the final Investigative Order numeric targets, strategies, monitoring and assessment activities, schedules, and reporting. The updates are provided in **Attachment 5B** to **Appendix 5**.
Attachment 1 – Adaptive Management General Topics – Due by January 31, 2021			
Attachment 1 Page 7	The updated JRMP strategies are required to be included in the JRMP Annual Report submitted concurrently with each applicable WQIP Annual Report **on or before January 31, 2021**.	• Appendix 2	JRMP strategies and JRMP Annual Reports are provided in Appendix 2 for each Copermittee. JRMP Updates may be provided as an attachment to the JRMP Annual Report and/or links to online JRMP documents are provided.
Item 1, Page 7	Homeless Encampments: Identification of potential geographic focus areas for coordination with local and regional programs or strategies to address discharges from encampments. Summaries of efforts, map of geographic prioritized areas, and a description of coordination with other agencies and programs.	• 2017-2018 Annual Report Review Letter Responses - Attachment 5A to Appendix 5	This topic is largely not applicable to the SMR WMA at this time as the WQIP includes several strategies to address homeless encampments and identifies encampments as a controllable non-point source potentially impacting receiving water quality. However, Copermittees summarized efforts to address discharges from encampments in **Section 2.1** of **Attachment 5A**.
Item 2, Page 7	Identification of Controllable and Uncontrollable Sources	• 2017-2018 Annual Report Review Letter Responses - Attachment 5A to Appendix 5	This topic is not applicable to the SMR WMA at this time, as the topic is addressed in the WQIP. The technical rationale is provided in **Section 2.2** of **Attachment 5A**.
Item 3, Page 8	Agricultural Orders Update and Assessment	• 2017-2018 Annual Report Review Letter Responses - Attachment 5A to Appendix 5	This topic is not applicable to the SMR WMA at this time, as the topic is addressed in the WQIP. The technical rationale is provided in **Section 2.3** of **Attachment 5A**.
Item 4, Page 8	Coordination of WQIP HPWQCs, PWQCs, and Strategies with WMA Ecological Reserve Goals and Projects	• 2021 WQIP Update - Attachment 5B to Appendix 5	The Copermittees have developed an inventory of Ecological Reserves in the WMA and summarized reserve and project goals in **Attachment 5B Section A6-1**. An assessment of the compatibility of jurisdictional and WMA strategies with Ecological Reserve goals is also provided in **Section A6-1**.
Item 5, Page 8	Storm Drain Biofilms Source of Bacteria	• 2017-2018 Annual Report Review Letter Responses - Attachment 5A to Appendix 5	This topic is not applicable at this time, as there is no bacteria TMDL or identified concerns regarding storm drain biofilms in the SMR WMA. Technical rationale as to why the topic is not applicable to the WMA is provided in **Section 2.4** of **Attachment 5A**.
Item 6, Page 8	Update of 303(d) Listings Since the acceptance of WQIPs, the 303(d) listings have been updated. The San Diego Water Board is requiring that Copermittees' update the 303(d) summaries to the most current OAL approved 303(d) list as of January 31, 2021.	• 2017-2018 Annual Report Review Letter Responses - Attachment 5A to Appendix 5; and • 2021 WQIP Update - Attachment 5B to Appendix 5	The Copermittees updated the WQIP 303(d) summary and conducted an assessment of any potential changes to PWQCs or HPWQCs based on the revised list. Based on the assessment, no changes to PWQCs or HPWQCs are proposed at this time. The updated summary table is included in the WQIP Update as **Table 2-6** in **Attachment 5B** and the assessment is provided in **Section 3.1** of **Attachment 5A.**

Table 1-2. Responses to San Diego Water Board 2017-2018 and 2018-2019 WQIP Annual Report Reviews

Location in Letter	Requested Item	AR Sections Where Addressed	Copermittee Response
Item 7, Page 9	Over-Irrigation Audit Findings	• 2017-2018 Annual Report Review Letter Responses - Attachment 5A to Appendix 5	The Copermittees have reviewed their respective audit notices and evaluated their JRMPs. A summary of program modifications and updates was provided in the 2018-2019 Annual Report. Additional program modifications and updates were evaluated in FY 19-20. A summary of remaining program modifications and updates and the rationale of why the non-structural BMP load reduction assessment is not applicable are presented in **Section 3.2** of **Attachment 5A**.
Item 8, Page 9	Persistent Flow in MS4 Outfalls - Groundwater or Water Agency Maintenance Source Identification	• 2017-2018 Annual Report Review Letter Responses - Attachment 5A to Appendix 5; and • 2021 WQIP Update - Attachment 5B to Appendix 5	Copermittees incorporated a summary of the Order WQ 2014-0194 DWQ (General Order) enrollee discharges, ongoing source identification activities, and the Permitted Flow Assessment strategy into **Section 3.3** of **Attachment 5A**. The Permitted Flow Assessment strategy was updated in **Section 4.2.3.2** and added to **Table 4-16** in **Attachment 5B**.
Item 9.a, Page 9	Use of C Value Either provide a corrected pollutant load calculation or propose a method or process to correct the calculations. Based on the revised calculations, the WQIP Copermittees are required to revise the WMA or JRMP strategies as applicable to address the WQIP numeric goals and schedules.	• 2017-2018 Annual Report Review Letter Responses - Attachment 5A to Appendix 5; and • 2021 WQIP Update - Attachment 5B to Appendix 5	Through the Regional Monitoring Workgroup, the Copermittees met with the San Diego Water Board to present the existing approach and constraints of the Permit and monitoring requirements that led to the methods in use. Copermittees and the San Diego Water Board are in agreement that the assessments should be revised or replaced, which will require time and continued coordination. Current WMA and Copermittee strategies in the WQIP do not utilize the C value to calculate non-structural pollutant load reduction. The Copermittees developed revisions to WQIP text to clarify the C Value is under revision in **Attachment 5B Section 5.5.2.2** and a brief discussion that the revised calculation will not result in a change in reprioritization of projects or actions is provided in **Section 3.4** of **Attachment 5A**. In an email dated August 19, 2020 the San Diego Water Board granted regulatory relief from performing some of the Permit-required assessments until after the planned reissuance of the Permit based on the Copermittees' on-going efforts to address this San Diego Water Board request. Details are provided in **Appendix 4 Section 4.2**.
Item 9.b, Page 10	Conduct a completeness check of the required monitoring.	• Appendix 5, Sec 5.1.2.1.1	A monitoring completeness check was conducted; sampling completeness requirements were achieved for each program component. In addition, QA/QC summary reports provided by monitoring element in attachments to Appendix 4 provide further detail on monitoring completeness. This item was addressed in Appendix 5 Table A5-3 of the 2018-2019 Annual Report and will continue to be addressed annually. A detailed response is provided in **Section 5.1.2.1.1** of **Appendix 5**.
Item 9.c, Page 10	Fecal Indicator Bacteria A discussion of these new standards in the monitoring programs in the WMA is required. The discussion shall identify whether the Copermittees will add the new FIB standard and to which monitoring stations.	• 2021 WQIP Update - Attachment 5B to Appendix 5	Both *E. coli* and *Enterococci* are monitored as part of the WQIP Monitoring and Assessment Program, thus no modifications to the monitoring plan are required as both indicators will be analyzed. The Copermittees updated WQIP **Table 2-5** to include *Enterococci* as a REC-1 and REC-2 beneficial use indicator and inserted a discussion of the new standards into the Santa Margarita River Monitoring Plan (WQIP Appendix 5A Section 2) in **Attachment 5B**.
Item 9.d, Page 10	Appropriate use of Surfer Health Study Results Update the evaluations that cite the SHS results to assure the differences in study design is accurately accounted for in the WQIP Annual Reports.	• 2017-2018 Annual Report Review Letter Responses - Attachment 5A to Appendix 5	This topic is not applicable to the SMR WMA at this time. The SMR Surfer Health Study results are not cited in monitoring reports or the WQIP. Technical rationale as to why the topic is not applicable to the WMA is provided in **Section 2.5 of Attachment 5A.**
Item 10, Page 10	Coordination with Water and Sewer Agency Planning and Projects	• 2021 WQIP Update - Attachment 5B to Appendix 5	Copermittees developed a summary of sewer and water agency projects and strategies. Addressed in the 2021 WQIP Update - see **Sections 4.2.1.3.2**, **4.2.2.3.2, Appendix 3B Table 1**, and **Appendix 6 Section 2** within the WQIP Update (**Attachment 5B**). A figure illustrating the service areas and water districts within the WMA is provided as **Figure 4-12** in **Attachment 5B**.
Item 11.a, Page 10	Tabulate and report structural BMP information in a shape file format showing all structural BMPs, including wetland restoration projects and dry- weather diversions. The information for each structural BMP should include at least GPS location; size of BMP; drainage area to BMP; type of BMP; installation year; and target pollutant(s) to be treated.	Previously Completed	

Table 1-2. Responses to San Diego Water Board 2017-2018 and 2018-2019 WQIP Annual Report Reviews

Location in Letter	Requested Item	AR Sections Where Addressed	Copermittee Response
Item 11.b, Page 11	Provide the criteria for determining high-priority outfalls for monitoring in dry and wet weather. Include clarification as to whether, and how, the results summarized in the Five- year Assessment of Random and Targeted MS4 Outfall Discharge Data Collected under NPDES Permit Order No. R9-2007-0001 in San Diego County Watersheds (Weston Solutions, 2015b) were used to prioritize outfall monitoring in each WMA.	Previously Completed. Slight modifications have been made to the County of San Diego prioritization criteria and updates are provided in **Appendix 5**, **Section 5.2.4.1**.	
Item 11.c, Page 11	Provide electronic copies of all monitoring results as a separate submittal turned in concurrently with the WQIP Annual Report. For each WMA, provide a copy of the analytical results for all outfalls and receiving waters in the same Excel format as submitted to CEDEN.	• Appendix 4, Sec 4.8	In addition to continuing to provide CEDEN submittals as a WQIP Annual Report attachment, the watershed lead agency will provide a separate submittal of these data to the San Diego Water Board under separate cover. This request was addressed as a separate submittal concurrent with the January 31, 2020, WQIP Annual Report as well as a report attachment. For the January 31, 2021, submittal the San Diego Water Board has indicated that CEDEN data can be provided as attachments to the WQIP Annual Report submittal.
2018-2019 WQIP Annual Report Review Letter Received September 10, 2020			
Item 4, Page 3	The County of San Diego reported completion of 1.7 acres of artificial turf. In addition, the County of San Diego reports that it is in progress to reduce dry weather flow 25 percent from baseline. The baseline flow will be reported in the WQIP Annual Report submitted January 31, 2021.	• Appendix 4, Sec 4.5.4.4	The County has determined that the candidate site (MS4-SMG-063) originally identified to establish a baseline flow was not feasible because the outfall drains to Rainbow Creek and is subject to other regulatory requirements under the Rainbow Creek TMDL. The County has identified at least one outfall (MS4-SMG-093) that has the potential to discharge to the SMR during dry weather and can be used to assess progress toward dry weather flow reductions. This outfall will be monitored during the 2020-2021 monitoring year to establish a baseline flow rate. The final dry weather goal is to eliminate anthropogenic dry weather flows from MS4 outfalls (by 100%) by the end of Fiscal Year (FY) 2038, and the first interim goal is to reduce dry weather flows from MS4 outfalls by 25% by the end of FY 2023 from the baseline year.
Item 6.a, Page 4	The San Diego Water Board finds that the 2018-2019 WQIP Annual Report is deficient in its assessment of the WMA without discussion of the upper watershed area. This deficiency must be corrected with the WQIP Annual Report due January 31, 2021.	• Section 2, Section 3 • Appendix 2, Appendix 4	Strategies identified in the SMR WQIP are being implemented in the Upper SMR Subwatershed as applicable per the JRMPs for the Counties of Riverside and San Diego to address any pollutants from the developed areas. Strategy implementation status is presented in **Section 2** and **Appendix 2** of this Annual Report. No goals have yet been established for the Upper Subwatershed because a HPWQC has not been assigned due to insufficient data. Therefore, progress to goals is only reported for the Middle and Lower Subwatersheds. The Copermittees have established a long-term receiving water station in the Upper SMR Subwatershed to collect data for evaluating this portion of the watershed, although no major MS4 outfalls have been identified there. The monitoring section of the Annual Report includes reporting on the efforts made by Copermittees to collect water quality data in the Upper SMR Subwatershed.
Item 6.b, Page 4	The SMR IO specifically includes the County of San Diego as a discharger responsible for reducing pollutant loading to the SMR Estuary. The data and information relevant to the County of San Diego must be included in the January 31, 2021, WQIP Annual Report.	• Section 2	The Riverside County Copermittees and the County of San Diego are all responsible parties for meeting the goals related to the SMR Estuary TMDL Alternative. The WQIP has different sets of goals for these two groups, so progress to goals is also discussed separately for these two groups. Some re-organization of the progress to goals tables and section have been implemented in order to more clearly demonstrate responsibilities. While there are two sets of progress to goals discussions, the actions taken by the Riverside County Copermittees and the County of San Diego are both designed to meet the SMR Estuary TMDL Alternative objectives, as set forth in Investigative Order No. R9-2019-0007.
Item 6.c, Page 5	The County of San Diego Public Education and Outreach information specific to the WMA must be included in the January 31, 2021, WQIP Annual Report.	• Section 2 • Appendix 2	The County's strategy highlights presented in **Section 2** of the Annual Report provide WMA-specific information where possible. The County continues to look for opportunities to collect and report information on a WMA basis. The remaining strategy information can be found in **Appendix 2**.
Item 6.d, Page 5	A discussion of how the results of the County of San Diego Non-Stormwater Flow Source Study are specific to the WMA must be included in the January 31, 2021, WQIP Annual Report.	• Appendix 4, Attachment 4I	The 2018-2019 study was continued during 2019-2020 with the objective to determine flow sources of monitored MS4 outfall dry weather flows at some outfalls within the SMR WMA. Specifically, the 2019-2020 study included HST01 in the SMR WMA and the report can be found in **Appendix 4**, **Attachment 4I**.

Table 1-3 provides a summary of the report content and organization, and **Table 1-4** provides a list of Permit-required assessments and reporting provisions and identifies the report sections and appendices that address these assessment and reporting requirements. A detailed list of Permit provision descriptions related to WQIP Annual Reporting is included in **Appendix 1.**

Table 1-3. Report Content Overview and Organization

Section	Contents	Associated Appendix and Contents
1. Introduction	Introduces Permit, identifies Copermittees, major waterbodies, HPWQCs, WQIP and Annual Reporting requirements, and report organization.	**Appendix 1. Crosswalk of Permit Requirements and Annual Report References** • Table of all Permit provisions with descriptions and location in report and appendices.
2. Progress to Goals and Strategy Implementation	Provides assessment of progress toward numeric goals, with a focus on next goals to be achieved. The section also provides highlights of the key strategies implemented to meet the numeric goals, the status of implementation, and plans for the coming year. Detailed strategy implementation status tables are provided in **Appendix 2**. The goals and schedules from the WQIP are provided in **Appendix 3**.	**Appendix 2. Jurisdictional Runoff Management Program (JRMP) Information - organized by Copermittee** • Copermittee JRMP Annual Report Forms (Attachment D of Permit) including Fiscal Analyses • Modifications to JRMPs • Modifications to Riverside County Water Quality Management Plan (WQMP) or San Diego County Best Management Practices (BMP) Design Manual **Appendix 3. Water Quality Improvement Plan Numeric Goals - from WQIP**

3. Monitoring and Assessment	Summarizes the monitoring programs and provides an assessment of the data collected. WQIP Annual Report presents high-level results for monitoring related to HPWQCs. Details provided in **Appendix 4**.	**Appendix 4. Monitoring Results and Assessments**
		Monitoring results for all programs and required assessments. Includes Attachments, which provide further details, data packages, and additional reports.
		Attachments:
		• Long-Term Receiving Water Monitoring Data
		• SMC Regional Monitoring Program Data
		• Rainbow Creek Nutrient TMDL Monitoring Report and Progress to Goals MS4 Outfall Monitoring Report
		• Dry Weather Field Screening Data
		• Dry Weather MS4 Outfall Assessment
		  o Historical Dry Weather Annual Loads Table
		• Wet Weather MS4 Outfall Data
		• Wet Weather MS4 Outfall Assessment
		  o Historical Wet Weather Annual Loads Table
		  o Wet Weather MS4 Outfall Time-Series Plots
		• Special Study Reports and Workplans
		• CEDEN Data Submittals and Receipts
		• Monitoring Program GIS Files

4. Adaptive Management	Provides a summary of the drivers for adaptive management, WQIP elements for adaptive management, and current or proposed modifications as a result of information gathered or received during the reporting period. Details provided in **Appendix 5**.	**Appendix 5. Adaptive Management Modifications** • Detailed assessment of triggers for adaptive management and resulting adaptive management • Responses to the 2017-2018 and 2018-2019 WQIP Annual Report Review Letters • WQIP Updates **Attachments:** **5A** - Santa Margarita River WMA WQIP 2017-2018 Annual Report Review Letter Responses **5B** – 2021 Santa Margarita River WMA WQIP Update
5. Conclusions and Recommendations	Provides the conclusions and next steps based on the data collected and assessments conducted during implementation of the WQIP.	N/A
6. References	Includes references for main report and appendices in one master list.	N/A

Table 1-4. Permit WQIP Annual Reporting Provisions and Corresponding Annual Report Sections

Permit Provision	WQIP Annual Report Section					WQIP Annual Report Appendix				
	Section 1 – Introduction	Section 2 – Progress to Goals and Strategy Implementation	Section 3 – Monitoring	Section 4 – Adaptive Mgmt.	Section 5 – Conclusions	Appendix 1 – Permit Requirements	Appendix 2 – Jurisdictional Info.	Appendix 3 – Goals	Appendix 4 – Monitoring	Appendix 5 – Adaptive Mgmt.
Provision A, Prohibitions and Limitations										
A.4.a.(2)			✓	✓			✓		✓	✓
Provision B, Water Quality Improvement Plans										
B.5.a.				✓					✓	✓
B.5.b.		✓	✓	✓			✓	✓	✓	✓
B.5.c.				✓					✓	✓
Provision D, Monitoring and Assessment Program Requirements										
D.1.e.(2)(c)			✓						✓	
D.2.b.(2)(b)(iv)			✓						✓	
D.4.b.(1)(a)(ii)			✓						✓	
D.4.b.(1)(b)			✓	✓					✓	✓
D.4.b.(1)(c)			✓	✓					✓	✓
D.4.b.(2)(a)			✓	✓					✓	✓
D.4.b.(2)(b)			✓	✓					✓	✓
D.4.b.(2)(c)			✓	✓					✓	✓
D.4.b.(2)(d)			✓						✓	
D.4.c.			✓						✓	✓
D.4.d.				✓					✓	✓
D.4.d.(1)				✓						✓
D.4.d.(2)				✓						✓
D.4.d.(3)				✓					✓	✓
Provision E, Jurisdictional Runoff Management Programs										
E.1.b.							✓			
E.2.d.(4)			✓						✓	
E.8.c.							✓			
Provision F, Reporting										
F.1.b.(6)				✓						✓
F.2.a.(2)				✓			✓			✓
F.2.a.(3)				✓			✓			✓
F.2.b.(1)				✓			✓			
F.2.b.(2)				✓			✓			
F.2.c.(1)(c)				✓						✓
F.3.b.(3)(a-f)		✓	✓	✓			✓		✓	✓
Attachment E, Specific Provisions for Total Maximum Daily Loads										
Attachment E			✓						✓	

2.0 PROGRESS TO GOALS AND STRATEGY IMPLEMENTATION

The Copermittees implement WQIP strategies to improve water quality and assess specific water quality data and programmatic information in order to gauge progress toward achieving numeric goals for the HPWQCs. These assessments evaluate whether intended outcomes are being realized or adaptations of Copermittees' programs are necessary.

Progress toward goals established in the WQIP is summarized in **Table 2-1**. This table focuses on progress toward the next goal due for the Middle and Lower SMR Subwatersheds and Rainbow Creek. Goals have not yet been established for the Upper SMR Subwatershed because a HPWQC has not been assigned due to insufficient data. Water quality data are scarce due to largely ephemeral conditions. However, a focused data collection effort has been initiated and strategies are being implemented in this Subwatershed. Refer to **Appendix 3** for a full list of all interim and final goals and their associated due dates. Additional detail on progress to goals, including all compliance pathways in the WQIP, is provided later in this section.

Table 2-1. Summary of Progress toward Achieving WQIP Goals

Applicable Regulatory Driver	Subwatershed or Water Body	Temporal Extent	Interim or Final Goal	Due Date	Selected Compliance Pathway	Goal Status
TBD	Upper SMR Subwatershed	TBD – Copermittees in the Upper Watershed are collecting additional data. Goals will be developed if a HPWQC is identified after data collection and analysis is completed.				
SMR Estuary TMDL Alternative and WQIP[1]	Middle SMR Subwatershed[2]	Dry Conditions	Interim	FY 2023	WQIP Implementation through strategies in the JRMPs (Pathway 6); see **Table 2-3.**	**Achieved.** Strategies proposed in the WQIP were implemented.
	Lower SMR Subwatershed[3]	Dry Conditions	Interim	FY 2023	Reduce the baseline aggregate flow volume by 25% (Pathway 1); see **Table 2-4**.	**In progress**
					Turf replacement in Rainbow Park (Pathway 1); see **Table 2-4**.	**Achieved.** Project completed (1.7 acres of grass replaced with artificial turf)
Rainbow Creek Nutrient TMDL	Rainbow Creek[3]	Year Round	Final	December 31, 2021 (TMDL Final Goal)	WQIP Implementation (Pathway 1); see **Table 2-13** and **Attachment 5B** to **Appendix 5**.	**In progress**

[1] The Riverside County Copermittees and the County of San Diego are all responsible parties for meeting the goals related to the SMR Estuary TMDL Alternative. The WQIP has different sets of goals for these two groups, so progress to goals is also discussed separately for these two groups. While there are two sets of progress to goals discussions, the actions taken by the Riverside County Copermittees and the County of San Diego are both designed to meet the SMR Estuary TMDL Alternative objectives, as set forth in Investigative Order No. R9-2019-0007.

[2] Copermittees responsible are County of Riverside, Riverside County Flood Control and Water Conservation District, City of Murrieta, City of Temecula, and City of Wildomar.

[3] Copermittee responsible is County of San Diego.

Progress to goals information in **Table 2-1** is grouped by regulatory driver and weather condition, as summarized below. Refer to **Figure 1-1** for a map of subwatershed boundaries.

- SMR Estuary Total Maximum Daily Load (TMDL) Alternative and WQIP
  - Includes Middle SMR Subwatershed goals (Riverside County Copermittees) and Lower SMR Subwatershed goals (County of San Diego).
  - Goals for these two different portions of the watershed are presented separately in the WQIP, and the organization of this annual report follows that same structure. However, the separation of subwatersheds and their associated goals does not imply that the County of San Diego is not responsible for meeting the TMDL Alternative requirements.
  - These goals are applicable to dry weather conditions only. Dry weather is defined as non-storm days in both summer and winter. Storm days have measured precipitation greater than 0.1 inch and include the 72 hours following the measured precipitation.

- Rainbow Creek Nutrient TMDL
  - The County of San Diego is the responsible party for the Rainbow Creek Nutrient TMDL goals.
  - The Rainbow Creek goals apply to wet and dry conditions ("Annual").

The timelines to achieve the interim and final WQIP goals are shown in **Figure 2-1** for the Middle SMR Subwatershed and Lower SMR Subwatershed ("WQIP Interim" and "WQIP Final" goals in the figure) and for Rainbow Creek ("RBC TMDL" goal in the figure). The timeline also shows the implementation schedule for Investigative Order No. R9-2019-0007[8] ("IO" in the figure). WQIP goals were established to be accomplished for each five-year period (shown in green), as required by Permit Provision B.3.a.(1)(b)(iii). **Appendix 3** provides additional details about the interim and final goals and their due dates.

Progress toward the selected pathways' numeric goals, and jurisdictional strategy implementation highlights are described in **Section 2.1** to **Section 2.3** in accordance with Provision F.3.b.(3)(d). **Table 2-3** through **Table 2-13** in the following sections list all the available pathways to meeting numeric goals, indicate which pathway or pathways are being used, and provide additional information about progress toward the selected pathways.

Key strategy implementation highlights are provided later in this chapter to help illustrate actions the Copermittees are taking to make progress toward achieving goals. These include both baseline JRMP program strategies and enhancements from what is required as part of the JRMPs. The full list of strategies identified in the WQIP for implementation by each Copermittee are provided in **Appendix 2**, with implementation status (i.e., active implementation, planned, or not triggered) and progress (i.e.,

[8] Investigative Order No. R9-2019-0007. An Order Directing the Cities of Murrieta, Temecula, and Wildomar, the Counties of San Diego and Riverside, the Riverside Flood Control and Water Conservation District, and the United States Marine Corps Base Camp Pendleton to Design and Implement a Water Quality Improvement Monitoring and Assessment Program for Eutrophic Conditions in The Santa Margarita River Estuary and Watershed, California (San Diego Water Board, 2019).

fully implemented, partially implemented, or not implemented), and if planned for the next reporting period, where applicable.

Specific water quality data and programmatic information are assessed to gauge progress toward achieving numeric goals and to determine whether intended outcomes are being achieved. Monitoring results are provided in **Section 3** and **Appendix 4**.

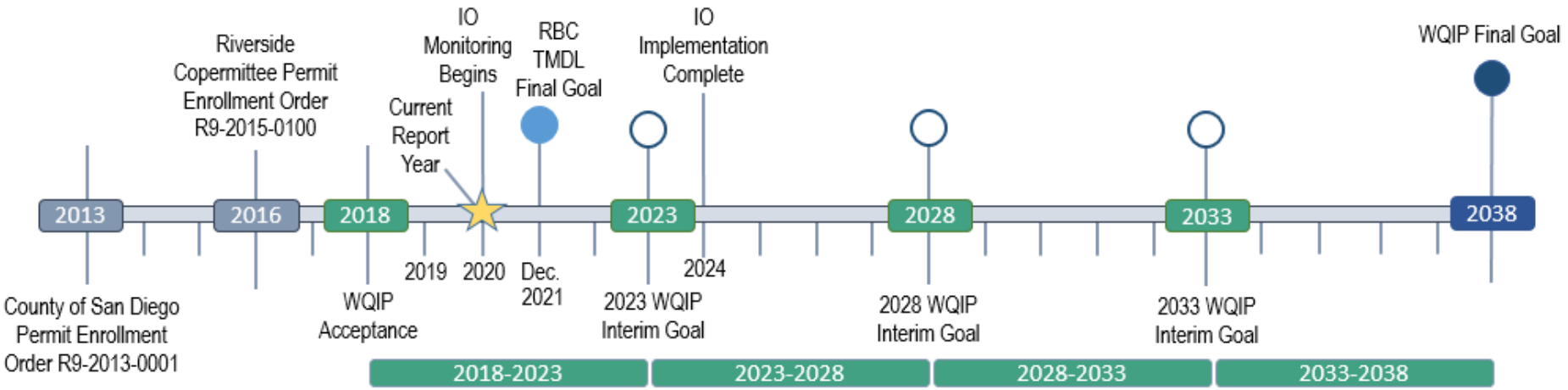


Figure 2-1. Timeline for Achievement of Numeric Goals for the SMR WMA

2.1 UPPER SMR SUBWATERSHED

The District, the County of Riverside, and the County of San Diego have jurisdictional area in the Upper SMR Subwatershed. The 2010 census showed that the Upper SMR Subwatershed has a population of approximately 15,400 people (5% of the total population in the WMA), and the population density is low relative to the other subwatersheds. The census-designated areas of Anza, Lake Riverside, and Aguanga, and an area east of Lake Skinner contain most of the population, which includes scattered rural residential properties and a few agricultural operations. The Upper SMR Subwatershed also includes large tracts of land under tribal, federal and state jurisdiction.

The jurisdictions in the Upper SMR Subwatershed implement the strategies listed in **Appendix 2** and highlighted later in this section as applicable in the Upper SMR Subwatershed. While, as discussed in Section 2.2.1 of the WQIP, no numeric goals have been established for the Upper SMR Subwatershed, these strategies help protect and improve water quality in the Upper SMR Subwatershed. Examples of relevant strategies being implemented include septic system regulations issued by the Riverside County Department of Environmental Health and the County of San Diego Department of Environmental Health, outreach to residents, illegal discharge detection and elimination (IDDE) tracking and response, and working with agricultural businesses on best management practice (BMP) implementation and notifying them of the requirement to enroll in the San Diego Water Board's General Agricultural Orders.[9]

Receiving water monitoring was initiated during the 2019-2020 monitoring year in the Upper SMR Subwatershed as part of the WQIP monitoring program. See **Section 3.1** of this document and **Section 4.1** of **Appendix 4** for additional details on receiving water monitoring.

2.2 MIDDLE AND LOWER SMR SUBWATERSHEDS

An alternative approach to a traditional TMDL has been developed to address eutrophic conditions in the SMR Estuary. The accepted WQIP includes interim and final goals to measure progress toward addressing these conditions by subwatershed and responsible parties, as follows:

- Middle SMR Subwatershed (Riverside County Copermittees)
- Lower SMR Subwatershed (County of San Diego)

Goals for these two subwatersheds are presented separately in the WQIP, and the organization of this annual report follows that same structure. While the goals are discussed separately, both the Riverside County Copermittees and the County of San Diego are implementing strategies to help meet the SMR Estuary TMDL Alternative requirements and their applicable WQIP goals.

Additional information about the SMR Estuary TMDL Alternative and the Santa Margarita River Nutrient Initiative Group (SMRNIG) are presented below. Summaries of progress to goals and strategy implementation by subwatershed follow those discussions.

[9] San Diego Water Board Order Nos. R9-2016-0004 and R9-2016-0005.

2.2.1 TMDL Alternative and WQIP Goals

The TMDL Alternative approach is based on a current State Water Resources Control Board (State Water Board) effort to develop an alternative approach to address biostimulatory substances, which takes into account site-specific factors that water quality objectives (WQOs), such as those outlined in the Water Quality Control Plan for the San Diego Basin (Basin Plan), do not. The final numeric targets of the TMDL Alternative for the SMR Estuary, as developed in the San Diego Water Board's Draft Staff Report[10] and incorporated into the IO, are summarized in **Table 2-2.**

Table 2-2. Numeric Targets for SMR Estuary based on TMDL Alternative

Metric	Primary Target	Secondary Target	Season
Surface Water Macroalgal Biomass	< 57 g dry weight/m^2	< 70 g dry weight/m^2	Winter Dry and Summer Dry
Water Column Dissolved Oxygen	Daily minima ≥ 5.0 mg/L	7-day average of daily minimum measurements ≥ 5.0 mg/L, 10 percent allowable exceedance	Winter Dry and Summer Dry
Benthic Community Condition Score	-	≤ 2.0 (Low Disturbance based on Sediment Quality Objectives [SQO] scale)	Winter Dry and Summer Dry

mg/L – milligrams per Liter; g dry weight/m2 – grams dry weight per square meter

Numeric goals established in the WQIP were designed to show progress toward meeting the numeric targets for the SMR Estuary as applicable. WQIP goals and schedules may be revised through the adaptive management process, including updates needed to be consistent with the requirements for implementation of the TMDL Alternative. The WQIP Update provided as an attachment to this annual report (**Attachment 5B** to **Appendix 5**) has incorporated the primary and secondary numeric goals and targets shown in **Table 2-2** into Pathway 2 of WQIP Tables 4-2 (Middle SMR Subwatershed Agencies) and 4-3 (County of San Diego).

2.2.2 Santa Margarita River Nutrient Initiative Group

The Copermittees of the WMA are actively participating in the SMRNIG, composed of a broad range of stakeholders with diverse interests, which was formed in 2012 to address nutrient issues in the SMR Watershed. The Stakeholder Advisory Group (SAG), with support from a Technical Advisory Committee (TAC), is working through a collaborative, inclusive, and regional process, using state of the science techniques, to develop regulatory targets and monitoring programs, and to recommend management approaches to ensure that the biological, chemical, and physical integrity of the SMR and its tributaries are protected. Phases I and II of technical work (conducted from 2011-2018) led by the Southern California Coastal Water Research Project (SCCWRP) developed models to apply a Nutrient Numeric Endpoint methodology to evaluate nutrient impacts to the Estuary, collected comparable data for nutrient loading and transport processes, and developed regulatory targets for the Estuary.

[10] California Regional Water Quality Control Board San Diego Region. Santa Margarita River Estuary, California Nutrients Total Maximum Daily Load Project Draft Staff Report (San Diego Water Board, 2018).

During this reporting period, the SMRNIG held meetings on October 2, 2019 and March 12, 2020. The District began supporting and coordinating TAC and SAG meetings in the fall of 2019 and has continued to provide a supporting role during this reporting period. The District has provided a facilitator and coordinated TAC and SAG meetings with the San Diego Water Board and the science team being led by SCCWRP. In additional small workgroups and technical meetings and calls were held as needed to support the progress of the SMRNIG efforts.

In early 2019, the group initiated Phase III of the technical work, which extends the efforts conducted for the Estuary in Phases I and II to explore a range of biostimulatory targets that are protective of beneficial uses in the SMR main stem under the present climate conditions and under climate change and/or extreme climate scenarios. Phase III expects to identify potential restoration actions to improve biointegrity and reduce eutrophication, and to calculate load and waste load allocations required to meet the proposed biostimulatory targets. The technical work in Phase III is being funded by the San Diego Water Board.

Modeling work was conducted during this reporting period and incorporated data provided by the Copermittees as applicable. The modeling report will be included with the 2020-2021 WQIP Annual Report and results used to inform future planning efforts.

The work of the SMRNIG provided foundational information used by the San Diego Water Board in developing the Draft Staff Report and the IO for the SMR Estuary. The Copermittees together with U.S. Marine Corps Base Camp Pendleton developed a Workplan and Quality Assurance Project Plan (QAPP), as required by the IO. The SMRNIG meetings provided opportunity for input by the TAC during development of the Workplan and QAPP. The IO Monitoring Workplan and QAPP were approved by the San Diego Water Board on January 30, 2020. These documents can be accessed online at the Santa Margarita River Nutrient Initiative – Stakeholder Group content links in the SMR Regional Clearinghouse website: http://content.rcflood.org/NPDES/SMRWMA.aspx

In April 2020, the Copermittees collaborated with U.S. Marine Corps Base Camp Pendleton to begin implementing the monitoring requirements of the IO, which include estuary, river, and groundwater monitoring. The results and data assessment for the first year of monitoring under the IO will be included in the IO Monitoring Annual report submitted to the San Diego Water Board separately from this report in January 2021.

2.2.3 Middle SMR Subwatershed Progress to Goals

The Riverside County Copermittees are the responsible agencies for the numeric goals in the Middle SMR Subwatershed.

Progress toward achieving interim goals for the Middle SMR Subwatershed is presented in **Table 2-3**, which includes six different compliance pathways. Each Copermittee in the Middle SMR Subwatershed has the option of demonstrating the respective goal has been achieved through any one of the six pathways. The pathways are presented sequentially and separated by "OR" to indicate that the goal can be achieved through any one of the six pathways.

Table 2-3. Progress toward Interim Eutrophication Impacts and Nutrient Loading Numeric Goals, Middle SMR Subwatershed (Riverside County Copermittees)

Path-way	Interim Goal	Metric	Baseline	Goal Due Date	Goal Status
1 OR	*10% load reduction in dry weather loadings in receiving waters: TN: 993 lb/yr TP: 99 lb/yr*	*Assessment of loadings in the Santa Margarita River (receiving water) at the base of the Middle SMR Subwatershed*	*TN: 60,796 lb/yr TP: 6,004 lb/yr*	*FY 2023*	*Compliance pathway under evaluation*
2 OR	*Numeric interim and final goals to be determined based on outcome of TMDL Alternative for the Santa Margarita River. Numeric targets listed in **Table 2-2** (refer to Appendix 3)*	*Assessment of receiving water conditions in the Santa Margarita Estuary*	*Not yet determined*	*Not yet determined*	*Compliance pathway under evaluation*
3 OR	*10% reduction in non-stormwater flows within agency control*[1]	*Assessment of load reductions from implementation actions (based on outfall monitoring or other assessment metrics)*	*Not yet determined*	*FY 2023*	*Compliance pathway under evaluation*
4 OR	*10% reduction in dry weather loadings from Copermittees as a total: TN 993 lb/yr, TP 99 lb/yr OR by jurisdiction City of Wildomar: TN 79, TP 8 City of Murrieta: TN 224, TP 22 City of Temecula: TN 395, TP39 Riverside County: TN 286, TP 28*	*Assessment of load reductions from implementation actions (based on outfall monitoring or other assessment metrics)*	*See Pathway 1*	*FY 2023*	*Compliance pathway under evaluation*
5 OR	*Assess progress toward achieving final goal (using other pathways)*	*Source investigations*	*Not yet determined*	*Not yet determined*	*Compliance pathway under evaluation*
6	The Copermittees develop and implement the jurisdictional strategies as described in the accepted WQIP	Implementation of JRMP, enhanced JRMP strategies, optional jurisdictional strategies, or optional WMA strategies, as triggered through an iterative, adaptive management approach	N/A	FY 2023	**Achieved during the 2019-2020 reporting period.** Strategies proposed in the WQIP were implemented. See **Appendix 2** for details.

[1] Within agency control means, consistent with the scope of the Permit, that conditions are within the regulatory authority of the Copermittee or the City of Menifee and can feasibly be addressed or treated at the point of entry, within, or at the outlets from the MS4. This requires the availability of feasible options for treating the condition. Flows/conditions determined to be uncontrollable would not be included in the calculations related to this goal.

2.2.4 Lower SMR Subwatershed Progress to Goals

The County of San Diego is the responsible agency for the numeric goals in the Lower SMR Subwatershed.

Progress toward the interim goals for the Lower SMR Subwatershed is presented in **Table 2-4**. The compliance pathways for the County of San Diego to achieve WQIP goals are based on six different metrics. The County of San Diego has the option of demonstrating goals have been met through any one of the six pathways. The pathways are presented sequentially and separated by "OR" to indicate that the goal can be achieved through any one of the six pathways.

The compliance pathway currently being pursued involves reducing dry weather discharges. Reducing dry weather flows from the San Diego County storm water outfalls will ultimately reduce the nutrient loading that leads to the eutrophic conditions in the SMR Estuary.

Table 2-4. Progress toward Interim Eutrophication Impacts and Nutrient Loading Numeric Goals, Lower SMR Subwatershed (County of San Diego)

Path-way	Goal	Metric	Baseline	Interim Goal	Goal Due Date	Goal Status
1 OR	Effectively eliminate anthropogenic dry weather discharges from MS4 outfalls to the receiving water	Project completion	Turf replacement project not completed	Complete turf replacement in Rainbow Park	FY 2023	**Achieved.** Project completed (1.7 acres of grass replaced with artificial turf)
		Percent reduction in aggregate flow volume	Not yet determined[1]	Reduce the baseline aggregate flow volume by 25%	FY 2023	In progress
2 OR	*Demonstrate that the Santa Margarita River Estuary targets have been attained*	*Algal biomass level in SMR Estuary*	*N/A*	*Primary numeric targets listed in **Table 2-2** (refer to **Appendix 3**)*	*FY 2038 (Final Goal)*	*Not using this compliance pathway*
		OR				
		Algal biomass level in SMR Estuary AND SQO benthic community structure	*N/A*	*Secondary numeric targets listed in **Table 2-2** (refer to **Appendix 3**)*	*FY 2038 (Final Goal)*	*Not using this compliance pathway*
3 OR	*Discharger is attaining nutrient load reduction*	*Percent nutrient load reduction*	*Not yet determined*	*76%*	*FY 2038 (Final Goal)*	*Not using this compliance pathway*
4 OR	*Discharger is attaining the load allocations defined in the TMDL Alternative for the SMR Estuary*	*Nutrient loading*	*Not yet determined*	*Not yet determined*	*FY 2038 (Final Goal)*	*Not using this compliance pathway*
5 OR	*Exceedances of the targets are due to non-controllable sources*	*Documentation that exceedances are due to non-controllable sources*	*N/A*	*Demonstrate that all exceedances of targets are due to non-controllable sources*	*FY 2038 (Final Goal)*	*Not using this compliance pathway*
6	*Demonstrate that management actions to attain allocations are being implemented through mechanisms defined in each applicable Order[2]*	*Implementation of proposed management actions*	*N/A*	*Implement proposed management actions according to proposed schedules.*	*FY 2038 (Final Goal)*	*Not using this compliance pathway*

[1] The County of San Diego planned to use site MS4-SMG-063 to develop the baseline in 2019-2020, however, since the outfall drains to Rainbow Creek and is subject to other regulatory requirements under the Rainbow Creek TMDL, the County will not use this site to assess progress toward reducing and eliminating anthropogenic dry weather discharges. The County investigated several other sites that could be used to set a baseline and plans to monitor MS4-SMG-093, an outfall that drains to the Santa Margarita River, during the 2020-2021 dry season to set a baseline. The results of that monitoring and the baseline determined based on it are expected to be presented in the 2020-2021 WQIP Annual Report.

[2] Mechanisms for implementing management actions include, but are not limited to, Phase I MS4 Water Quality Improvement Plans, Agricultural Discharger Water Quality Restoration Program Plans, Phase II MS4 permit program elements, and Caltrans compliance units, cooperative implementation grants and cooperative implementation agreements.

2.2.5 Middle SMR Subwatershed Strategy Implementation and Planning

Highlights of strategies implemented by the Riverside County Copermittees across the region are presented below, followed by highlights of individual Copermittee strategy implementation and planning in accordance with Provision F.3.b.(3)(d)(ii) and (iii). In the strategy highlight tables in this section, the columns on the right identify pollutants/conditions addressed and the HPWQC is shown in yellow. The highlights include both strategies that were implemented and strategies for which planning occurred during the reporting period. The status of each strategy listed in the WQIP is provided in **Appendix 2**, including whether it was implemented during the reporting period, whether it is planned to be implemented in the next reporting period, and whether any modifications are proposed.

2.2.5.1 Riverside Copermittee Regional Programs

Programs the Riverside Copermittees implemented regionally within the Riverside County portion of the WMA are summarized in **Table 2-5**. The District generally leads implementation of these strategies, which are undertaken on behalf of all Riverside Copermittees. These strategies are also implemented in the Upper SMR Subwatershed, as applicable.

Table 2-5. Summary of Riverside County Copermittee Regional Strategy Implementation

Strategy Highlight	Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
Overwatering Webpage. During this reporting period, the Riverside County Watershed Protection Program continued maintaining and adjusting its over-watering webpage (https://www.rcwatershed.org/overwatering/). This page contains beneficial information about how to recognize and prevent over-irrigation, short videos, links to water district web pages and the District's public reporting form and contact number to report illegal discharges. All in all, the District's regional Watershed Protection website, including the over-irrigation page, was visited 6,715 times during this reporting period.	• Reduce irrigation runoff	PubEd-1	X	X	X	X	X	X	
Outreach to Students. The Riverside County Watershed Protection Program continues to move forward according to its Five-Year Public Education and Outreach Strategic Plan which includes outreach to school children as a key objective in the plan. During this reporting period, 3 presentations at 2 schools reached 305 students in the SMR WMA. County wide, the regional outreach program conducted 51 presentations at 16 schools and reached 2,840 students. The outreach programs included presentations and information students could use to involve their family and other members of the community in improving water quality. This reporting period, educational outreach to schools was impacted as a result of COVID-19 restrictions on in-person outreach efforts. As a result, the Riverside County Watershed Protection Program provided virtual outreach options for students instead.	• Outreach to school children	PubEd-1	X	X	X	X	X	X	X

Table 2-5. Summary of Riverside County Copermittee Regional Strategy Implementation

Strategy Highlight	Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
Public Education Strategic Taskforce (PEST) Committee. PEST is a technical committee consisting of representatives from each watershed group in Riverside County. It was established following the completion of the Five-Year Public Education and Outreach Strategic Plan to enable its implementation and the continued implementation of the regional public education activities common to, shared, and funded by all three watershed groups.	• Regional consistency in outreach	PubEd-1	X	X	X	X	X	X	X
Overwatering Doorhanger. A doorhanger was created to work in conjunction with the over-watering webpage. This doorhanger has multiple uses. It was designed to be used throughout residential and business communities to supplement the various educational brochures and hand-outs currently provided by Copermittees, or it can be used as an enforcement tool to identify violations and require immediate attention by the recipient. The door hanger is distributed as an educational material with all enforcement actions.	• Reduce irrigation runoff	PubEd-1	X	X	X	X	X	X	
Outreach Improvements. During the next reporting period, the District, as Principal Copermittee, will continue implementing the Strategic Plan, focusing on the school education program, as well as reviewing and updating business outreach, with an emphasis on home improvement and pet stores, and updating the District's Watershed Protection website, including the over-irrigation webpage, if necessary.	• Improved outreach to key audiences	PubEd-1	X	X	X	X	X	X	X
Digital News and Social Media. Monthly digital newsletters continued featuring compelling articles to engage citizens and stakeholders, promote watershed protection, encourage pollution prevention, and modify behavior. These newsletters provide links to guide visitors to the Watershed Protection website and associated social media sites.	• Outreach to broad audience of stakeholders	PubEd-5	X	X	X	X	X	X	X
Earth Day 2020 Social Media Contest. The District, as Principal Copermittee, routinely participates in Earth Day activities on an annual basis to encourage Riverside County residents to share how they protect their environment. However, due to state- and county-issued COVID-19 restrictions such as limits on the size of group events and requirements for social distancing, the District was unable to implement previously planned activities.	• Public participation	PubEd-1	X	X	X	X	X	X	X

Table 2-5. Summary of Riverside County Copermittee Regional Strategy Implementation

Strategy Highlight	Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
Upper Santa Margarita River Watershed Storm Water Resource Plan (USRW SWRP)[11]. The USMRW SWRP is an integrated plan that focuses on regional watershed-based stormwater priorities and on developing projects with multiple benefits in the Riverside County portion of the SMR WMA. The SWRP works closely with the WQIP as well as the Upper Santa Margarita Watershed Integrated Regional Water Management Plan (IRWMP) allowing eligible entities with eligible projects to compete for grant funds through all chapters of Proposition 1.	• Increase opportunities for funding water quality projects		X	X	X	X	X	X	X
Illicit Discharge Detection and Elimination (IDDE), Major MS4 Outfall Field Screening and Dry Weather MS4 Outfall Monitoring. The Riverside County Copermittees implement programs to identify and eliminate prohibited discharges, such as outfall monitoring and operating public hotlines. Reducing prohibited non-stormwater discharges is an accepted compliance pathway to meet TMDL Alternative goals as outlined in Section 4.1.3.1 of the WQIP (Pathway 3). In 2019-2020, approximately 27 of the almost 262 MS4 outfalls operated by Riverside County Copermittees had measurable flow data during dry weather.	• Identify and eliminate dry weather runoff	IDDE-2	x	x	x	x	x	x	

[11] The Upper SMR Watershed area described by the USRW SWRP is the Riverside County portion of the WMA and includes the Middle SMR Subwatershed as defined in the WQIP.

2.2.5.2 County of Riverside

During this reporting period, the County of Riverside implemented strategies described in the WQIP, and implementation status is provided by strategy in **Section 5.3** of **Appendix 2**. Highlights of strategies implemented by the County to address the eutrophication and nutrient HPWQC are summarized in **Table 2-6**; the columns on the right identify pollutants/conditions addressed.

Table 2-6. County of Riverside Strategy Implementation Highlights

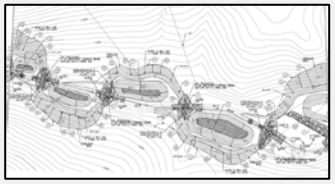
Strategy Highlight	Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
 **Eliminating Illicit Discharges and Illegal Connections.** The County of Riverside has mapped MS4 facilities and is monitoring high priority areas known for observed dry-weather flows. A reporting and outreach process is in place and includes providing educational materials to residents. Staff training on IC/ID elimination and reporting was conducted during this reporting period.	• Identify and eliminate illegal discharges	IDDE-1 IDDE-2 IDDE-3	X	X	X	X	X	X	X
 **Warm Springs Creek Integrated Mitigation Project.** This project will create over 1,500 linear feet of new intermittent channel and seasonal wetlands. The project will preserve, restore and enhance the existing un-named creek tributary to Warm Springs Creek, ephemeral drainages, and associated wetland habitats. The construction phase of this project began November 2020.	• Habitat restoration	OPT-1	X	X	X	X	X	X	X

Table 2-6. County of Riverside Strategy Implementation Highlights

Strategy Highlight	Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
 **Facilitating Public Reporting.** The public can report pollutant issues with the County's "RivCo" mobile application (app). The app includes options to report illegal dumping and necessary maintenance to storm drains. Service requests can also be submitted on the County of Riverside's website.	• Identify and eliminate illegal discharges	PubEd-4	X	X	X	X	X	X	X

2.2.5.3 Riverside County Flood Control and Water Conservation District

During this reporting period, the District implemented the strategies described in the WQIP, and implementation status is provided by strategy in **Section 6.3** of **Appendix 2**. Highlights of strategies implemented by the District to address the eutrophication and nutrient HPWQC are summarized in **Table 2-7**; the columns on the right identify pollutants/conditions addressed.

Table 2-7. Riverside County Flood Control and Water Conservation District Strategy Implementation Highlights

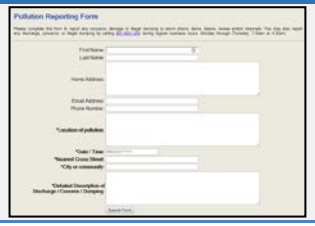
Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
	**Public Reporting of ICIDs.** The District operated a County-wide hotline number and two weblinks for public reporting. One weblink was dedicated to reporting ICIDs, and the other is dedicated to non-ICID stormwater items such as clogged storm drains and illegal dumping.	• Identify and eliminate illegal discharges	IDDE-1	X	X	X	X	X	X	X

Table 2-7. Riverside County Flood Control and Water Conservation District Strategy Implementation Highlights

Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
	**Inspection of District Outfalls.** During this reporting period, the District field screened 100% (82 outfalls) of its major outfall inventory in spring. Then in late summer, 82% (74 outfalls) that were assumed to be "accessible" were inspected. Accessible major outfalls with the presence of flow at the time of inspections were prioritized for additional field screenings during dry weather as a targeted approach to flow source tracking. 10 additional field screenings (2x at 5 outfall stations) were completed during the dry weather MS4 monitoring sample events in May and August. Accessible major outfalls with the presence of flow at the time of these inspections will continue to be prioritized for additional field screenings during dry weather as a targeted approach to flow source tracking. All identified dischargers were notified of the discharge prohibitions, either through direct contact or provided with educational materials, to assist in correcting the condition causing the discharge.	• Reduce dry weather flow • Identify and eliminate illegal discharges	ED-2	X	X	X	X	X	X	X
	**Transient Area Clean-up**. This strategy continued to be implemented. A transient encampment area cleanup was conducted within Temecula Creek. The amount of trash removed was 1.20 tons, as compared to 2.52 tons from the previous reporting period.	• Reduce source of nutrients, trash, and other pollutants	IDDE-4	X	X		X		X	X

Table 2-7. Riverside County Flood Control and Water Conservation District Strategy Implementation Highlights

Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
	**"Science Day" Public Outreach.** The Riverside County Watershed Protection Division has partnered with the Santa Margarita Group of the Sierra Club and the San Diego State University Field Station Program to create the Santa Margarita Ecological Reserve Science Day. This reporting period, Science Day was held by the Riverside County Watershed Protection Division. Attendees learn what they can do at home to improve the overall health of their watershed, including limiting fertilizers and pesticides, eliminating irrigation runoff, and keeping trash out of the waterways.	• Pollution prevention • Reduce sources of nutrients	PubEd-3	X	X	X	X	X	X	X
	**Regional Detention Basin.** The District is designing a regional detention basin to be built in the City of Wildomar. This project is included in the USRW SWRP. The basin will occupy 19.1-acres with flow-through infiltration functions and a multi-benefit park. The basin footprint is intended to be the hydrologic low-point for a 2,310-acre tributary watershed located near the top of the Middle SMR Subwatershed and treats runoff before it enters Murrieta Creek. The project charter specifies that it will support flood protection up to 100-year storm events and have a storage capacity of 143.6 ac-ft and the potential to infiltrate 33 acre-feet per year.	• Reduce runoff	OPT-3	X	X	X	X	X	X	

Table 2-7. Riverside County Flood Control and Water Conservation District Strategy Implementation Highlights

Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
	**Santa Margarita Nutrient Initiative Group.** During the 2019-2020 reporting year, the SMRNIG held quarterly/as needed meetings. The District continued to provide a facilitator and coordinated TAC and SAG meetings with the San Diego Water Board and the science team being led by SCCWRP. The group continues to progress in Phase III of the technical work, which extends the efforts conducted for the Estuary in Phases I and II to explore a range of biostimulatory targets that are protective of beneficial uses in the SMR main stem under the present climate conditions and under selected climate change scenarios. The technical work in Phase III is being funded by the San Diego Water Board.	• Reduce source of nutrients	WMA-7 WMA-8	X	X			X	X	X

2.2.5.4 City of Murrieta

During this reporting period, the City of Murrieta implemented the strategies described in the WQIP, and implementation status by strategy is provided in **Section 2.3** of **Appendix 2**. Highlights of strategies implemented by the City to address the eutrophication and nutrient HPWQC are summarized in **Table 2-8**; the columns on the right identify pollutants/conditions addressed. Most of the City's strategies were not due to begin until the FY2021 reporting period. The City will be initiating several additional strategies to address the HPWQC in the coming years, as described in the WQIP.

Table 2-8. City of Murrieta Strategy Implementation Highlights

Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
	**Enhanced Municipal Training Programs.** Due to COVID-19, field staff will attend an online enhanced municipal training program developed and put on by the District in the fall of 2020. The program focused on the WQIPs, HPWQCs, elimination of illicit discharges, and elimination of dry weather flow. Training programs will continue in FY 2021.	• Identify and eliminate dry weather flow	IDDE-1 ED-6	X	X	X	X	X	X	X
	**Enhanced Commercial and Training Programs. Due to COVID-19,** inspection staff will attend an online enhanced commercial and industrial training program developed and put on by the District in the fall of 2020. Programs focused on the WQIP, HPWQC, and specific nutrient issues at commercial and industrial businesses. Inspection staff will continue attending the training program in FY 2021.	• Reduce sources of nutrients	ED-6	X	X		X		X	

Table 2-8. City of Murrieta Strategy Implementation Highlights

Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
	**IDDE.** In response to the 2018 IDDE audit, the City has reviewed the IDDE program and has prepared a draft implementation plan to improve the existing program. The proposed improvements include a website update, including clarification of over-irrigation as a prohibited discharge, improved coordination with appropriate City departments, training for enforcement staff and review and refinement of the residential enforcement response to include over-irrigation. Residential BMP information brochures will be posted to the website and attached to the JRMP. Additionally, in order to improve data management and tracking of storm water compliance activities, the City is in the process of implementing cloud-based software to streamline storm water compliance activities associated with the IDDE program, including IDDE inspections, investigations and enforcement actions. In August 2020, Outfall 4063 contained trickle flow and was sampled. The results indicated there were NAL exceedances for manganese, enterococci and phosphorous. In August 2019, there were NAL exceedances for iron, fecal coliform, enterococci, total nitrogen and total phosphorous for Outfall 4062. The potential sources for these exceedances are rising groundwater, wastewater effluent, water main flushings, leaky sewer pipes, pet waste and fertilizer treated areas. The City will be sending	• Identify and eliminate dry weather flow	IDDE-3 IDDE-4 IDDE-5 ED-8	X	X	X	X	X	X	X

Table 2-8. City of Murrieta Strategy Implementation Highlights

Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
	NAL notification letters to the Home Owner's Associations located within the area tributary to Outfalls 4062 and 4063. Additionally, to address the potential sources of NAL exceedances, the City will also be sending public education materials on landscaping and gardening, over-irrigation and pet waste. The City will also reach out to Rancho California Water District to inquire about sewer lines and potential water main flushings in the area to gather more information on potential sources of exceedances.									
	**Construction Inspection Public Education.** To ensure the contractors are prepared to implement appropriate BMPs prior to the rainy season, the City prepared public information letters to distribute to the responsible parties of active construction sites. The letters emphasized the City's expectations for compliance and compliance areas that require additional attention.	• Reduce sources of sediment	CON-2				X	X	X	X

Table 2-8. City of Murrieta Strategy Implementation Highlights

Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
 Credit: University of Illinois	**Data and Storm Water Compliance Management.** The City will be implementing cloud-based software to better management data and storm water compliance activities. The software will be configured to track construction, post construction BMP, commercial, industrial, IDDE and municipal inspections, investigations and enforcement actions. The City is currently in the process of configuring the construction inspection program within the software. Once the construction program has been configured, the program will be tested prior to the start of configuration of the remaining programs.	• Identify and eliminate dry weather flow	IDDE-4	X	X	X			X	X

2.2.5.5 City of Temecula

During this reporting period, the City of Temecula implemented the strategies described in the WQIP. Implementation status is provided by strategy in **Section 3.3** of **Appendix 2**. Highlighted strategies implemented by the City to address the eutrophication and nutrient loading HPWQCs are summarized in **Table 2-9**; the columns on the right identify pollutants/conditions addressed.

Table 2-9. City of Temecula Strategy Implementation Highlights

Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
	**Alternative Compliance Program.** The City of Temecula has developed and begun implementing an alternative compliance program for development projects. The City generates credits, which are then used for City projects or private projects. When a private project uses credits generated by the City, the private project owner pays the City a one time in-lieu fee to compensate the City for the capital and long-term operation and maintenance costs of the BMP. Due to safety factors built into the Water Quality Equivalency process used to calculate credits, use of alternative compliance provides additional water quality benefits compared to standard onsite compliance, including additional reductions of nutrients, a HPWQC in the SMR WMA, and other pollutants.	• Reduce sources of nutrients and other pollutants • Provide funding for water quality treatment	DEV-2	X	X	X	X	X	X	X

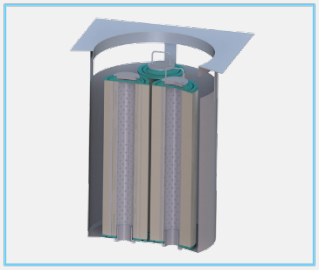
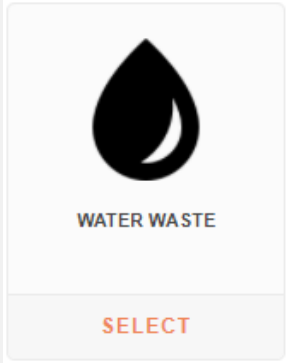
Table 2-9. City of Temecula Strategy Implementation Highlights

Strategy Highlight	Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
 **Land Restoration.** Land restoration is generally completed on land that was formerly agricultural, which has been identified as a potential source of nutrients, the HPWQC for the portion of the WMA in which the City of Temecula is located. Land restoration reduces erosion, runoff, and discharge of nutrients from previously agricultural areas. A YouTube video of a site before and after land restoration was completed can be viewed at https://www.youtube.com/watch?v=blOf3ZGUCik&feature=youtu.be. Screen captures from the video showing before and after conditions in one part of the project are provided in the left-hand column.	• Reduce source of nutrients • Reduce source of runoff and erosion	DEV-2	X	X			X	X	X

Table 2-9. City of Temecula Strategy Implementation Highlights

Strategy Highlight	Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
Before  **After** 	**Creek Restoration.** The Meadowview Creek Restoration Project is a joint effort by community, municipal, and federal agencies to fix a section of the creek's deeply eroded banks. The first of its kind in the area, this project provides a viable method and model for managing storm water to deliver multiple benefits beyond public safety and water quality. The City of Temecula approved the project's permits, provided support by waiving grading fees, and has been overseeing the project's progress, which has included implementing bio-engineering methods such as bank grading, planting native vegetation, and the creation of earthen diversion bars. A video illustrating the project is available at https://www.dropbox.com/s/nr7a6sxl2ian2m0/Meadowview_Reduced.mp4?dl=0 This project won the Environmental Engineering Project of the Year from the Inland Empire American Association of Engineers in 2019 and is ongoing in FY20-21.	• Reduce source of nutrients • Reduce source of runoff and erosion • Habitat improvement	OPT-2	X	X	X	X	X	X	X

Table 2-9. City of Temecula Strategy Implementation Highlights

Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
 **High Efficiency Filtration Device** Image Credit: Bio Clean	**Higher Efficiency BMPs for Trash Amendments Compliance.** Typical BMPs installed to meet Trash Amendments remove trash but are not as effective at removing other pollutants. The City of Temecula has begun installing media filtration devices, which provide treatment for nutrients and other pollutants in addition to trash, instead of standard trash controls. Because of this additional treatment, the City generates alternative compliance credits that it can use for its own capital improvement projects or that it can sell to private developers. This provides both additional water quality benefits relative to installing only the basic trash controls and a funding source to pay for BMP installation and maintenance needed to comply with the Trash Amendments, which has no designated funding source.	• Reduce trash and nutrients in runoff • Provide funding for water quality treatment	DEV-2	X	X	X	X	X	X	X
	**Public Education and Outreach.** The City continues updating its website, app, and outreach materials to ensure the irrigation runoff discharge prohibition is clearly identified for the public and that irrigation runoff discharges can be reported. Residents can also report illegal discharges, including irrigation runoff, through the City Mobile Application. In addition, the City has worked with the Riverside County Flood Control District to develop a door hanger addressing the irrigation runoff prohibition. The City follows up on all reports of irrigation runoff.	• Identify and eliminate illegal discharges	PubEd-1 PubEd-2	X	X	X	X	X	X	X

2.2.5.6 City of Wildomar

During this reporting period, the City of Wildomar implemented the strategies described in the WQIP, and implementation status is provided by strategy in **Section 4.3** of **Appendix 2**. Highlights of strategies implemented by the City to address the eutrophication and nutrient HPWQC are summarized in **Table 2-10**.

Table 2-10. City of Wildomar Strategy Implementation Highlights

Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
	**Working with HOAs to Eliminate Dry Weather Flows.** While conducting MS4 outfall monitoring, the City has observed flows in outfalls that appear to come from a specific residential area. The City shared this information with an HOA manager of that community and educated the HOA about the over-irrigation runoff prohibitions. The HOA expressed their willingness to support the City's educational efforts by providing information to their residents regarding this issue. This year, the City sent specific letters and an Irrigation Runoff BMP fact sheet to multiple HOA Managers throughout the City to highlight the City's recent NPDES ordinance update and the over-irrigation prohibition. The City requested that the HOA share the information with their communities also, to inform residents. Based on FY 2019 dry weather MS4 outfall monitoring, many of the City's major outfalls are dry.	• Reduce source of dry weather flow	IDDE-1	X	X	X	X	X	X	X

Table 2-10. City of Wildomar Strategy Implementation Highlights

Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
	**Enhanced Outreach to Businesses.** The City provides businesses with BMP handouts and educational materials upon approval of their business registration. Nurseries are given handouts targeting nutrient pollutant reduction; livestock/ equestrian operations are given handouts targeting animal care; and home-based businesses are given irrigation reduction handouts, as well as educational materials specific to their business activities. These materials also include references to California Stormwater Quality Association (CASQA) BMP Fact Sheets, as applicable, and handouts available at RCWatershed.org, depending on the type of business.	• Reduce source of nutrients • Pollution prevention	PubEd-1 PubEd-2 PubEd-3	X	X	X	X	X	X	X
	**Stormwater Ordinance Amendment.** The City updated its stormwater drainage system protection ordinance to ensure consistency with the MS4 Permit's discharge prohibitions, including irrigation runoff. The ordinance amendment was approved in September 2019 and became effective in October 2019.	• Reduce source of dry weather flow • Eliminate illegal discharges	IDDE-2	X	X	X	X	X	X	X

Table 2-10. City of Wildomar Strategy Implementation Highlights

Strategy Highlight	Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
 	**Reporting Stormwater Issues to City**. The City updated its website to create a new stormwater pollution prevention webpage. The purpose of the webpage is to inform the public about stormwater pollution and prevention, and to provide specific information to various members of the community (Residents, Businesses, Contractors, and Developers). The City's website now also provides residents with clear links to report over-irrigation runoff violations.	• Reduce source of dry weather flow • Identify and eliminate illegal discharges	IDDE-3	X	X	X	X	X	X	X

Table 2-10. City of Wildomar Strategy Implementation Highlights

Strategy Highlight	Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
	**Over-Irrigation Runoff Education.** In coordination with the other Riverside County Copermittees, the City of Wildomar participated in the development of a new Over-Irrigation Runoff Doorhanger to help educate residents regarding the over-irrigation runoff prohibitions and to better equip City staff to respond to reports or observations of over-irrigation runoff. The doorhanger was developed during the previous reporting period and is now currently in active use with IDDE follow-up efforts.	• Reduce irrigation runoff and dry weather flow	IDDE-1 PubEd-3	X	X	X	X	X	X	X

2.2.6 Lower SMR Subwatershed Strategy Implementation and Planning

During this reporting period, the County of San Diego implemented the strategies described in the WQIP, and implementation status is provided by strategy in **Section 7.3** of **Appendix 2**. Highlights of strategies implemented by the County to address the eutrophication and nutrient HPWQC are summarized in **Table 2-11**; the columns on the right identify pollutants/conditions addressed and the HPWQC is shown in yellow. Note that these strategies were generally implemented throughout the County's jurisdiction in the SMR Watershed, including both the Lower SMR Subwatershed and the Rainbow Creek Watershed. These strategies are also implemented in the Upper SMR Subwatershed, as applicable. Details on additional strategies implemented for the Rainbow Creek Watershed are provided in **Section 2.3** and **Appendix 2**.

Table 2-11. County of San Diego Strategy Implementation Highlights

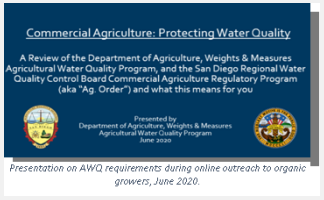
Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/Wildlife
	**Agriculture Facility Inspections.** The County's Agriculture, Weights, and Measures Departments (AWM) conducted 32 initial agricultural stormwater inspections in the SMR WMA during this reporting period, which is 58% of the 55 inventoried facilities. AWM inspectors continue conducting follow-up inspections when BMP implementation deficiencies are noted.	• Reducing pollution from agricultural facilities	38	X	X	X	X	X	X	X
 *Presentation on AWQ requirements during online outreach to organic growers, June 2020.*	**Water Quality Workshops for Commercial Agriculture Facilities.** Three workshops were hosted by the County during this reporting period. Two in-person outreach events were for new and prospective industrial hemp growers. The third event was an online webinar for organic growers. In total, more than 70 stakeholders attended these workshops.	• Educating agricultural growers on water quality	54, 56	X	X	X		X	X	X

Table 2-11. County of San Diego Strategy Implementation Highlights

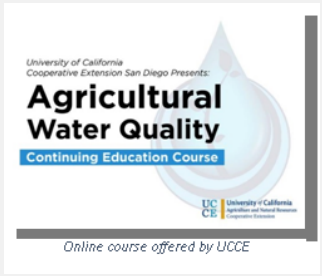
Strategy Highlight	Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/Wildlife
 Online course offered by UCCE **Agricultural Water Quality Workshops.** The County and University of California Cooperative Extension (UCCE) held three workshops during this reporting period to address the requirements of the General Orders for commercial agriculture water quality and waste discharge. A total of 115 local growers attended the workshop. UCCE, sponsored by the County, also offered an online Agricultural Water Quality Continuing Education Course, which was completed by 140 participants.	• Educating agricultural growers on water quality	54, 56, 68	X	X	X		X	X	X
 AWM Staff at the Farm and Nursery Expo, November 2019 **Annual Farm and Nursery Expo.** County staff hosted a booth at the annual San Diego County's Farm Bureau's Annual Farm and Nursery Expo. Staff shared information and resources regarding pollution prevention with growers in attendance.	• Educating agricultural growers on pollution prevention	54, 56	X	X	X		X	X	X
 **Stormwater Community Outreach.** The County conducts stormwater outreach events throughout its jurisdiction, which include school outreach on recycling and webinars for small residential agriculture. Within the Santa Margarita watershed, 16,559 people attended the events where outreach was being offered in FY 2019-2020.	• Educating 16,559 members of the public on stormwater pollution prevention	48	X	X	X	X	X	X	X

Table 2-11. County of San Diego Strategy Implementation Highlights

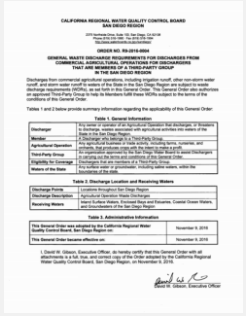
Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/Wildlife
	**Discovering and Referring of Ag Order Non-filers.** Agriculture Orders (Ag. Order) are permits administered and enforced by the State of California. However, the County of San Diego collaborates with the State and San Diego Regional Water Board by referring Ag. Order "non-filers" when they are discovered. The County's approach to referring non-filers ensures that the businesses are educated about State permit requirements and also promotes compliance with the County's WPO. During this reporting period, a total of 32 Ag. Order non-filers were reported County-wide.	• Identifying agricultural facilities not compliant with State Permits	63	X	X	X	X	X	X	X
	**Master Gardener Website.** During the COVID-19 pandemic, the Master Gardeners developed a new feature for the website that addressed public need for information and activities while following the COVID-19 Stay-at-Home directive. This feature received 4,800 visits on the home page and a total of 12,870 visits to the individual sections.	• Educating members of the public on best management practices	47, 56, 57	X	X			X	X	

Table 2-11. County of San Diego Strategy Implementation Highlights

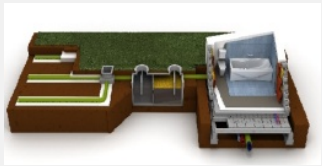
Strategy Highlight	Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/Wildlife
Solana Center Compost and Manure Outreach. The County partners with the Solana Center for Environmental Innovation to educate residents on composting and gardening. During this reporting period, 14 composting workshops were attended by 338 residents; 45 school presentations reached 5,970 students; 1 Master Composter Course had 35 weekly attendees; 10 community events reached 3,775 residents; 2 landscaper-focused one-day courses reached 36 landscapers, 5 manure management workshops reached 66 horse owners; 3 manure management community events reached 2,000 horse and livestock owners, and e-Blasts were sent to 105,742 people.	• Educating members of the public, school children, landscapers, and livestock owners	49, 56		X	X	X	X		X
 **Septic System Maintenance Support.** The County prepared a fact sheet on preventative septic system maintenance that was sent to 189 septic system professionals and septic tank pumpers. These fact sheets are designed to be shared with homeowners financially impacted by COVID-19 that may be experiencing septic system problems.	• Assisting septic system owners with maintenance activities	9, 11	X	X				X	X
 **Septic System Outreach.** The County developed both a flyer and a training video to communicate proper septic system maintenance guidelines. These materials are part of the County's approach to reaching septic system users, which will also include a rebate program in the future.	• Educating septic system owners on maintenance activities	Opt-3	X	X				X	

Table 2-11. County of San Diego Strategy Implementation Highlights

Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/Wildlife
	**Collaboration with Water Districts in Santa Margarita WMA.** There are three water districts in the County of San Diego portion of the Santa Margarita Watershed. They include Camp Pendleton, Fallbrook Public Utility District, and Rainbow Municipal Water District. Water districts serving more than 3,000 acre-feet of water per year are required to report water loss rates to the State Department of Water Resources annually. The gallons lost to the watershed per day due to permitted flows, leaks, breaks, and overflows can be assumed to be either moving through the watershed as surface or subsurface flows. However, water district service areas cross watershed and jurisdictional boundaries, therefore volumes lost to any particular watershed or jurisdiction are challenging to estimate. The County recommends the Water Board coordinate with the water districts to review the reporting requirements under General Order 2014-0194-DWQ to explore the viability of reporting detailed data losses in each MS4 by watershed.	• Reducing non-stormwater discharges from potable sources	2	X	X				X	

Table 2-11. County of San Diego Strategy Implementation Highlights

Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/Wildlife
	**Development of a Green Streets Master Plan.** The County is developing a Green Streets Master Plan to identify multi-benefit opportunities within unincorporated village and adjacent semi-rural residential areas to support progress on achieving water quality. The plan is currently in the early stages of development and is estimated to be completed during the first half of 2022. Key components of the Master Plan include: o Identification of candidate sites within the County Right-of-way o Assessment of best-suited BMP site designs utilizing our Green Infrastructure Guidelines and design criteria o Assessment of benefits provided by candidate sites o Development of a project prioritization approach o Develop an Estimate of Capital and Operation and Maintenance costs (30-year lifecycle) o Present prioritized project recommendations and layout the broader vision for green streets in unincorporated County	• Will treat wet weather flows for nutrients and other pollutants	Opt-8	X	X	X	X	X		

2.3 RAINBOW CREEK

The Rainbow Creek Nutrient TMDL is based on the numeric interpretation of the narrative Basin Plan (Regional Water Board, 1994) WQOs for biostimulatory substances for the protection of the COLD and WARM beneficial uses. The County of San Diego is the responsible agency for the Rainbow Creek numeric goals. Progress toward the goals and the strategies the County of San Diego is implementing or planning to help meet the goals are described in the following subsections.

2.3.1 Rainbow Creek Nutrient TMDL Compliance Pathway Selection

The following pathways for meeting final compliance with the Rainbow Creek Nutrient TMDL are provided in Specific Provision E.3.b.(3) of Attachment E of the MS4 Permit:

(a) There is no direct or indirect discharge from the Responsible Copermittee's MS4s to the receiving water; OR

(b) There are no exceedances of the final receiving water limitations under Specific Provision 3.b.(2)(a) in the receiving water at, or downstream of the Responsible Copermittee's MS4 outfalls; OR

(c) There are no exceedances of the final effluent limitations under Specific Provision 3.b.(2)(b)(i) at the Responsible Copermittee's MS4 outfalls; OR

(d) The annual pollutant loads from given land uses discharging to and from the MS4s do not exceed the final effluent limitations under Specific Provision 3.b.(2)(b)(ii); OR

(e) The Responsible Copermittee develops and implements the Water Quality Improvement Plan as follows:

- (i) Incorporate the BMPs required under Specific Provision 3.b.(2)(c) as part of the Water Quality Improvement Plan,
- (ii) Include an analysis in the Water Quality Improvement Plan, utilizing a watershed model or other watershed analytical tools, to demonstrate that the implementation of the BMPs required under Specific Provision 3.b.(2)(c) achieves compliance with Specific Provisions 3.b.(3)(a), 3.b.(3)(b), 3.b.(3)(c) and/or 3.b.(3)(d),
- (iii) The results of the analysis must be accepted by the San Diego Water Board as part of the Water Quality Improvement Plan,
- (iv) The Responsible Copermittees continue to implement the BMPs required under Specific Provision 3.b.(2)(c), AND
- (v) The Responsible Copermittees continue to perform the specific monitoring and assessments specified in Specific Provision 3.d, to demonstrate compliance with Specific Provisions 3.b.(3)(a), 3.b.(3)(b), 3.b.(3)(c) and/or 3.b.(3)(d)."

In the September 4, 2019 letter to the County of San Diego, the San Diego Water Board notified the County of deficiencies in the reasonable assurance demonstration used to select the implementation of the WQIP (i.e., Pathway (e)) as a pathway for compliance with the Nutrient TMDL. In response to this letter, the County of San Diego re-evaluated its approach to meeting compliance with the TMDL and proposed updates to the goals in the 2018-2019 WQIP Annual Report.

However, based on recent discussions with the San Diego Water Board, the proposed goal updates cannot be accepted by the San Diego Water Board under the current Permit. For this reason, the County has selected compliance Pathway (e) for FY19-20 for its Rainbow Creek nutrient reduction goal.

As discussed in detail in the 2018-2019 WQIP Annual Report, updated modeling was performed to develop the annual total nitrogen (TN) and total phosphorus (TP) loads from the given land uses of commercial nurseries, parks, residential areas, and urban areas as identified in Table 3.3 of Attachment E.3 of the MS4 Permit (**Table 2-12**). These updated loads are proposed to be incorporated into compliance Pathway (e) as part of the WQIP update.

Table 2-12. MS4 Existing (Modeled) and Allowable TN and TP Loads and Required Reductions for the Rainbow Creek Nutrient TMDL based on Annual Rainfall Average for WY 2007 to WY 2016 (kg/yr)

TMDL Land Use Category	Existing (Modeled) TN Load	Existing (Modeled) TP Load	Allowable TN Load (Final Effluent Limitation)	Allowable TP Load (Final Effluent Limitation)	Required TN Load Reduction	Required TP Load Reduction
Commercial nurseries	83.1	4.1	9.5	0.9	73.7 (89%)	3.2 (77%)
Parks	1.3	0.09	0.8	0.08	0.5 (36%)	0.01 (5%)
Residential areas	24.7	1.2	13.9	1.4	10.8 (44%)	0.0 (0%)[1]
Urban areas	15.5	1.1	9.8	1.0	5.7 (37%)	0.1 (8%)
MS4 TMDL Compliance Subtotal	**124.6**	**6.5**	**34.0**	**3.4**	**90.7 (73%)**	**3.31 (51%)[2]**
Agricultural fields[3]	46.9	4.6	--	--	--	--
Orchards[3]	12.7	0.4	--	--	--	--
Caltrans[3]	53.4	4.2	--	--	--	--
Other[3]	18.0	0.4	--	--	--	--
Total MS4 Area[3]	**255.6**	**16.1**	--	--	--	--

[1] Actual difference between the Existing Modeled TP Load and Allowable TP Load is -0.2 kg/yr. A Required TP Reduction of 0.0 (0%) is shown to reflect antidegradation.

[2] Total Required TP Reduction calculated assuming 0.0 kg TP/yr required reduction for residential areas, as stated in (1). However, the actual Total Required TP Reduction is 3.1 kg/yr (48%), accounting for the greater allowable load compared to the existing load in residential areas.

[3] Provided for reference to include all land uses within the MS4 drainage area.

2.3.2 Rainbow Creek Progress to Goals

The pathway options to achieve final numeric goals for nutrients in Rainbow Creek by the County of San Diego as given in the WQIP reflect the same five pathway options in Attachment E.3 but are presented in a different order (i.e., 1 = '(e)', 2 = '(b)', 3 = '(c)', 4 = '(a)', and 5 = '(d)' as shown in **Table 2-13**). The County of San Diego has elected to pursue Pathway 1 (i.e., Pathway '(e)' from Attachment E.3), and, based on the updated model described in the 2018-2019 WQIP Annual Report, is providing updated allowable loads (i.e., final effluent limitations) for Pathway 1, which are shown in the "Goals" column of **Table 2-13**. **Table 2-13** shows the status of progress to goals, which are not due to be achieved until December 31, 2021. Strategy implementation and planning to meet goals are described in **Section 2.3.3**.

Table 2-13. Progress toward Nutrient Numeric Goals due December 31, 2021; Rainbow Creek[1] (San Diego County)

Compliance Pathway		Indicator		Goal	Goal Status
1 OR	Implement Accepted Water Quality Improvement Plan MS4 Permit Attachment E, Section E.3.b(3)(e)	Implementation of a WQIP that incorporates the required BMPs; includes an analysis utilizing a watershed model or other watershed analytical tool to demonstrate that the implementation of the required BMPs achieves compliance; the results of the analysis are accepted by the Regional Water Board as part of the WQIP; the responsible Copermittees continue to implement the required BMPs; and the responsible Copermittees continue to perform the specific monitoring and assessments to demonstrate compliance.			In progress; see Section 2.3.3 for additional details.
2 *OR*	*Receiving Water: Meet receiving water limitations* *MS4 Permit Attachment E, Section E.3.b(3)(b)*	*Nitrate (as N)*		*10 mg/L*	*Not using this compliance pathway*
		Total Nitrogen		*1.0 mg/L*	
		Total Phosphorus		*0.1 mg/L*	
3 *OR*	*MS4 Discharges: Meet final effluent limitations expressed as concentrations in the storm drain discharge* *MS4 Permit Attachment E, Section E.3.b(3)(c)*	*Nitrate (as N)*		*10 mg/L*	*Not using this compliance pathway*
		Total Nitrogen		*1.0 mg/L*	
		Total Phosphorus		*0.1 mg/L*	
4 *OR*	*MS4 Discharges: No direct or indirect storm drain discharges to receiving water* *MS4 Permit Attachment E, Section E.3.b(3)(a)*	*100% reduction in anthropogenic discharges from storm drain outfalls to Rainbow Creek*			*Not using this compliance pathway*
5	*MS4 Discharges: Final effluent limitations expressed as annual allowable loads* *MS4 Permit Attachment E, Section E.3.b(3)(d)*	*Total Nitrogen[2]*	*Commercial Nurseries*	*116 kg/yr*	*Not using this compliance pathway*
			Parks	*3 kg/yr*	
			Residential Areas	*149 kg/yr*	
			Urban Areas	*27 kg/yr*	
		Total Phosphorus[2]	*Commercial Nurseries*	*3 kg/yr*	
			Parks	*0.10 kg/yr*	
			Residential Areas	*12 kg/yr*	
			Urban Areas	*6 kg/yr*	

[1] Baselines are not included in this table. Baselines for Rainbow Creek goals are not included in the accepted WQIP, and none of the goals are expressed in terms that are relative to a baseline, so baselines are not necessary to evaluate progress toward the goals.

[2] Changes to the land-use based final effluent limitations were proposed in the 2018-2019 WQIP Annual Report. However, those changes have since been reversed after discussions with the San Diego Water Board. They are instead proposed to be incorporated into the final effluent limitations presented in Compliance Pathway 1; see the WQIP update (Appendix 5, Attachment 5B) for details.

2.3.3 Rainbow Creek Strategy Implementation and Planning

To meet Rainbow Creek Nutrient TMDL requirements, the County of San Diego is implementing and planning structural and non-structural BMPs. Highlights of the strategies that are specific to the Rainbow Creek Watershed are summarized in **Table 2-14**; the columns on the right identify pollutants/conditions addressed. Details on implemented and planned BMPs, including next steps, are provided in the following subsections. Note that in addition to the Rainbow Creek specific strategies described below, many of the strategies described in **Section 2.2.6** above are also being implemented in the County's jurisdiction within the Rainbow Creek Watershed. A table listing the implementation status of all strategies from the WQIP is included in **Appendix 2**.

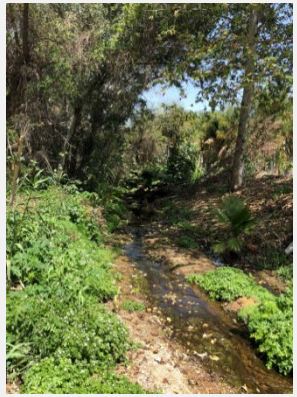
Table 2-14. County of San Diego Rainbow Creek Strategy Implementation Highlights

Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
	**Inspection + Compliance Success: Illegal Discharge Elimination.** Non-stormwater discharges from a farm were investigated in August 2019 by County staff. Multiple WPO violations, such as uncovered material storage, vehicle maintenance performed over bare ground, lack of spill kits, and trash and human feces discharged to creek bed, were discussed with the manager of the farm. Corrective actions were implemented by the farm.	• Addressing agriculture, gardening, and landscaping nutrient sources	2, 63	X	X	X	X			X
	**HF183 Source Abatement Actions.** The County worked closely with Caltrans to identify possible human bacteria (HF183) sources at a major outfall within the Rainbow Creek Subwatershed. Source investigations led to the discovery of human feces in the channel across the I-15 that drains to the outfall and appeared to be attributed to the area being used as a roadside restroom by motorists and truck drivers. The County coordinated with Caltrans to assist with abatement of the source. Caltrans cleaned the storm drain leading to the outfall and removed brush in the area to deter motorists from stopping in the area. The County initiated a special study in response to HF183 detections at the outfall which included continuous flow monitoring with a camera at the outfall, additional source investigations, geochemistry analysis and weekly HF183 sampling. HF183 was not detected in samples after completion of abatement activities.	• Identifying and eliminating source of HF183 to reduce human sources of bacteria	63	X	X	X			X	

Table 2-14. County of San Diego Rainbow Creek Strategy Implementation Highlights

Strategy Highlight		Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
	**Rainbow Creek Enhanced Agriculture Facility Inspection Program.** Within the Rainbow Creek Watershed, the County's Agriculture, Weights, and Measures Departments (AWM) has committed to increase inspection frequency up to four inspections per High TTWQ existing commercial agricultural facility and depending on the facility's compliance history. AWM will also conduct additional inspections in response to elevated nutrient monitoring results to try and identify and eliminate pollutant sources within corresponding drainage areas. AWM will also annually review commercial agricultural facilities in the Rainbow Creek watershed that may discharge pollutants to the County MS4 and add any newly identified facilities to the inventory. The County's JRMP has been updated to reflect these program changes.	• Reducing pollution from agricultural facilities	38	X	X	X	X	X	X	X
	**Rainbow Creek Flyers for Commercial Nurseries.** The County designed Rainbow Creek Nutrient Reduction and Management Plan (NRMP) flyers to convey Best Management Practice (BMP) information to growers in the Rainbow Valley. Four main categories of BMPs were highlighted (Irrigation Management, Erosion and Runoff Management, Nutrient Management, and Training and Record Keeping) to help nurseries reduce nutrient contributions to Rainbow Creek. The flyers were also translated into Spanish.	• Educating agricultural growers on water quality	47	X			X	X	X	X

Table 2-14. County of San Diego Rainbow Creek Strategy Implementation Highlights

Strategy Highlight	Water Quality Benefits	Strategy Number	Bacteria	Nutrients	Metals	Trash	Sediment	Flow	Habitat/ Wildlife
 **Rainbow Valley Water Quality Project.** The County has designed a water quality project in Rainbow Valley that includes full capture trash devices.	• Reducing trash in Rainbow Valley	Opt-9	X			X			
 **Rainbow Creek Water Quality Improvement Project.** This project has completed the 30% design and is scheduled to go to the County Board of Supervisors on March 24, 2021. Survey and geotechnical work (potholing) has been completed. An initial JD determination was completed and will support the environmental review that will occur during the next reporting period. Once the environmental review begins, the County will engage with resource agencies to start discussions regarding required permits. Tribal Consultation And project design will be completed during the next reporting period while utility relocation and acquisition of easements will begin during the next reporting period. Total project costs (soft costs and construction costs) are $11.4 M.	• Treat flows from approximately 324.6 acres	Opt-8, Opt-9	X	X	X				X

2.3.3.1 Structural BMP Implementation and Stream Restoration Opportunities

To achieve compliance with the Rainbow Creek 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 reduce nutrient loads to Rainbow Creek. Specifically, the County completed a 1.7-acre turf conversion project and is pursuing stream restoration and BMP retrofits, or their equivalent, consisting of subsurface wetland channels and bioretention swales within segments of the County's road drainage system in the Rainbow Creek Watershed. A description of the completed and future projects and their expected contributions toward meeting the final effluent limitations are described below.

2.3.3.1.1 Rainbow Park Turf Replacement Project

To reduce nutrient loads from park land use, the County completed the Rainbow Park Turf Replacement Project which converted 1.7 acres of grass on an existing multi-use soccer and baseball field to artificial turf with an underdrainage system. The project reduces TN loads by 0.27 kilograms per year and TP loads by 0.01 kilograms per year, supporting the required TMDL load reduction from park land uses. This load reduction is based on updating the land cover for the park from "park" to "artificial turf" in the model, which affects the assumed nutrient concentrations present in runoff from the park.

The project allows for year-round use of the field and eliminates water use and associated costs for the multi-use sports field. The project was funded with $1.34 million in FY 2015 State Water Board "Drought Response Action Plan" funds. Ongoing maintenance of the field is funded by County Service Area 81 and conducted by the County's Department of Parks and Recreation. The project was presented to the Rainbow Community Planning Group in November 2016 and was completed in September 2017. **Figure 2-2** provides photos of the multi-use sports field before and after turf replacement.

Before

After

Figure 2-2. Rainbow Park Sports Field Before (Top) and After (Bottom) Turf Replacement

2.3.3.1.2 BMP Retrofits and Stream Restoration

The County continues its commitment to timely comply with the requirements of the Rainbow Creek Nutrient TMDL. To achieve this end, 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. **Figure 2-3** is a rendering of the proposed subsurface wetland channels during wet weather.

Figure 2-3. Example Rendered Subsurface Wetland Channel During Wet Weather

The four BMP retrofits (**Figure 2-4**) will treat runoff from approximately 324.6 acres within the Rainbow Creek Watershed. Specifically, the retrofits will treat all, or portions of, drainage areas of four MS4 outfalls: HST01, MS4-SMG-088, MS4-SMG-087, and MS4-SMG-086. It was reported in the 2018-2019 WQIP Annual Report that approximately 511 acres would be treated by the BMP retrofits. The reduction in the treated drainage area from 511 acres to 324.6 acres is attributed to an update of outfall drainage areas.

The BMP retrofits will be located along Fifth Street and the southern extent of Huffstatler Street; along the southern extent of Rainbow Valley Boulevard; along the northern extent of Rainbow Valley Boulevard; and along the northern extent of Huffstatler Street. **Figure 2-4** provides a map of the approximate locations of the BMP retrofit projects and the associated outfall drainage areas.

These four projects are collectively referred to as the Rainbow Creek Water Quality Improvement Project. During FY19-20, project design was initiated and the 30% design deliverables were in process of internal review. The goal for FY20-21 is to complete the project design, obtain Board of Supervisor approval for the Bid and Award of construction contract, and begin coordination of utility relocations. Project construction is expected to begin in FY21-22. Total project costs (soft costs and construction costs) are $11.4 million.

In combination with the Rainbow Park Turf Replacement Project, the Rainbow Creek Water Quality Improvement Project will achieve 59.9% and 103.1% of the TN and TP load reductions, respectively, assigned to the MS4 (**Table 2-15**). Since 30% design was completed for the project, the BMP specifications and drainage areas have been refined, resulting in a lower expected nutrient reduction than was reported in the 2018-2019 WQIP Annual Report.

Additionally, the County is considering additional BMP retrofits, a stream restoration project, and/or load reductions achieved through enhanced non-structural BMPs (i.e., strategies) to achieve final TMDL compliance. The expected nutrient reduction to be achieved by these combined efforts is 40.1% and 72.6% of the TN and TP load reductions, respectively (**Table 2-15**). To implement a stream restoration project, public-private partnerships are being pursued through a pay-for-performance contracting mechanism. This innovative approach is being explored for its potential to deliver highly impactful projects like stream restoration on private property with the goal of improving riparian areas near Rainbow Creek. In FY19-20, the County began work on a draft pay-for-performance scope of work, which is planned for release as a Request for Proposals (RFP) in FY20-21. This action aligns with the recommendations from the Rainbow Creek Compliance Analysis that was completed as part of the SMR WMA WQIP (Santa Margarita MS4 Copermittees, 2018). Additional information on non-structural BMP implementation is included in the following section.

In anticipation of the construction of the Rainbow Creek Water Quality Improvement Project, the County communicated with residents, businesses, and the school near the project area about the projects. This communication was done both in-person during site visits and via distributing project flyers in February and March 2020.

Furthermore, baseline monitoring for flow and nutrients during at least one wet weather event was conducted during the 2019-2020 wet season and will be continued at HST01 and at two additional MS4 BMP retrofit sites during the 2020-2021 wet season. These baseline data will be used to measure the effectiveness of the MS4 BMP retrofits after construction.

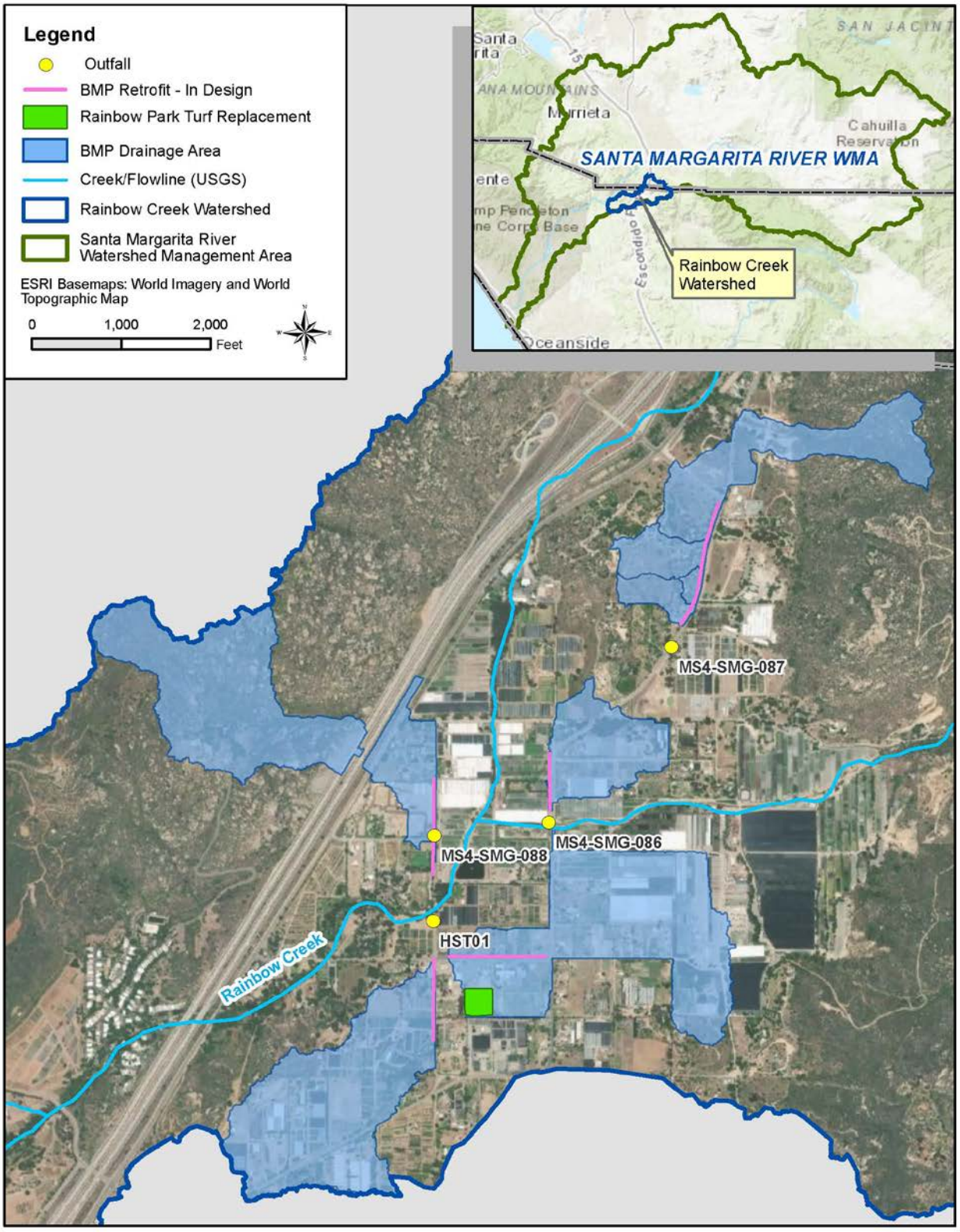


Figure 2-4. Planned and Existing Structural Project Locations of BMP Retrofits and Associated Drainage Areas within the Rainbow Creek Watershed

Table 2-15. Drainage Areas and Updated Nutrient Load Reductions for MS4 BMP Retrofits or Equivalents to be Completed Prior to December 31, 2021

#	Project/Outfall ID	Drainage Area Treated (acres)	TN Load Reduction (kg/yr)	TN MS4 Target (%)	TP Load Reduction (kg/yr)	TP MS4 Target (%)
Completed Projects						
1	Rainbow Park Turf Replacement Project	1.7[1]	0.27	0.3%	0.01	0.3%
BMP Retrofit Projects in Design[2]						
2	HST01	150.0	35.15	38.8%	2.31	69.9%
3	MS4-SMG-086	27.7	7.62	8.4%	0.45	13.7%
4	MS4-SMG-087	59.6	3.04	3.4%	0.23	6.9%
5	MS4-SMG-088	87.3	8.16	9.0%	0.41	12.3%
AND						
Planned Projects/BMPs						
6	Additional structural BMP(s), stream restoration, and/or enhanced non-structural BMPs[3]	In progress	36.46	40.1%	2.41	72.6%
Total		**324.6**	**90.70**	**100.0%**	**5.82**	**175.7%**
TMDL Required Load Reduction		***--***	***90.7***	***--***	***3.31***	***--***

Note: TN – total nitrogen; TP – total phosphorus

[1] The Rainbow Park Turf Replacement Project is located within the drainage area to Outfall HST01; therefore, it is not included in the drainage area totals listed below to avoid double counting the acreage. However, the project is factored into the calculations for TN and TP load reductions.

[2] Since 30% design was completed for the project, the BMP specifications and drainage areas have been refined, resulting in a lower, expected nutrient reduction than was reported in the 2018-2019 WQIP Annual Report.

[3] Since estimating the reduction of nutrients from non-structural BMPs is challenging, load reductions from non-structural BMPs are not factored into the modeled load reductions at this time but may be in the future when methods for quantifying nutrient load reductions from non-structural BMPs are further refined. Refer to **Section 2.3.3.2** for additional information on non-structural BMPs.

2.3.3.2 Implementation of Non-Structural BMPs

In addition to the aforementioned BMP retrofit projects and stream restoration approaches, the County will continue implementation of non-structural BMPs to reduce nutrients in runoff. However, estimating the reduction of nutrients from non-structural BMPs can be challenging. Thus, nutrient load reduction from non-structural BMPs is not factored into the modeled load reductions at this time but may be in the future when methods for quantifying nutrient load reductions from non-structural BMPs are further refined. The County will continue to search for opportunities to better quantify nutrient load reductions from non-structural BMPs.

Nevertheless, these institutional programs are important because they focus on controlling the sources of pollution throughout the landscape before pollutants can be washed downstream by stormwater runoff. The County currently implements a variety of jurisdictional non-structural strategies (i.e., BMPs), including inspections, enforcement, and education and outreach at commercial agricultural facilities. During FY19-20, the County implemented additional strategies in the Rainbow Creek

Watershed to target sources of nutrients. Below are brief descriptions of example existing non-structural strategies. **Section 2.2.6** and **Appendix 2** of this report include additional details on the non-structural strategies implemented by the County to minimize the contribution of nutrients to receiving waters through the MS4. **Appendix 2** also identifies optional strategies (i.e., enhanced non-structural BMPs) that are being implemented, or will be implemented as needed through an adaptive management process, to meet the WQIP goals (i.e., TMDL compliance targets) for Rainbow Creek.

2.3.3.2.1 Inspections and Enforcement

The County's Department of Agriculture, Weights, and Measures (AWM) inspects commercial nurseries and greenhouse facilities that have the potential to discharge pollutants to the MS4 within the unincorporated areas and follows up to ensure violations have been addressed and resolved. Inspections are regularly and thoroughly conducted across the Rainbow Creek Watershed. The inspections are both routine and in response to reported violations. Violations are reported to the County by phone or e-mail and can be made by the public or by County employees (who receive "see something, say something" watershed training).

Staff continue to notify agricultural businesses within the County unincorporated area of the requirement to enroll under the Agricultural Order. Prior to inspections, staff identify businesses that were not enrolled and are provided one-on-one outreach and relevant educational materials (e.g., San Diego Water Board Agricultural Order flyer, see **Figure 2-5**) at the time of the inspection. In FY 19-20, a total of 32 businesses were identified as non-filers and subsequently referred to the San Diego Water Board via email. Details on additional focused effort in the Rainbow Creek Watershed are provided below. Additional details on the AWM Agricultural Water Quality Program are presented in **Section 2.3.3.2.3**.

2.3.3.2.2 Focused Agricultural Strategies for the Rainbow Creek Watershed

The Rainbow Creek Nutrient Reduction and Management Plan (NRMP) was completed in 2016 and outlines several waste control and cleaning practices for County-responsible sources. Strategies include the Agricultural Water Quality Program described in **Section 2.3.3.2.3** and NRMP management practices for irrigation, nutrient control, and erosion and runoff recommended for agricultural operations. Further, the County has identified additional specific strategies to help achieve water quality improvement goals in the Rainbow Creek Watershed as discussed in **Section 2.3.3.2.3** and as presented in **Appendix 2**. The County of San Diego has updated its JRMP to describe its programs to address agricultural water quality during FY 19-20, as described in **Section 7.4** of **Appendix 2**.

In addition to inspection and enforcement for commercial agricultural facilities completed by the County AWM as described above, the County WPP conducts industrial, commercial and residential audits in the Rainbow Creek Watershed. Residential audits include inspection of parcels and roads to identify signs of improper discharge or irrigation runoff. If a residential discharge complaint is filed, an inspection is conducted to assess whether a violation is present. Additionally, under the IDDE Program, the County Department of Environmental Health (DEH) investigates complaints or notifications of potential failing septic systems (which can be a source of nutrients) to determine if repairs are required.

What Is the Commercial Agriculture Regulatory Program?

The Commercial Agriculture Regulatory Program regulates runoff from agricultural operations through waste discharge requirements (WDRs). San Diego Water Board Order No. R9-2016-0004, *General WDRs for Commercial Agricultural Operations for Dischargers that are Members of a Third-Party Group*, is for agricultural operations who have joined a Third-Party Group grower coalition.

This Order requires the implementation of management measures to prevent or minimize the pollutants that may adversely impact water quality. Growers in a Third-Party Group will enjoy reduced annual permit fees and share the costs of sampling and reporting.

Growers may sign up as individuals but will not have compliance assistance from a Third-Party Group and will be responsible for all sampling and reporting to the San Diego Water Board.

How Do I Join a Third-Party Group?

The San Diego Water Board strongly encourages growers to contact a Third-Party Group to assist with enrollment, document upload, and overall compliance.

There are four Third-Party Groups serving the San Diego Region:

- Frog Environmental Group (310) 241-0866
- San Diego Region Irrigated Lands Group (760) 745-3023
- Upper Santa Margarita Irrigated Lands Group (909) 208-7847

Is there an Application Fee?

Yes. There is a $50 application fee to enroll. The fee increases to $200 if growers receive a written directive to enroll from the San Diego Water Board. This is in addition to membership fees associated with Third-Party Groups.

How Do I Enroll?

Each grower must provide information on an application including parcel number(s), contact info, description of crop(s) and description of measures used to prevent or minimize environmental impacts. You will need computer and internet access to complete the process.

All of the Third-Party Groups are available to assist with the enrollment process and application fee.

For Additional Information

Visit the Commercial Agriculture Regulatory Program website

Or
Call the San Diego Water Board:
(619) 516-1990

Or
Email your questions to:
rb9_questions@waterboards.ca.gov

Figure 2-5. Agricultural Order Informational Flyer

Why is the Program Necessary?

Runoff from commercial agricultural operations is known to contain suspended sediments, salts, nutrients, and pesticides. These pollutants impair water quality.

The Program protects downstream water quality from adverse impacts and assists agricultural operations in complying with existing regulations.

Do I need to Enroll?

Enrollment in the Program is **mandatory** for all commercial agricultural operations in the San Diego Water Board's jurisdiction. This includes **farms, nurseries, orchards, and vineyards** that produce crops or ornamentals with the intent to make a profit.

Growers must enroll if at least one is true:

- The grower files IRS Form 1040 Schedule F with their federal taxes;
- The grower receives an agricultural water use rate or variance;
- The grower has a pesticide use permit or identification number.

Failure to enroll is a violation of California Water Code Section 13260 and could result in issuance of a fine of up to $1,000 per day.

San Diego Regional Water Quality Control Board

San Pasqual Valley

Our Mission...

To preserve, enhance, and restore the quality of California's water resources and drinking water for the protection of the environment, public health, and all beneficial uses, and to ensure proper water resource allocation and efficient use, for the benefit of present and future generations.

Protecting Water Quality

What you need to know about the *Commercial Agriculture Regulatory Program*

Commercial Growers Must Seek Regulatory Coverage or Risk $1,000 (Maximum) Fine Per Day

www.waterboards.ca.gov/sandiego

Water Boards

CalEPA
California Environmental Protection Agency

Figure 2-5. Agricultural Order Informational Flyer (con't)

2.3.3.2.3 Education and Outreach

The County of San Diego has implemented a robust education and outreach program for watershed protection. In past years, the County hired the Mission Resource Conservation District (MRCD), who hosted workshops on stormwater management and source control for the SMR WMA. These workshops included training and information on agricultural BMPs, agricultural watering and fertilizing practices, and integrated pest management, etc. MRCD hosted workshops over the past five years reaching over 185 attendees. Additional residential stormwater resources are made available on the County Department of Public Works website. The County also offered an educational module on septic system function, how to properly maintain a system, and identify when a system is failing. Homeowners that completed the training module were eligible for a septic pumping rebate. The County has developed a new enhanced Septic Rebate Program, and it will be open for participation in FY 20-21. The County also holds workshops to inform growers about the requirements they will be held to through the Agricultural Orders.

In FY19-20, the Rainbow Creek overview flyers for commercial nurseries were developed in English and Spanish using community based social marketing principles to convey BMP information in four main categories (Irrigation Management, Erosion and Runoff Management, Nutrient Management, and Training and Record Keeping) to help nurseries reduce nutrient contributions to Rainbow Creek. County staff designed the Rainbow Creek Nutrient Reduction and Management Plan (NRMP) flyers to complement the overview flyer.

Additionally, folders containing the following outreach and education materials were prepared and distributed to each of the agricultural facilities that received initial inspections in FY19-20: Agricultural Order flyer (**Figure 2-5**), Agricultural Water Quality (AWQ) flyer, Sample Storm Water Pollution Prevention Plan (SWPPP) fillable document, AWQ Program Summary Sheet, Violation FAQ Sheet, Spanish and English Stormwater Training packets, National Resources Conservation Service program information, MRCD program information, State Water Efficiency and Enhancement Program information, and the University of California Cooperative Extension (UCCE) program information. NRMP flyers in English and Spanish were also distributed to the agricultural facilities located in the Rainbow Creek Watershed. These materials were also distributed at complaint and follow up inspections as needed.

Further, the County AWM's AWQ Division updated its public-facing website extensively to ensure it is a valuable resource for outreach and education materials, including program information, FAQs, BMPs, WQIPs, WPO, and training materials. A presentation regarding AWQ program requirements and the Agricultural Order requirements was developed and will be shared with commercial agricultural operations and posted on AWM's website during FY20-21.

2.3.3.2.4 University of California Cooperative Extension Program

Through 319(h) grants, the County has worked to collaborate with growers on irrigation, erosion, and runoff BMPs. As part of the grants, the UCCE conducted site visits, documented existing BMPs, and provided recommended improvements. The grants were intended to cover half the implementation cost of any recommendations made by the UCCE. Although very few of the nurseries chose to participate, some structural BMPs were installed with irrigation tailwater return pumps. Additional non-structural BMPs include sandbags, repair of a water collection pond pump, and tracking control.

In FY19-20, County AWM supported the UCCE in providing several outreach activities and materials on the subject of stormwater pollution prevention in agricultural water use. Between August and December 2019, UCCE held three Agricultural Water Quality workshops addressing the requirements of the Agricultural Orders for commercial agriculture facilities' water quality and waste discharge. These events were attended by a total of 115 local growers. UCCE also offered an online Agricultural Water Quality Continuing Education Course covering similar material as the in-person workshops. This course was completed by 140 participants. UCCE hosted the annual "Water Wise Farming" informational display at the Carlsbad Flower Fields. For two weeks in March 2020, this display provided demonstrations of BMPs for water quality and runoff, as well as self-assessment materials. Though this display was closed prematurely due to the COVID-19 Pandemic, it was still able to reach approximately 6,000 growers and members of the public in that time. In January 2020, UCCE shared the publication "Field Irrigation Water Management in a Nutshell" on its website. This free publication issued by UC Agriculture and Natural Resources contains technical information regarding effective irrigation management and was downloaded by approximately 250 interested persons.

Rainbow Creek NRMP flyers were provided during initial inspections of all inventoried agricultural facilities in the Rainbow Creek Watershed. AWM collaborated with the UCCE Office on several education outreach materials and activities which benefited growers throughout the San Diego region, including those in the Rainbow Creek Watershed.

2.3.3.2.5 Septic System Upgrades

The Rainbow Creek Nutrient TMDL identifies septic systems as contributors of approximately five percent of the total nitrogen loading to Rainbow Creek, and the San Diego Water Board identified improperly-maintained septic systems as a potential source of nutrient loading. Septic systems are also considered to be potential non-point source discharges that could contribute nutrient loading to receiving waters, and are therefore not considered to be point sources from the MS4. However, there are septic systems commonly found upstream of reaches identified as impacted by eutrophication impacts or nutrient loading, such as Rainbow Creek. Leaking or malfunctioning septic systems have the potential to contribute to nutrient loads through two mechanisms: 1) direct infiltration to the receiving water, and 2) infiltration to the MS4 (SMR WMA Copermittees, 2018).

Even though the County's MS4 Permit does not include the septic contribution from the Nutrient TMDL, the County DEH oversees the permitting of septic systems and enforces the Local Agency Management Program for septic systems that was approved by the San Diego Water Board in 2015. In recent years, six septic system repairs or upgrades have occurred in the Rainbow Creek Watershed. Notably, these repairs included the installation of large, advanced treatment systems at Vallecitos Elementary School and Rainbow Oaks Restaurant. Both facilities are near Rainbow Creek, within the Rainbow Valley where the depth to groundwater is relatively shallow. These upgrades will minimize the impact of these septic systems on nutrient loading to Rainbow Creek.

2.3.3.3 Summary of FY 19-20 Efforts and Next Steps

The County is committed to achieving TMDL compliance and meeting the WQIP goals and continues with project planning, design, and construction into FY 20-21 and FY 21-22. Major tasks that were completed in FY 19-20 include the following:

- Evaluated additional opportunities for BMP retrofits to treat runoff from other persistently flowing major outfalls to Rainbow Creek if present.
- Completed a jurisdictional waters determination for the road drainage segments planned for BMP retrofits.
- Completed surveys and geotechnical investigations for the project areas.
- Completed 30% design plans for four BMP retrofits projects currently in design.
- Continued to search for opportunities to better quantify pollutant load reductions from non-structural BMPs.
- Further evaluated the feasibility of additional planned BMPs and/or non-structural BMPs and expedite selected projects to complete by December 2021.
- Pursued the feasibility of issuing an RFP to solicit public-private partnerships for stream restoration activities along Rainbow Creek.
- Conducted baseline monitoring for flow and nutrients at HST01 and at two additional MS4 BMP retrofit sites during the wet season; prepare draft BMP effectiveness monitoring plan.
- Increased regulatory presence in the Rainbow Creek Watershed and achieved higher inspection frequency based on level of compliance throughout the year in the MS4 unincorporated area by adding staff hours and met the commitments made in the 2018-2019 WQIP Annual Report:
    - 1 full-time supervisor to have a dedicated supervisor over the Agricultural Water Quality Program (100% increase from FY18-19)
    - 3 full-time AWM inspectors (200% increase from FY18-19)
- Increased inspection frequency up to four inspections per High Threat to Water Quality (TTWQ) existing commercial agricultural facility within the Rainbow Creek Watershed and depending on the facility's compliance history.
    - Specifically, 44 initial inspections were conducted for 36 facilities; 29 facilities were compliant, equating to 66% compliance rate for initial inspections. Seventeen re-inspections were conducted; 10 facilities were compliant, equating to 59% compliance rate for re-inspections. Re-inspections on the remaining businesses not yet brought into compliance have been delayed by the COVID-19 pandemic. Overall, 61 inspections (initial + follow up) were conducted and 39 were compliant (64% compliance rate). The goal for each inspection is to ensure compliance with the County's Watershed Protection Ordinance. For locations where it has been determined that a non-compliance exists, AWM follows the Enforcement Response Plan as described in the JRMP, Section 9.0 to ensure a return to compliance.
- Notified agricultural businesses within the County unincorporated area of the requirement to enroll under the Agricultural Order and reported non-filers to the San Diego Water Board.
- Conducted additional inspections in response to elevated nutrient monitoring results to try and identify and eliminate pollutant sources within corresponding drainage areas.
    - When AWM AWQ receives reports from DPW's Watershed Protection Program showing samples that exceeded nutrient standards, follow-up inspections are conducted at adjacent agricultural facilities where stormwater runoff has the potential to enter the County MS4. AWM AWQ makes these inspections a priority and coordinates efforts with DPW, if necessary, in identifying any agricultural, commercial, or residential facilities that may have contributed to these exceedances. In FY19-20, no agricultural, commercial, or residential facilities were positively identified as being contributors to any reported nutrient standard exceedance.

- Enhanced education outreach materials and activities focused on Rainbow Creek Nutrient Reduction Management Plan goals in coordination with UCCE.
- Provided BMP outreach documents in English and Spanish at every inspected site.
- Annually reviewed commercial agricultural facilities in the Rainbow Creek Watershed that may discharge pollutants to the County MS4 and add any newly identified facilities to the inventory.
- Focused investigative efforts on identifying significant sources of nutrients.

Major tasks to be completed in FY 20-21 include the following:

- Seek approval from the County Board of Supervisors in 2021 to advertise and award for the construction of the four BMP retrofits with the goal of project completion by December 2021 (FY 21-22).
- Complete project design and begin utility relocation and acquisition of easements; coordinate with utility agencies.
- Complete tribal consultation as the North County tribes have expressed interest in the project locations.
- Complete environmental review of the projects; engage resource agencies and San Diego Water Board when project areas are further refined and discuss required permits.
- Further evaluate the feasibility of additional planned BMPs and/or non-structural BMPs and expedite selected projects to complete by December 2021.
- Pursue public-private partnerships for stream restoration activities along Rainbow Creek.
- Finalize the BMP effectiveness monitoring plan and conduct baseline monitoring for flow and nutrients at HST01 and at two additional MS4 BMP retrofit sites during the wet season.
- Conduct outreach to and engage with the Rainbow Community Planning Group.

3.0 MONITORING AND ASSESSMENT

The Permit requires an outcome-based approach to improve water quality in stormwater and non-stormwater discharges, guided by strategies and goals identified in the WQIP. By conducting multiple types of monitoring activities, the Copermittees collect data to evaluate progress toward achieving numeric goals and determine if modifications to JRMP strategies or monitoring activities are necessary. This section describes high-level results as they pertain to the eutrophication and nutrient loading HPWQCs. To streamline the text of this WQIP Annual Report, assessment of monitoring data related to other PWQCs, which strategies also address, is provided in **Appendix 4**.

3.1 RECEIVING WATER MONITORING

The schedule for receiving water monitoring at the three LTRW stations in the WMA is provided in Section 5.3.1 of the WQIP, and the LTRW stations are shown in **Table 3-1**. The Lower SMR Subwatershed is represented by SMR-MLS-2, the Middle SMR Subwatershed by 902USM828, and the Upper SMR Subwatershed by 902WLC650. In accordance with the schedule in the WQIP, LTRW station monitoring during the 2019-2020 monitoring year was conducted during wet weather at all three LTRW stations and during dry weather at the LTRW station representing the Lower SMR Subwatershed. Copermittees successfully monitored three wet weather events at the Santa Margarita River LTRW stations, SMR-MLS-2 within the County of San Diego and 902USM828 within the County of Riverside. Five storm mobilizations were conducted to monitor the Wilson Creek LTRW station (902WLC650), but no surface flows were observed at the monitoring station, so water quality samples could not be collected during any of these attempts. The Copermittees are planning a detailed wet weather assessment for the Wilson Creek LTRW station in the coming year in response to the difficulty encountered in trying to sample during the 2019-2020 monitoring year. Dry weather monitoring at the LTRW stations representing the Middle and Upper SMR Subwatersheds is scheduled to be conducted during the 2020-2021 monitoring year.

The Copermittees also continued to participate in the Southern California Stormwater Monitoring Coalition (SMC) Regional Monitoring Program, as required by the Permit. Monitoring included water quality, benthic macroinvertebrate (BMI), benthic algae, and physical habitat data collection.

In addition, monitoring in Rainbow Creek and its tributaries was conducted in the Rainbow Creek Watershed in compliance with the Rainbow Creek Nutrient TMDL.[12] Compliance with the TMDL may be demonstrated via one of five compliance pathways identified in Attachment E.3 of the Permit, including meeting final receiving water limitations (RWLs).

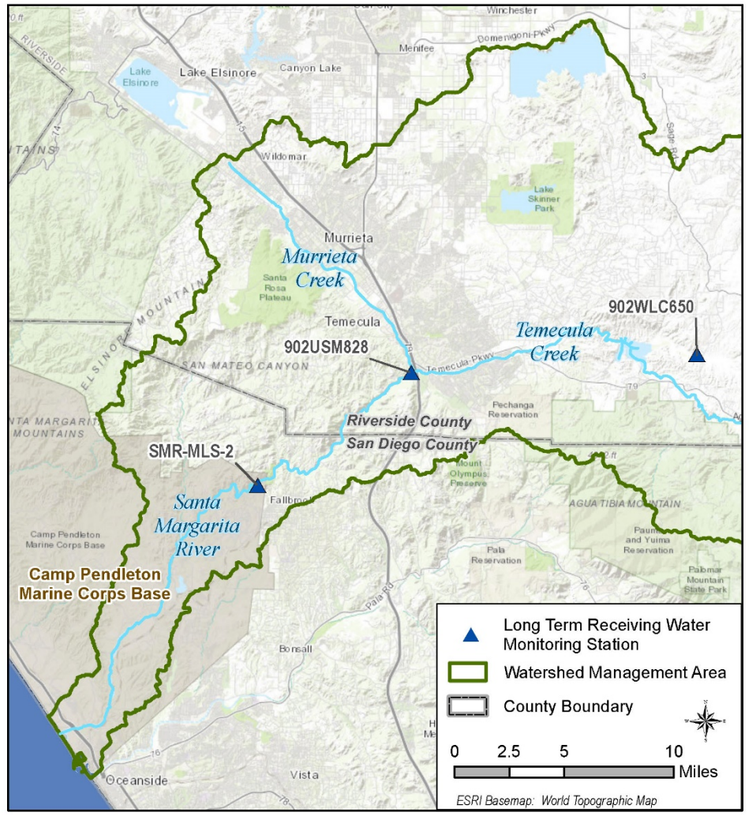
A high-level summary of receiving water monitoring results for 2019-2020 as they apply to the HPWQCs is provided in **Table 3-1**. Results for PWQCs and other constituents are provided in **Appendix 4**.

[12] Total Maximum Daily Loads for Total Nitrogen and Total Phosphorus in the Rainbow Creek Watershed, San Diego County. Resolution No. R9-2005-0036. Approved February 9, 2005.

Table 3-1. Summary of 2019-2020 Monitoring Year Receiving Water Results Related to Highest Priority Water Quality Conditions

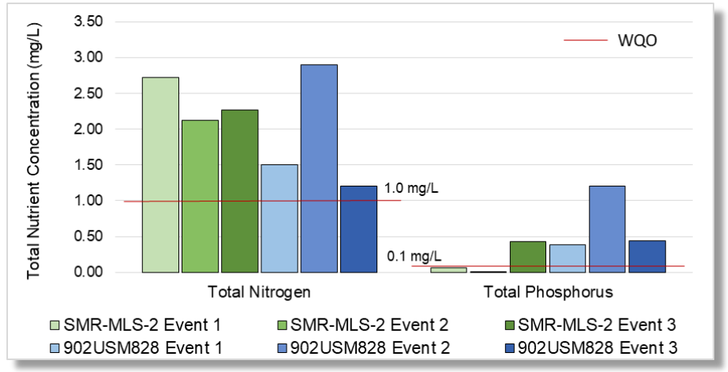
<table>
<tr><th>Monitoring Component</th><th>Required Monitoring Frequency</th><th>High Level Results for Highest Priority Water Quality Conditions</th></tr>
<tr><td rowspan="2">NPDES Receiving Water Monitoring: 3 LTRW stations: SMR-MLS-2, 902USM828, and 902WLC650. In accordance with the WQIP schedule, all 3 were monitored during wet weather* and SMR-MLS-2 was monitored during dry weather.

Details provided in Appendix 4 and Attachment 4A – NPDES Long-Term Receiving Water Monitoring Data

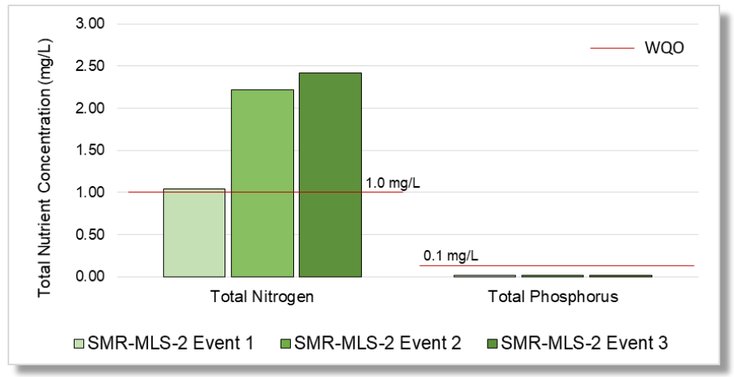
*902WLC650 was not sampled due to lack of measurable flow (see Appendix 4 for details).</td><td>✓ Completed

3 Wet Weather Events at 3 LTRW stations (SMR-MLS-2, 902USM828, and 902WLC650*)</td><td>2019-2020 LTRW Station Wet Weather Total Nitrogen and Total Phosphorus Results Summary

<table>
<tr><th>Event</th><th>Date</th><th>Total Rain (in)</th></tr>
<tr><td>SMR-MLS-2 #1</td><td>11/20/19-11/22/19</td><td>1.01</td></tr>
<tr><td>SMR-MLS-2 #2</td><td>2/9/20-2/11/20</td><td>0.17</td></tr>
<tr><td>SMR-MLS-2 #3</td><td>3/10/20-3/11/20</td><td>1.79</td></tr>
<tr><td>902USM828 #1</td><td>11/19/19-11/20/19</td><td>0.85</td></tr>
<tr><td>902USM828 #2</td><td>12/4/19</td><td>1.27</td></tr>
<tr><td>902USM828 #3</td><td>3/9/20-3/10/20</td><td>1.47</td></tr>
</table>


Finding: Concentrations of total nitrogen were above the WQO during all three events at both sampled LTRW stations. Concentrations of total phosphorus were above the WQO during the third event at SMR-MLS-2 and all three events at 902USM828. 902WLC650 was monitored in wet weather, but was not sampleable due to lack of flow.</td></tr>
<tr><td>✓ Completed

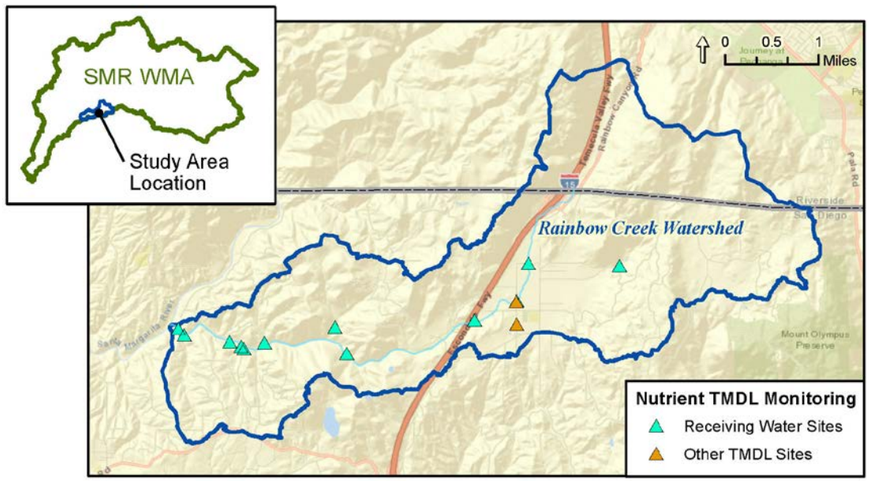
3 Dry Weather Events at the Lower SMR Subwatershed LTRW station (SMR-MLS-2)</td><td>2019-2020 LTRW Station Dry Weather Total Nitrogen and Total Phosphorus Results Summary

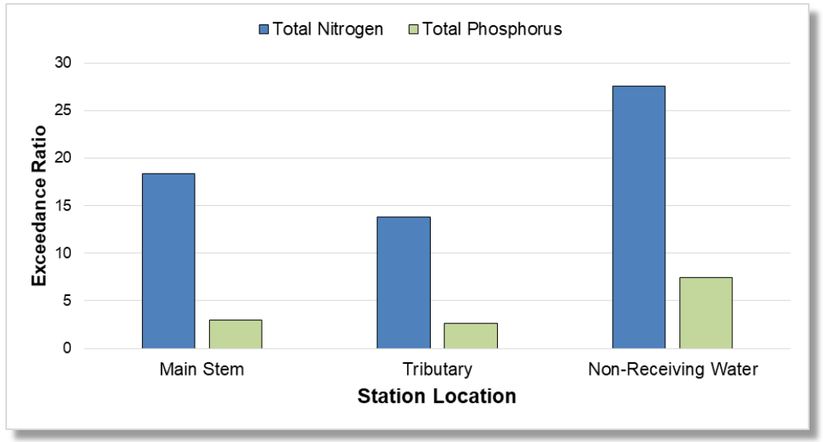
 

Finding: Concentrations of total nitrogen were above the WQO during all three events. Concentrations of total phosphorus were below the WQO and also below the detection limit or estimated at concentrations between the detection limit and reporting limit.</td></tr>
</table>

Table 3-1. Summary of 2019-2020 Monitoring Year Receiving Water Results Related to Highest Priority Water Quality Conditions

<table>
<tr><th>Monitoring Component</th><th>Required Monitoring Frequency</th><th>High Level Results for Highest Priority Water Quality Conditions</th></tr>
<tr>
<td>Rainbow Creek Nutrient TMDL Monitoring: 11 receiving water monitoring locations, one MS4 outfall location, and one location upstream of the MS4 outfall.

Details provided in Appendix 4 and Attachment 4C - Rainbow Creek Nutrient TMDL Monitoring Report
 
</td>
<td>✓ Completed

Monthly dry weather monitoring; Sampling of sites with measurable flow</td>
<td>2019-2020 Rainbow Creek Nutrient TMDL Total Nitrogen and Total Phosphorus Results Summary
 

Finding: Total nitrogen and total phosphorus concentrations were above receiving water limitations (RWLs) in 105 and 92 of the 107 samples collected, respectively. Exceedance ratios are shown above.</td>
</tr>
<tr>
<td>Stormwater Monitoring Coalition Bioassessment: Bioassessment monitoring included water quality monitoring at two locations for the County of San Diego (i.e., condition site 902M20301 and trend site 902WE0888) and two locations for Riverside County (i.e., condition site 902M18917 and trend site SMC01097). Bioassessment was also conducted at the County of San Diego LTRW station.

Details provided in Appendix 4 and Attachment 4B - Bioassessment Monitoring Data
  </td>
<td>✓ Completed

One monitoring event during dry weather in May-June 2020</td>
<td>2020 Bioassessment Monitoring Results Summary
<table>
<tr><th>Station Code</th><th>Stream Name</th><th>BMI CSCI Score</th><th>Nutrient Exceedances</th><th>Algal IBI Score</th></tr>
<tr><td>902M20301</td><td rowspan="2">Santa Margarita River at Gavilan</td><td>0.83</td><td rowspan="2">None</td><td rowspan="2">S2: 22
D18: 58
H20: 45</td></tr>
<tr><td>SMC</td><td>Condition Site</td><td>Possibly Altered</td></tr>
<tr><td>902WE0888</td><td>De Luz Creek</td><td>0.92</td><td rowspan="2">Total Nitrogen</td><td rowspan="2">S2: 13
D18: 74
H20: 51</td></tr>
<tr><td>SMC</td><td>Trend Site</td><td>Likely Intact</td></tr>
<tr><td>902M18917</td><td>Sandia Creek</td><td>1.08</td><td rowspan="2">Total Nitrogen</td><td rowspan="2">S2: 30
D18: 60
H20: 56</td></tr>
<tr><td>SMC</td><td>Condition Site</td><td>Likely Intact</td></tr>
<tr><td>SMC01097</td><td>Sandia Creek</td><td>1.07</td><td rowspan="2">Total Nitrogen</td><td rowspan="2">S2: 40
D18: 46
H20: 49</td></tr>
<tr><td>SMC</td><td>Trend</td><td>Likely Intact</td></tr>
<tr><td>SMR-MLS-2</td><td rowspan="2">Santa Margarita River</td><td>0.98</td><td rowspan="2">Total Nitrogen</td><td rowspan="2">S2: 20
D18: 46
H20: 38</td></tr>
<tr><td>NPDES</td><td>Likely Intact</td></tr>
</table>
CSCI – California Stream Condition Index; IBI – Index of Biotic Integrity
CSCI scores indicate benthic communities that are very likely altered (scores of 0.00 to 0.62), likely altered (0.63 to 0.78), possibly altered (0.79 to 0.91), or likely intact (at least 0.92).
S2 = soft algae and cyanobacteria; D18 = diatoms; H20 = combined. IBI Score of 57 is the statistical boundary between reference and non-reference condition.</td>
</tr>
</table>

3.2 MS4 OUTFALL MONITORING

MS4 outfall monitoring during the 2019-2020 monitoring year consisted of MS4 outfall dry weather field screening, dry weather highest priority MS4 outfall monitoring, IDDE investigations, and wet weather MS4 outfall monitoring. In addition, MS4 outfalls in the Rainbow Creek Watershed were monitored to assess progress toward compliance with the MS4 outfall pathways of the Rainbow Creek Nutrient TMDL.

A summary of results from each of these programs with respect to eutrophication and nutrient loading is presented in **Table 3-2**. Detailed results, assessments, and results for programs not related to the HPWQCs are presented in **Appendix 4** and its attachments. **Figure 3-1** below provides some examples of photos taken at Copermittee outfall locations during dry weather monitoring activities.

Figure 3-1. Storm Drain Outfalls during Dry Weather Monitoring

Table 3-2. Summary of 2019-2020 Monitoring Year MS4 Outfall Results Related to Highest Priority Water Quality Conditions

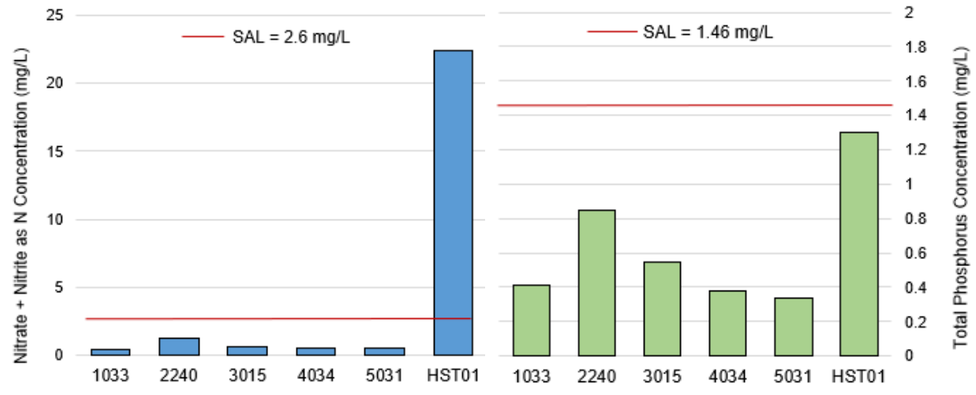
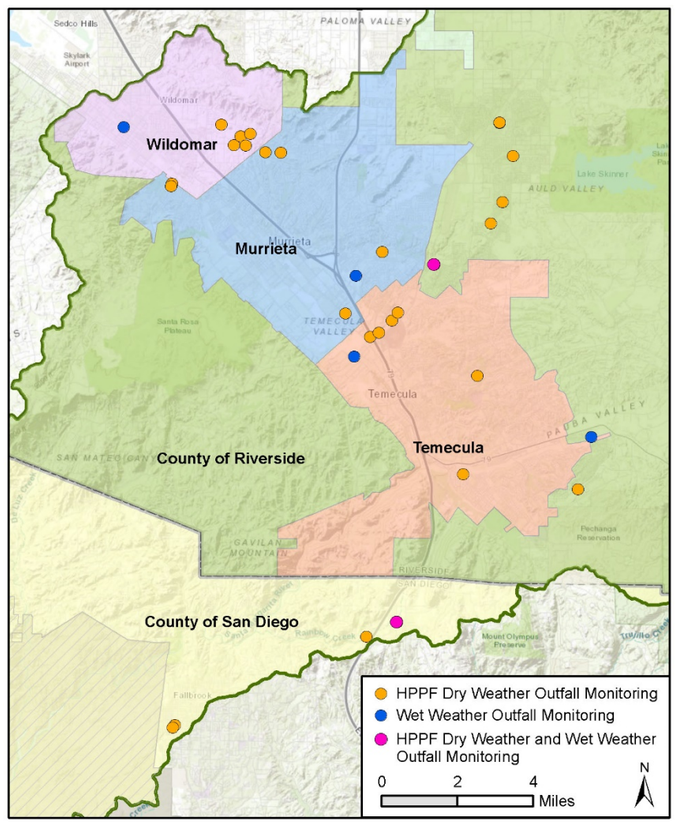
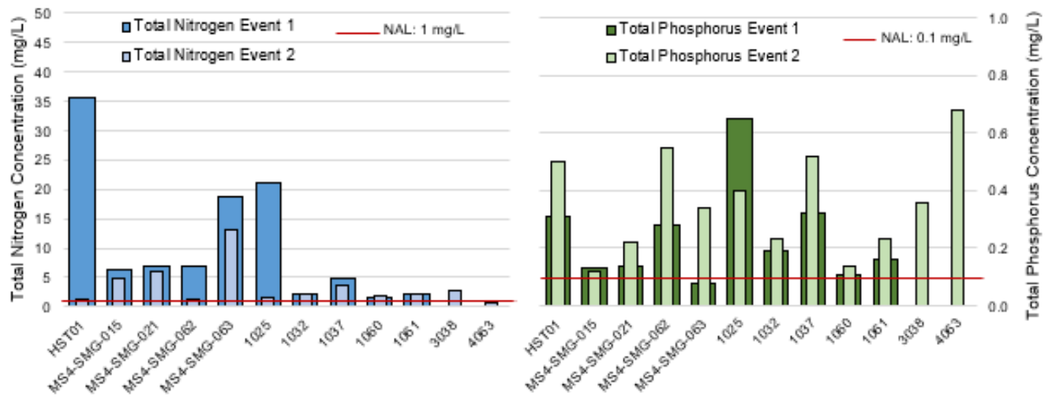
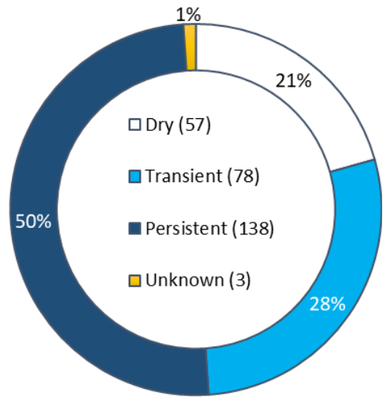
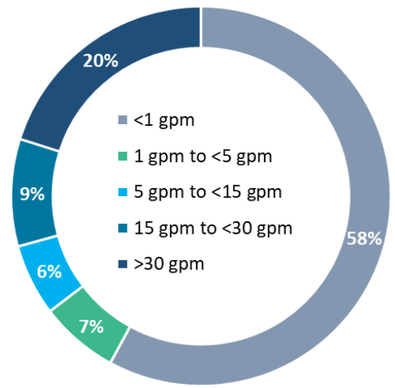
Monitoring Component	Required Monitoring Frequency	High Level Results for Highest Priority Water Quality Conditions
Wet Weather Monitoring: 6 major storm drain outfall monitoring stations (1 each for the County of San Diego, City of Wildomar, City of Murrieta, District, City of Temecula, and County of Riverside; shown in Appendix 4 Figure A4-15). Data are used to evaluate stormwater discharge status and trends. Concentrations are compared to stormwater action levels (SALs) and used to estimate pollutant loads. *Details are provided in Appendix 4 and Attachments 4F (Data) and 4H (Assessment)* **Dry Weather Monitoring:** Monitoring was attempted twice at each of the 30 highest priority outfalls (5 per jurisdiction; shown in Appendix 4 Figure A4-11). Of the 60 sampling attempts, 22 total samples were collected at 12 outfalls. Data are compared to non-stormwater action levels (NALs) and used in estimation of pollutant loads. *Details are provided in Appendix 4 and Attachments 4D (Data) and 4E (Assessment)*	✓ **Completed** 1 event during wet season	**2019-2020 Wet Weather MS4 Outfall Nutrient Results Compared to SALs**  **Finding:** Existing SALs for nutrients include nitrate + nitrite as N and total phosphorus. Results were below SALs except nitrate + nitrite as N at HST01. At HST01, total nitrogen and total phosphorus were also above the final effluent limitations given in the Nutrient TMDL.
 	✓ **Completed** 2 events during dry season	**2019-2020 Dry Weather MS4 Outfall Nutrient Results Compared to NALs**  **Finding**: NALs were exceeded for total nitrogen and total phosphorus in 90 to 100% of samples collected by each Copermittee.

Table 3-2. Summary of 2019-2020 Monitoring Year MS4 Outfall Results Related to Highest Priority Water Quality Conditions

<table>
<tr><th>Monitoring Component</th><th>Required Monitoring Frequency</th><th colspan="2">High Level Results for Highest Priority Water Quality Conditions</th></tr>
<tr><td>Dry Weather Field Screening: Visual observations of flow from dry weather field screening were used to determine persistently flowing outfalls and flow rates. Flow data are used to estimate non-stormwater volumes for highest priority outfalls.

<table>
<tr><th>Copermittee</th><th># of Major Outfalls Visited</th></tr>
<tr><td>City of Murrieta</td><td>32</td></tr>
<tr><td>City of Temecula</td><td>102</td></tr>
<tr><td>City of Wildomar</td><td>11</td></tr>
<tr><td>County of Riverside</td><td>8</td></tr>
<tr><td>County of San Diego</td><td>14</td></tr>
<tr><td>Riverside County Flood Control District</td><td>90</td></tr>
</table>
Details are provided in Appendix 4 and Attachments 4D (Data) and 4E (Assessment)</td><td>✓ Completed

Frequencies for visual monitoring of major outfalls (i.e., 80% of major outfalls screened twice annually) were met.</td><td colspan="2">Flow Determinations for Major MS4 Outfalls
 

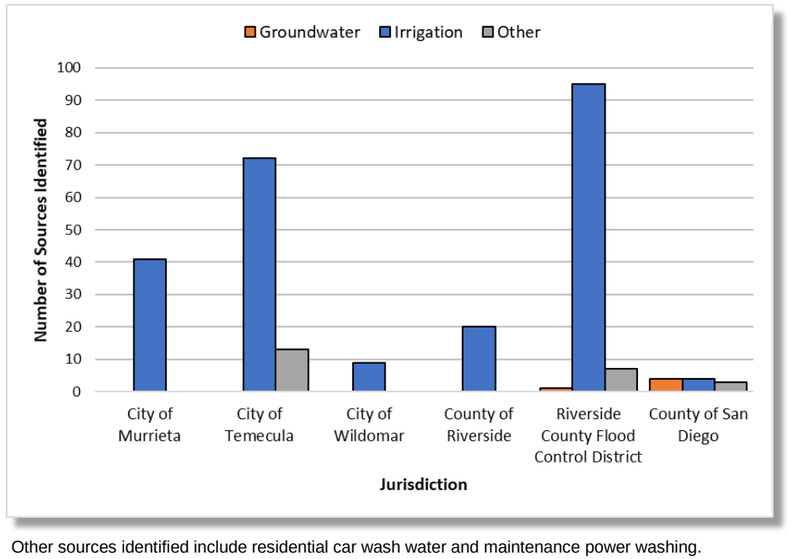
Estimated Flow Rates at Flowing Outfalls
 

Finding: 50% of outfalls were determined to be dry or have transient flow during field screening. Measurable flows were below 1 gpm for 58% of observations.</td></tr>
<tr><td>Illicit Discharge Detection and Elimination:

Participating Agencies conducted monitoring program field screening and upstream investigations to identify sources of flow or NAL exceedances at Major MS4 outfalls.

Details are provided in Appendix 4

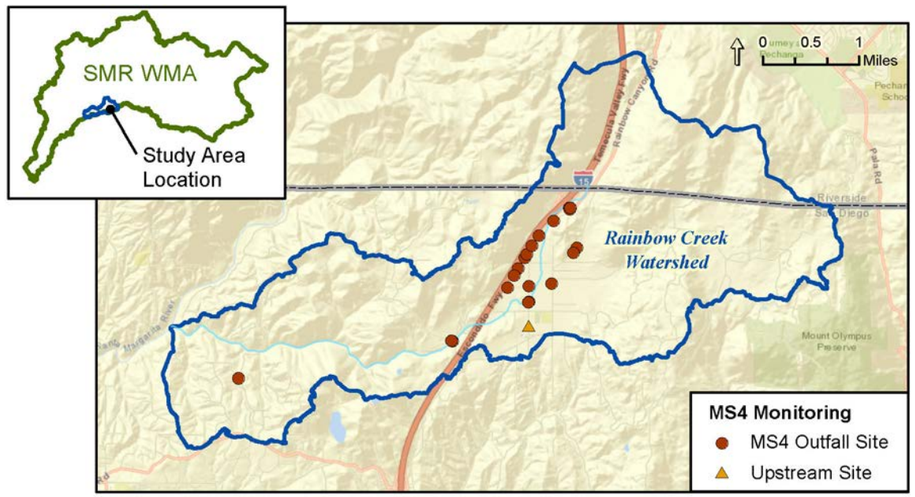
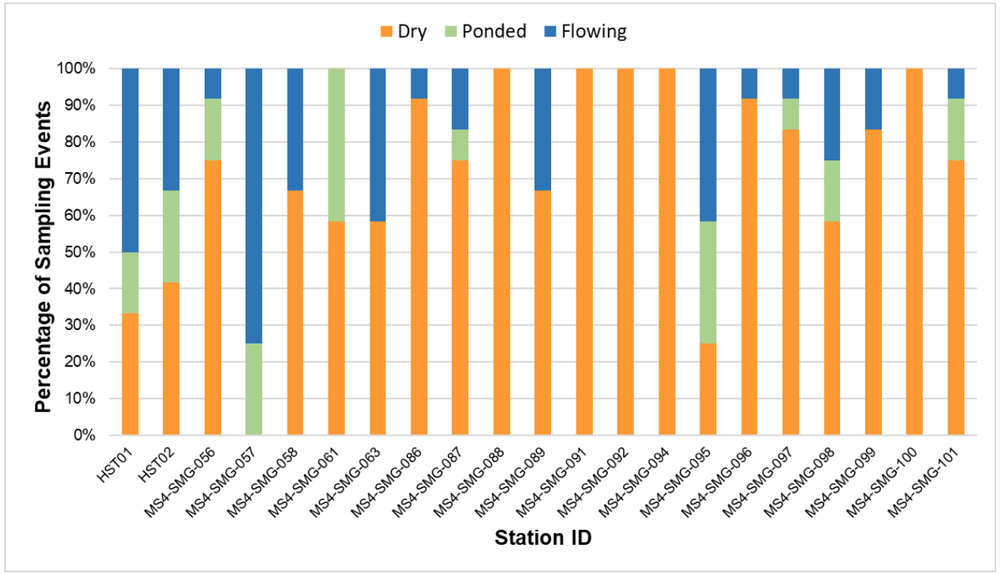
 
  </td><td>✓ Completed

Flow source observations and monitoring program upstream investigations at Major MS4 outfalls</td><td colspan="2">Known or Suspected Flow Sources Recorded During Field Screening and Follow-Up Source Investigations
 

Other sources identified include residential car wash water and maintenance power washing.

Finding: Irrigation runoff was the primary source identified or suspected during field visits to major MS4 outfalls.</td></tr>
</table>

Table 3-2. Summary of 2019-2020 Monitoring Year MS4 Outfall Results Related to Highest Priority Water Quality Conditions

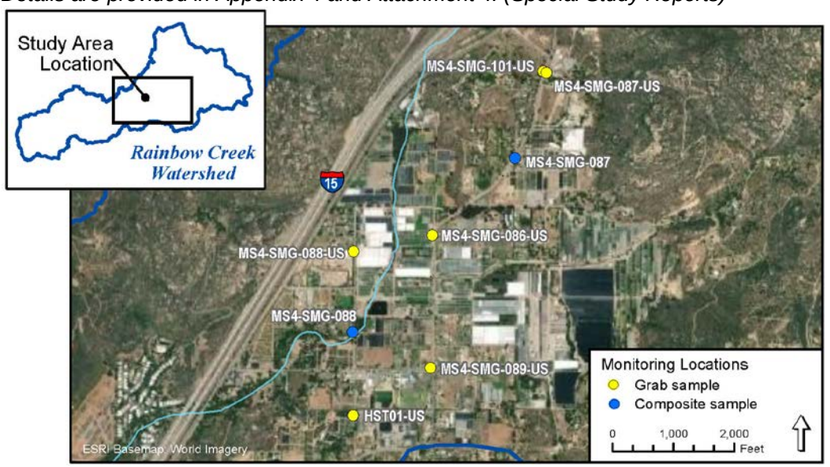
Monitoring Component	Required Monitoring Frequency	High Level Results for Highest Priority Water Quality Conditions
Additional Monitoring to Assess Progress toward Goals and/or Strategies: 21 MS4 outfalls are monitored in the Rainbow Creek Watershed during dry weather to provide data to evaluate progress toward compliance with the MS4 outfall discharge pathway options of the Rainbow Creek Nutrient TMDL ("no direct or indirect discharge from the Responsible Copermittee's MS4 to the receiving water" or "no exceedances of the final effluent limitations at the Responsible Copermittee's MS4 outfalls"). This monitoring is not required by the Permit or the TMDL. *Details provided in Appendix 4 and Attachment 4C* 	✓ **Completed** Monthly monitoring (not required as this monitoring is voluntary)	**2019-2020 Results Summary for Dry Weather MS4 Outfall Monitoring in the Rainbow Creek Watershed**  **Finding:** An overall total of 252 visits were conducted among the 21 outfalls. Flow records identified 180 visits where outfalls were dry and 46 that were flowing, with generally low flow rates. Nutrient concentrations were above TMDL effluent limitations for total nitrogen in 35 of 47 samples and for total phosphorus in 39 of 47 samples.

3.3 SPECIAL STUDIES

Copermittees conduct special studies to provide additional information about the spatial distribution, processes, and sources of nutrients and non-stormwater flow in the watershed. Several special studies also focused on microbial source tracking of bacteria, a PWQC in portions of the WMA, and which may also be associated with sources that contribute to nutrient loading. Data from special studies are used to improve the implementation of the Copermittees' jurisdictional strategies and refine or develop new special studies, and ultimately to achieve compliance with the numeric goals outlined in the WQIP.

Special studies conducted during the 2019-2020 monitoring year are summarized in **Table 3-3** and details are provided in **Appendix 4 Section 4.6**. In addition, several ongoing projects are continuing to support the development of alternative approaches for establishing biostimulatory targets in the SMR Estuary and River. These projects include the SMRNIG and participation in the SMC California LID Evaluation and Analysis Network (SMC CLEAN) Project. There was no work planned for the SMRNIG during the 2019-2020 monitoring year. A summary of the SMC CLEAN project for 2019-2020 is provided in **Table 3-3**. In addition to those projects listed in **Table 3-3**, a recent simulation modeling effort for Wilson Creek was conducted after the 2019-2020 monitoring year in order to develop site-specific mobilization criteria to maximize the ability for the District to conduct future sampling when wet weather flows occur at the Wilson Creek LTRW station. The results are provided in a technical memorandum attached to **Appendix 4** that also details the monitoring attempts at the Wilson Creek LTRW station during 2019-2020.

Table 3-3. Summary of 2019-2020 Monitoring Year Special Study Results

Monitoring Component	Required Monitoring Frequency	High Level Results for Highest Priority Water Quality Conditions
Special Studies in the Upper and Middle SMR Subwatershed: Special studies in the Middle and Upper SMR Subwatershed included the Post Fire Stormwater Monitoring Study and Participation in SMC CLEAN. *Details are provided in Appendix 4 and Attachment 4I (Special Study Reports)*  Photographs of the LID BMP Testing and Demonstration Facility	At least two special studies in each WMA during the Permit term to address pollutant and/or stressor data gaps and/or develop information necessary to more effectively address the pollutants and/or stressors that cause or contribute to HPWQCs ✓ **10 Studies Conducted or Completed in 2019-2020**	**District Post-Fire Stormwater Monitoring Study – 2019 Tenaja Fire:** • Two stations were monitored during two storm events in 2019-2020: Cole Creek at the terminal end of burned catchment before it discharges to Murrieta Creek, and at the historical receiving water station at Lower Murrieta Creek (902LMC778). • Contaminant flux from the 'first flush' event in November 2019 following the Tenaja Fire was a source of nutrients discharging downstream to Murrieta Creek. • Contaminant flux from the burned catchments were significantly lower during the March 2020 event compared to the November 2019 event, indicating the attenuation of contaminant concentrations and loads as the storm season progressed. • Nutrient concentrations from the Cole Creek burned catchment were higher than unburned natural areas. Nutrient concentrations from 902LMC778 during two storm events following the Tenaja Fire were similar to historical averages. Results are further discussed in **Appendix 4**. **Participation in SMC California LID Evaluation and Analysis Network (SMC CLEAN) Project:** • The District coordinated with the Santa Ana Watershed Project Authority on a Proposition 84 grant to construct a LID Testing and Demonstration Facility, which has evaluated the performance of 8 LID BMP types during a total of 17 storm events from 2012 to 2020. Results are evaluated in **Appendix 4**. • Data gathered and work products resulting from the SMC CLEAN Project will aid in the management of the SMR WMA HPWQCs.
Special Studies in the Lower SMR Subwatershed: Special studies in the Lower SMR Subwatershed included the Rainbow Creek HF183 Monitoring Study, HF183 Follow-up Study at MS4-SMG-095, and Pre-BMP Monitoring Study in the Rainbow Creek Watershed (monitored locations are shown on map below). *Details are provided in Appendix 4 and Attachment 4I (Special Study Reports)* 		**County of San Diego Wet Weather Pre-BMP Monitoring:** • Composite samples were collected from 2 outfalls in February 2020 and grab samples were collected from 6 upstream locations in March 2020. • Total nitrogen and total phosphorus exceeded TMDL final effluent limitations in compisite samples from both outfalls, and nitrate + nitrite as N exceeded the SAL in the sample from one outfall. • Total phosphorus was above the TMDL final effluent limitation at all 6 locations and above the SAL at 2 locations, total nitrogen was above the TMDL final effluent limitation at 4 locations, nitrate + nitriate as N was above the SAL at 3 locations, turbidity was above the SAL at 2 locations, and nitrate as N was above the TMDL final effluent limitation at 1 station. **County of San Diego Rainbow Creek Watershed HF183 Study:** • Monthly sampling events were conducted from June 2019 to June 2020 at the same locations monitored under the Rainbow Creek TMDL and MS4 Monitoring Program. • Overall, HF183 results were above the detection level in only 9% of samples collected in the receiving waters and 9% percent of samples collected in the MS4 outfall features. • A high HF183 detection occurred at site MS4-SMG-095 in July 2019, initiating the HF183 follow-up monitoring special study **County of HF183 Follow-up Monitoring at MS4-SMG-095:** • The source of HF183 was identified and the County worked closely with Caltrans to abate the source and took preventative measures to avoid future occurances of human fecal contamination • There were no detections of HF183 during the follow-up study following abatement activities. • Geochemical analyses indicated that groundwater is likely contributing to dry weather flows in the outfall. However, influence from the municipal water supply could not be ruled out. **County of San Diego Dry Weather MS4 Outfall Flow Source Assessment Study:** • Dry weather flow sources for 89 monitored sites ranged from nearly all imported water to all local groundwater, with flows at most sites comprised of a mixture of sources. • In 2019, dry weather flow sources were analyzed for 4 sites in the SMR WMA; 3 were identified as being mostly local groundwater with some tap, and 1 was mostly tap with some groundwater influence. **County of San Diego Low Flow Monitoring Equipment Testing and Uncertainty Estimation:** • Error results exceeded manufacturers' specified uncertainty for all tested sensors except the Meter Hydros sensors under field and laboratory conditions. In 2018, the County started using Meter water level sensors exclusively to minimize uncertainty in comparing results across sites and monitoring seasons.

4.0 ADAPTIVE MANAGEMENT

This section presents a summary of the potential triggers for adaptation of the WQIP and the results of the adaptive management process for the SMR WMA after the 2019-2020 monitoring year, with additional detail provided in **Appendix 5**.

Adaptive management is an iterative approach to re-evaluate the water quality conditions, priorities, numeric goals, strategies, and schedules based on the requirements of the Permit. The adaptive management process details how the Copermittees use new data and information to improve the WQIP through updates to priorities, assessments of and adjustments to goals, updates to strategies to achieve the goals, and updates to the MAP to provide the necessary data to support the process.

The adaptive management process may be triggered when new information becomes available, including results of routine monitoring and special studies, new regulatory drivers, results of program effectiveness assessments and progress towards numeric goals, and recommendations from the public and/or the San Diego Water Board, as described in Permit Provision B.5. The WQIP is in the early stages of implementation; the 2019-2020 monitoring year was the first full year under the accepted WQIP. Consequently, programmatic and monitoring data are limited for conducting assessments that could lead to adaptive management. Adaptive management at this time is largely driven by regulatory considerations, which include new regulatory actions at the State or local level and San Diego Water Board recommendations, rather than assessment of programmatic and monitoring data collected during this first full year of WQIP implementation.

As introduced in **Section 1.0**, The San Diego Water Board conducted reviews of the 2017-2018 and 2018-2019 WQIP Annual Reports for the San Diego Region, and sent letters to the Copermittees with the results of these reviews, with requested actions and deadlines for addressing the items. Requested items requiring a response by January 31, 2021 (i.e., with this Annual Report) are summarized in **Table 1-2**, with additional detail provided in **Appendix 5**.

The Copermittees' responses to the **San Diego Water Board 2017-2018 and 2018-2019 WQIP report reviews** are provided in **Table 1-2**.

An assessment of each of the adaptive management triggers and the status at the completion of the 2019-2020 monitoring year are discussed in **Appendix 5**.

4.1 ADAPTIVE MANAGEMENT HISTORY

A summary of WQIP revisions that have been identified since WQIP implementation began, which will be updated annually, is presented in **Table 4-1**. Details are provided in the 2016-2017 through 2018-2019 WQIP Annual Reports. Adaptive management based on the 2019-2020 monitoring year is discussed in **Section 4.2**.

Table 4-1. History of WQIP Adaptations

Copermittee	WQIP Adaptations
City of Murrieta	2018-2019: Changes to some highest priority outfalls for analytical monitoring and administrative changes to strategies. Added construction, IDDE and public education strategies.
City of Temecula	2018-2019: Changes to some highest priority outfalls for analytical monitoring.
City of Wildomar	2018-2019: Administrative changes to strategies.
County of San Diego	2017-2018: Administrative changes to strategies.
	2018-2019: The County of San Diego made updates to their BMP Design Manual. Administrative changes to JRMP and strategies, and new strategies were implemented by the County's Agriculture, Weights, and Measures Agricultural Water Quality Program. Updates to goals associated with Rainbow Creek Compliance Pathway 5 were proposed. Changes to some highest priority outfalls for analytical monitoring.
County of Riverside	None.
District	2018-2019: Administrative changes and corrections to the JRMP and WQMP, and changes to one highest priority outfall for analytical monitoring.
All Copermittees	Administrative updates to the WQIP were submitted as errata pages with the 2018-2019 WQIP Annual Report (January 31, 2020).

4.2 2019-2020 ADAPTIVE MANAGEMENT EVALUATION

In accordance with the Permit, PWQCs within the watershed *may* be re-evaluated as needed as part of the annual reporting process. PWQCs, HPWQCs, and numeric goals are generally established based on longer periods of record compared to a monitoring year. This assessment would most appropriately be conducted following the collection of sufficient data to make scientifically-based decisions. The 2019-2020 monitoring year was the first full year of monitoring in accordance with the WQIP's MAP, and monitoring results do not support modifications to the priority and highest priority water quality conditions identified by the WQIP at this time.

An evaluation of current goals, strategies, and schedules is required by the Permit annually as part of the WQIP Annual Report. The details of this evaluation for each element of the WQIP are provided in **Appendix 5**. **Table 4-2** summarizes the information used to evaluate the need for adaptive management for goals, strategies and schedules. Adaptive management based on the 2019-2020 monitoring year is described following **Table 4-2**.

Table 4-2. Information Used to Modify Goals, Strategies and Schedules

Evidence	WQIP AR Sections	2019-2020 Status	Changes Needed? (Y/N)
Receiving water monitoring results.	**Section 3, Appendix 4**	No new information pertaining to receiving water exceedances not addressed by the WQIP.	N
Storm drain outfall monitoring results.	**Section 3, Appendix 4**	NAL and SAL exceedances are consistent with WMA priority constituents.	N
Special studies results.	**Section 3, Appendix 4**	Data from these studies provide additional information about concentrations and sources of nutrients in the SMR Watershed.	N
New or updated regulations, including San Diego Water Board requests and recommendations.	**Section 4**	Regulatory drivers for 2019-2020 include the July 19, 2019 and September 10, 2020 San Diego Water Board letters, program audit letters, and approval of the Statewide Bacteria Provisions. Adaptive management is also required as the Copermittees address the IO and the Bacteria Provisions and Trash Amendments are incorporated into the Permit.	Y
Program effectiveness assessments and progress toward achieving numeric goals.	**Section 2**	Identified Copermittee goals were not due to be achieved during 2019-2020, but applicable strategies are being implemented to reduce eutrophication impacts and nutrient loading in the Middle SMR Subwatershed (Pathway 6), the Lower SMR Subwatershed (Pathway 1), and in Rainbow Creek (Pathway 1). The Copermittees are also adaptively designing and conducting special studies to gather data that will drive effective strategies and progress. The County of San Diego is addressing comments in the San Diego Water Board letters and continues to improve the effectiveness of their program in the Rainbow Creek Watershed.	N

During this reporting period, the Copermittees continued implementing their jurisdictional strategies under the accepted WQIP. As described in **Section 2.0**, the Copermittees are demonstrating progress in implementing the existing strategies; however, programmatic changes are not generally expected at this early stage of less than two full years of implementation. Additional information over a longer period of time is likely needed to assess the effectiveness of current efforts. Minor administrative changes, including clarifications, correcting typos and errors, and edits to WQIP strategies, are identified as markups to the Copermittees' tables in **Appendix 2**.

Modifications to JRMPs and online links to documents are identified in **Appendix 2.** In summary, the District made changes to their JRMP and has provided an errata page listing these revisions. The City of Wildomar updated its JRMP in January 2020, in response to the over-irrigation audit letter from the San Diego Water Board. The County of San Diego modified their JRMP to provide more detail about how the County's storm water program addresses agricultural areas, including an enhanced program for agricultural operations in the Rainbow Creek Watershed. These revisions were completed in 2019.

Comment letters issued by the San Diego Water Board based on the 2017-2018 and 2018-2019 Annual Reports have provided feedback necessitating some adaptive management (see **Table 4-1** for updates based on adaptive management outlined in the 2018-2019 WQIP Annual Report and **Appendix 5** for

updates based on the 2019-2020 monitoring year). The full list of responses to comments and proposed updates are provided in **Appendix 5** with supporting information and/or links to report sections that also address specific comment letter items.

Changes to the MAP may be triggered by several factors including:

- Modifications to other elements of the WQIP, including priority water quality conditions, numeric goals and schedules, and/or strategies and schedules.
- Identification of data gaps through Permit-required assessments.
- Results of special studies.
- Requests/requirements from the San Diego Water Board.

Of these triggers, modifications to the MAP will be needed based on new requests from the San Diego Water Board, including comments provided in the 2017-2018 and 2018-2019 WQIP Annual Report review letters, and comments received during the 2018-2019 monitoring year in the Rainbow Creek Nutrient TMDL letter.

In addition, the MAP has been updated to reflect the requirements of the IO for the Copermittees as part of the WQIP update provided as an attachment to this Annual Report (see **Attachment 5B** to **Appendix 5**). The IO required the development of a Monitoring and Assessment Program Workplan (Workplan) that outlined a water quality monitoring and assessment program to track progress towards achieving the numeric targets listed in the Draft Staff Report and total nitrogen and total phosphorus loading reductions to the Estuary. This Workplan was submitted to the San Diego Water Board in November 2019, and the four-year monitoring program was initiated in Spring 2020. Monitoring reports will be prepared annually to allow the Dischargers to evaluate the effectiveness of their actions to reduce nitrogen and phosphorus loading to the Estuary and achieve the numeric targets of the Draft Staff Report. The final report, which evaluates all four years of data, is to be submitted to the San Diego Water Board in March 2024.

A change to one station is planned for highest priority outfalls for analytical monitoring for the 2020-2021 monitoring year based on a review of 2019-2020 monitoring results and application of their outfall prioritization processes by the Copermittees. The County of San Diego has made minor changes to their prioritization process for highest priority outfalls. This process is documented in **Appendix 5**.

4.3 WATER QUALITY IMPROVEMENT PLAN UPDATE

In the July 19, 2019 report review letter, the San Diego Water Board required the WQIP to be updated to incorporate the final IO numeric targets, strategies, monitoring and assessment activities, schedules and reporting. The WQIP update includes proposed updates to goals and explains the rationale for the changes. This update was presented to the Consultation Committee on October 22, 2020. The updates were subject to a 30-day public review period from November 5 to December 7, 2020 to satisfy the public participation requirements of Permit Provision F.2.c. They will be deemed acceptable for inclusion in the WQIP 90 days after the submission of the updates with this Annual Report, unless directed in writing by the San Diego Water Board Executive Officer. The WQIP Update is provided in **Attachment 5B** to **Appendix 5**.

5.0 CONCLUSIONS AND NEXT STEPS

During this reporting period, the Copermittees implemented a broad range of strategies to address eutrophication and nutrient loading HPWQCs. Although these strategies are focused on achieving improvements in water quality related to eutrophication and nutrients, implementation of the chosen strategies will also improve conditions in relation to PWQCs and other potential contaminants such as bacteria and trash, providing a multi-benefit approach to implementation. In addition to completing all of the monitoring and assessment required by the Permit and MAP for the 2019-2020 monitoring year, additional special studies were also accomplished.

The Copermittees' goals were not due to be achieved during this reporting period, but they are implementing strategies to reduce eutrophication impacts and nutrient loading in the Middle SMR Subwatershed (Pathway 6), the Lower SMR Subwatershed (Pathway 1), and Rainbow Creek (Pathway 1). They are collecting data toward evaluating progress, planning studies focused on the HPWQCs and non-stormwater flows, and have initiated the monitoring and assessment required by the IO. Although a HPWQC and goals have not been established for the Upper SMR Subwatershed, the Copermittees are implementing strategies to protect beneficial uses in this less-developed portion of the watershed. To better understand water quality and flow conditions, monitoring at a LTRW station on Wilson Creek was initiated during this reporting period but no surface flows were observed during the five storm mobilization events attempted, so water quality samples could not be collected during any of these attempts. To address these monitoring challenges, the Riverside Copermittees have conducted simulation modeling of flows for Wilson Creek to develop site specific criteria that will facilitate wet weather data collection at this LTRW station.

Since the Copermittees have been implementing the accepted WQIP for less than two years, continued and further implementation of strategies and collection of additional monitoring and programmatic data is necessary for an evaluation that leads to meaningful adaptive management and is driven by data collection and assessment. Progress to goals in terms of strategy implementation thus far indicates that the Copermittees are employing measures to be on track to meet goals.

Next steps planned for the Copermittees in the WMA are summarized in **Table 5-1**.

Table 5-1. Achievements and Next Steps

Copermittee	Project	Description
All	Monitoring for the 2019 Investigative Order	Monitoring in accordance with the SMR Estuary Monitoring and Assessment Workplan and QAPP developed for the IO began in April 2020. The first annual monitoring report for the partial year of implementation will be submitted by January 31, 2021. Monitoring, assessment, and reporting will continue until March 2024. The WQIP MAP has been updated to summarize the requirements of the IO and reference the Workplan and QAPP as part of the WQIP Update (**Attachment 5B**) provided with this WQIP Annual Report submittal.
	Long-Term Receiving Water Monitoring	Long-Term Receiving Water Monitoring under the WQIP MAP began during the 2019-2020 monitoring year. The County of San Diego completed wet and dry monitoring requirements in the Lower Subwatershed, and the Riverside Copermittees completed wet weather monitoring at the Middle SMR Subwatershed station. During the 2020-2021 monitoring year, the Riverside Copermittees will conduct dry weather monitoring and apply specific mobilization criteria based on simulation modeling to again attempt wet weather monitoring at the Wilson Creek LTRW station since no surface flows were observed during five storm events of the 2019-2020 monitoring year.
	Addressing 2017-2018 and 2018-2019 WQIP Annual Report Review Letters	The Copermittees are providing a WQIP Update and a technical memorandum to address the applicable adaptive management general topics due in January 2021, and have provided responses to all comments in **Table 1-2**. The WQIP Update will be deemed accepted 90 days after submittal with this Annual Report.
	Program Audit Letters	The Copermittees will continue to implement improvements as needed in response to Program Audit letters regarding the prohibition of irrigation runoff.
Riverside Copermittees	Regional Education and Outreach Program	The Riverside County Watershed Protection Program is implementing a Five-Year Strategic Plan for Public Education and Outreach. During the next reporting period, implementation of the work plan will include reviewing the school education program, the business outreach program, the website, and the Copermittees' efforts to control over-irrigation in order to determine if updates are required.
	Upper Santa Margarita River Watershed Storm Water Resource Plan (SWRP)	In December 2019, the SWRP was submitted to the State Water Board to verify concurrence with the California Water Code and State Water Board's SWRP Guidelines. Following this review, projects listed in the SWRP will be allowed to compete for grant funds through all chapters of Proposition 1.
County of Riverside	Warm Spring Creek Integrated Mitigation Project	To preserve, restore and enhance the existing un-named creek tributary to Warm Springs Creek, ephemeral drainages, and associated wetland habitats, the County of Riverside is planning to create over 1,500 linear feet of new intermittent channel and seasonal wetlands. The 100% design was completed during this reporting period and construction will begin in November 2020.
Riverside County Flood Control and Water Conservation District	Regional Detention Basin	The District is planning to build a regional detention basin in the City of Wildomar. The basin will be a 19.1-acre, flow-through/infiltration, multi-benefit park. The basin footprint is intended to be the hydrologic low-point for a 2,310 acre tributary watershed of open space, low to medium density residential, and some commercial land uses.

Table 5-1. Achievements and Next Steps

Copermittee	Project	Description
City of Murrieta	Enhanced Municipal Training Programs	Inspection staff will attend enhanced municipal training programs focused on the WQIPs, HPWQC, elimination of illicit discharges, and elimination of dry weather flow during FY 20-21.
	Enhanced Commercial and Industrial Training Programs	Inspection staff will attend enhanced commercial and industrial training program focused on the WQIP, HPQWC, and specific nutrient issues at commercial and industrial businesses during FY 20-21.
	Data and Storm Water Compliance Management	The City is implementing a cloud-based software system to advance data management and tracking of compliance data for the stormwater program. This action is part of their draft implementation plan to improve the IDDE program.
City of Temecula	Higher Efficiency BMPs for Trash Amendments Compliance	The City of Temecula will continue installing media filtration devices in storm drain inlets. Media filters provide treatment for other pollutants in addition to trash, including nutrients.
	Creek Restoration	The City of Temecula approved the project permits, provided support by waiving grading fees, and has been overseeing the progress of the multi-benefit Meadowview Creek Restoration Project, which is a joint effort by community, municipal, and federal agencies to fix a section of the creek's deeply eroded banks and has a stormwater management component.
City of Wildomar	Focused Public Outreach to Eliminate Dry Weather Flows	This year the City sent specific letters and an Irrigation Runoff BMP fact sheet to multiple HOA Managers throughout the City to highlight the City's recent NPDES ordinance update (Effective October 2019) and the over-irrigation prohibition. The City also provides outreach materials to businesses and specific handouts to nurseries. The City will continue focus on enhanced outreach to better inform the public about stormwater regulations and to work towards further reducing dry weather flows.
County of San Diego	Rainbow Creek BMP Retrofits and Stream Restoration	In anticipation of the construction of four BMP retrofits or equivalent structural projects, baseline monitoring was conducted at HST01 and two additional MS4 BMP retrofit sites (see **Appendix 4** for details). During the next reporting period, the County will seek approval from the County Board of Supervisors to advertise and award the construction of the four BMP retrofits with the goal of project completion by December 2021 (FY 21-22). The County will also further evaluate the feasibility of additional planned BMPs and/or non-structural BMPs and expedite selected projects to complete by December 2021.
	Focused Agricultural Strategies for the Rainbow Creek Watershed	The County of San Diego implemented additional strategies focused on agriculture that included an increased inspection frequency of High TTWQ existing commercial agricultural facilities, annually reviewing commercial agricultural facilities in the watershed that may discharge pollutants to the County MS4, and adding newly identified facilities to the inventory. Modifications to the JRMP, which included the enhanced program for agricultural operations in the Rainbow Creek Subwatershed, were completed in FY19-20.
	Development of a Green Streets Master Plan	The County is developing a Green Streets Master Plan to identify multi-benefit opportunities within unincorporated village and adjacent semi-rural residential areas to support progress on achieving water quality. The plan is currently in the early stages of development and is estimated to be completed during the first half of 2022.

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