GEI Consultants

Santa Ana Regional Bacteria Monitoring Program Annual Report for 2024-2025

Submitted to:
Santa Ana Watershed Project Authority

Submitted by:
GEI Consultants
June 2025

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Acronyms and Abbreviations

AgSEP	Agricultural Source Evaluation Plan
Babcock	Babcock Laboratories, Inc.
Basin Plan	Water Quality Control Plan, Santa Ana River Basin
BMP	Best Management Practice
BPA	Basin Plan Amendment
CEDEN	California Environmental Data Exchange Network
cfs	Cubic Feet per Second
CFU	Colony Forming Units
COC	Chain of Custody
DO	Dissolved Oxygen
DWF	Dry Weather Flow
EPA	Environmental Protection Agency
IDDE	Illicit Discharge Detection and Elimination
mgd	Million Gallons Per Day
MPN	Most Probable Number
MSAR	Middle Santa Ana River
OCPHL	Orange County Public Health Laboratory
OCPW	Orange County Public Works
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance / Quality Control
RCFC&WCD	Riverside County Flood Control & Water Conservation District
RMP	Regional Monitoring Program
Santa Ana Water Board	Santa Ana Regional Water Quality Control Board
SAR	Santa Ana River
SAWDMS	Santa Ana Watershed Data Management System
SAWPA	Santa Ana Watershed Project Authority
SBCFCD	San Bernardino County Flood Control District
SOP	Standard Operating Procedures
SSV	Single Sample Value
STV	Statistical Threshold Value
State Water Board	State Water Resources Control Board
SWAMP	California's surface ambient monitoring program
SQSS	Stormwater Quality Standards Study
Task Force	MSAR TMDL / Regional Water Quality Task Force
TMDL	MSAR Bacteria Indicator Total Maximum Daily Load
TSS	Total Suspended Solids
UAA	Use Attainability Analysis
USEP	Urban Source Evaluation Plan

Executive Summary

The Stormwater Quality Standards Study (SQSS) Task Force was formed in 2003 to embark upon a deliberate and measured approach to protect recreational uses in inland surface waters in the Santa Ana Basin. At the time, there were few examples of such a group including water quality regulators and watershed stakeholders spread across three counties and encompassing a mix of municipal separate storm sewer systems (MS4s), agricultural groups, state lands, and publicly owned treatment works (POTWs), coalescing together for common values. The SQSS Task Force collaborated on a Basin Plan Amendment (BPA)[1] that pulled from 17 recreational use surveys, six use attainability analyses (UAAs), economic feasibility assessments, hydrologic analysis, California Environmental Quality Act (CEQA) analysis, and many other special studies. Changes to the Basin Plan were approved by the Environmental Protection Agency (EPA) Region 9 in April 2015 and allowed for the watershed stakeholders to focus resources on areas of highest priority to protect public health. The BPA required development and implementation of a Regional Bacteria Monitoring Program (RBMP). The SQSS Task Force retired in 2015, and a new Regional Water Quality Monitoring Task Force was formed to oversee the RBMP. The RBMP is a program of routine bacteriological data collection and review needed to meet key priorities of the BPA, as follows:

- Priority 1: Monitor bacteria levels at those locations where and when people are most likely to engage in water contact recreation. The use of *E. coli* or *Enterococcus*
- Priority 2: Evaluate effectiveness of implementation actions taken to comply with the Middle Santa Ana River (MSAR) bacteria total maximum daily load (TMDL).
- Priority 3: Collect data to evaluate status and trends in other bacteria impaired waters throughout the Santa Ana Basin.
- Priority 4: Ensure that waters re-designated as 'REC2 Only' meet anti-degradation requirements in the absence of numeric water quality objectives (WQOs). Numeric WQOs apply only to REC1 waters which are monitored in priorities 1-3 above (see Table 4-pio in Basin Plan).

The selected fecal bacteria indicator for monitoring and assessment is dependent upon the salinity of the inland water; whereby *E. coli* is used for waters with salinity less than 1 part per thousand (ppth) or *Enterococcus* is used for all waters where the salinity is greater than 1 ppth. In the Santa Ana region, some inland waters have naturally high salinity, which has caused the RBMP to use *Enterococcus* for assessment.

[1] https://www.epa.gov/sites/default/files/2015-06/documents/ca8-recreational.pdf

For each of the RBMP priority categories, data is synthesized at a summary level and key interpretive findings from this 2024-2025 annual report are highlighted in the following sections.

Priority 1 – Waterbody Segments with Greatest Risk of Exposure

Fecal bacteria conditions in Priority 1 waters during the 2024-2025 warm (May-Sept) and cool (Oct-Nov) months of the dry season were generally low and support recreational use (Figure ES-1) except at two Santa Ana River (SAR) sites (not shown in Figure ES-1). Results for the two SAR Reach 3 sites are presented in the following section focused on Priority 2, or MSAR TMDL waters. *E.coli* geomeans in Mill and Lytle Creek remained low relative to conditions in 2022 (when geomeans approached the WQO but did not exceed). For Lake Elsinore at Launch Pointe (P1-2), salinity in excess of 1ppth most of the time makes *Enterococcus* the relevant WQO; three of fifteen rolling five sample geomeans for *Enterococcus* exceeded the REC1 WQO of 30 MPN /100mL (Figure ES-2).

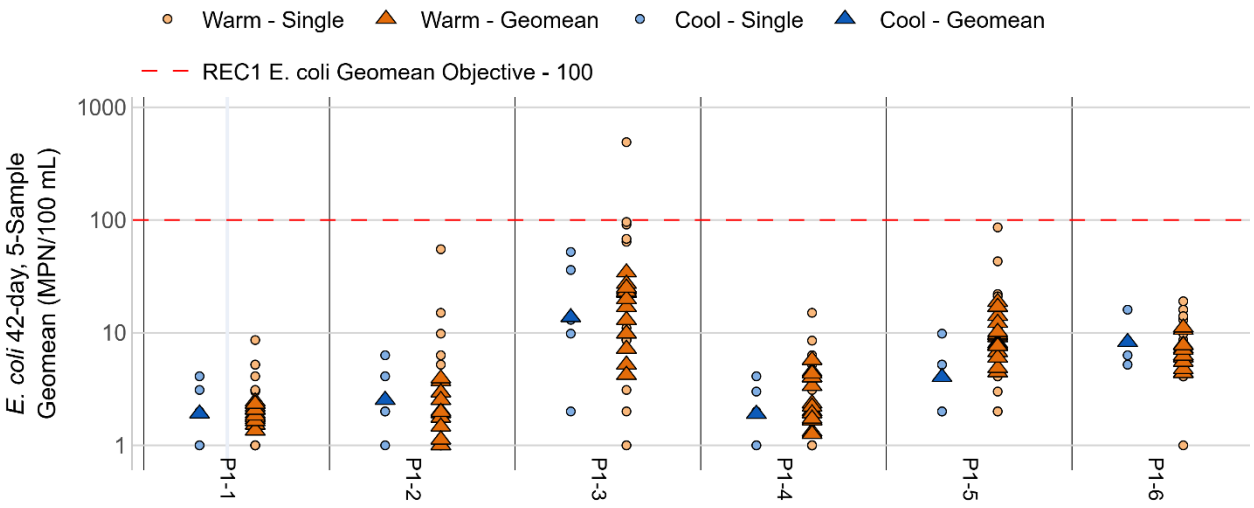

Figure ES-1. *E. coli* Geomean (Triangles) and Single Sample (Circle) Concentrations in Priority 1 Waters during Dry Weather in Warm (20 consecutive weeks) and Cool (5 consecutive weeks) Seasons in 2024-2025

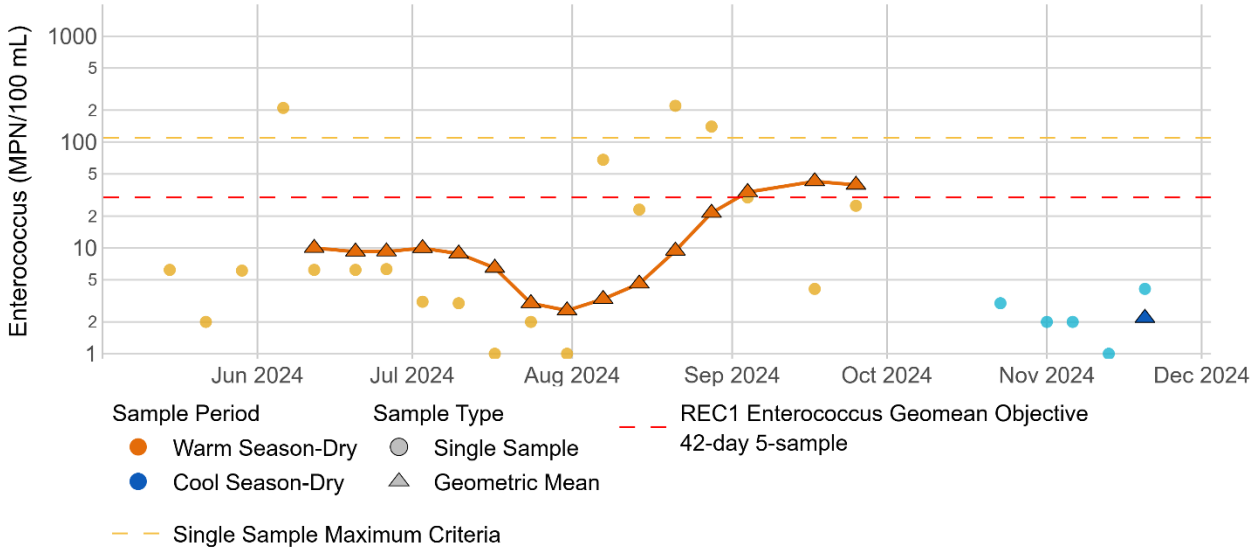

Figure ES-2. *Enterococcus* Single Sample and Rolling Geomean Concentrations at P1-2.

Priority 2 – Waters Subject to the MSAR Bacteria TMDL

This RBMP annual report characterizes fecal bacteria conditions within the MSAR TMDL waters: Santa Ana River Reach 3, Mill-Cucamonga Creek, and Chino Creek. In 2024, no Priority 2 site attained TMDL waste load allocations (WLAs) throughout the dry season, with rolling geomean compliance percentages reported in Table ES-1. **Error! Reference source not found.** shows the calculated geomean concentrations (triangles) and single dry weather samples (circles) during the warm and cool seasons. For dry weather samples during the cool season, sufficient data is collected to allow for calculation of a single geomean at each site (Table ES-1). Table ES-1 does not include the Santa Ana River at Mission Blvd Bridge site (WW-MISSION). This site is at the transition from Reach 4 to Reach 3 and is not used to assess TMDL attainment within Reach 3. Instead, this site provides an understanding of loading from upstream sources, comprised of non-MS4 flows during typical dry weather conditions.

Table ES-1. Frequency of Compliance with MSAR TMDL WLAs/LAs for *E. coli* Geomean (113 MPN/100 mL) for the 2024 Dry Weather Samples

Site ID	Site	Warm, Dry Season Geomean WLA/LA Exceedance Frequency (%)	Cool, Dry Season Geomean WLA/LA Exceedance Frequency (%) (n=1)
WW-C3	Prado Park Lake	19% (n=16)	0%
WW-C7	Chino Creek at Central Avenue	100% (n=16)	100%
WW-M6	Mill-Cucamonga Creek	83% (n=12[1])	100%
WW-S1	Santa Ana River at MWD Crossing	69% (n=13[2])	100%
WW-S4	Santa Ana River at Pedley Avenue	38% (n=13[2])	100%

1) Mill-Cucamonga Creek sample scheduled for August 1 was not collected due to wildlife creating unsafe conditions to complete the monitoring event. A make-up sample was collected on September 5, but this resulted in several weeks of less than 5 samples within 30 days that would be needed for rolling geomean calculation.
2) Samples were collected at WW-S4 on September 10 and WW-S1 on September 11, were both influenced by isolated rainfall in the eastern part of the MSAR watershed. These sample results were reclassified as wet and thus removed from calculations of geomeans for dry conditions. This resulted in several weeks of less than 5 samples within 30 days that would be needed for rolling geomean calculation.

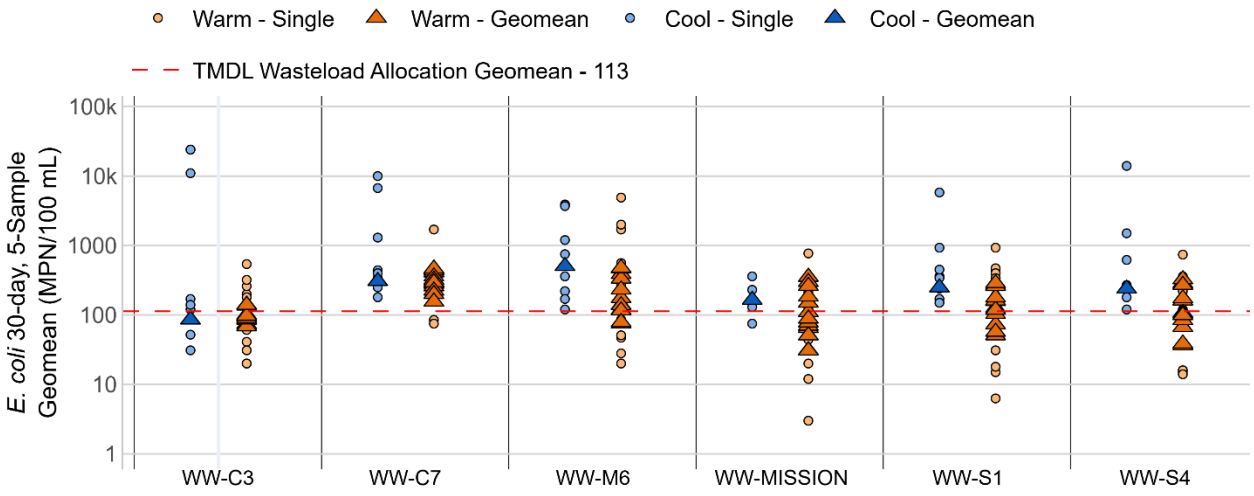

Figure ES-3. Single Sample and Five-Sample Geomean of E. coli Concentrations (MPN/100 mL) at Priority 2 Sites in 2024.

Santa Ana River Reach 3

Within Reach 3 of the SAR, monitoring showed the same condition as in prior years, whereby *E. coli* concentrations rise from NPDES permit limits (<2 MPN /100mL total coliform) to levels that exceed the TMDL allocations at the WW-MISSION station (Figure ES-4). The inclusion of the WW-MISSION sampling site in the RBMP in 2020

has facilitated a larger dataset to support a key finding from the 2023 TMDL Triennial Report that “bacteria load from unknown non-point sources consume nearly 100% of the total allowable load for *E. coli* bacteria in the receiving water”. In other words, attainment of TMDL numeric targets may not be possible even with complete drying of all MS4 inflows that occur downstream of WW-MISSION. Closer analysis of temporal data revealed a period of the season when 5-sample 30-day rolling geomeans of *E. coli* concentration reached all-time lows at the three sites in Reach 3 of the SAR during July (WW-MISSION at 31 MPN /100mL; WW-S1 at 51 MPN /100mL; WW-S4 at 36 MPN /100mL). This improved water quality condition may have begun in 2023 and could be attributed to removal of riparian zone fecal bacteria sources to accommodate construction activity within the river bottom including homeless encampment cleanups, reworking the sediment of the riverbed, and rerouting of the low flow channel away from levees. It is also possible that the increased rainfall observed in this past year led to increases in river flows diluting concentrations. Figure ES-5 portrays the location of sampling sites and river bottom re-construction and compares seasonal geomeans in 2024 with past years of the RBMP. Areas where reworking of the river bottom sediment to route low flows away from the levees are referred to as ‘new low flow segments’ in the map.

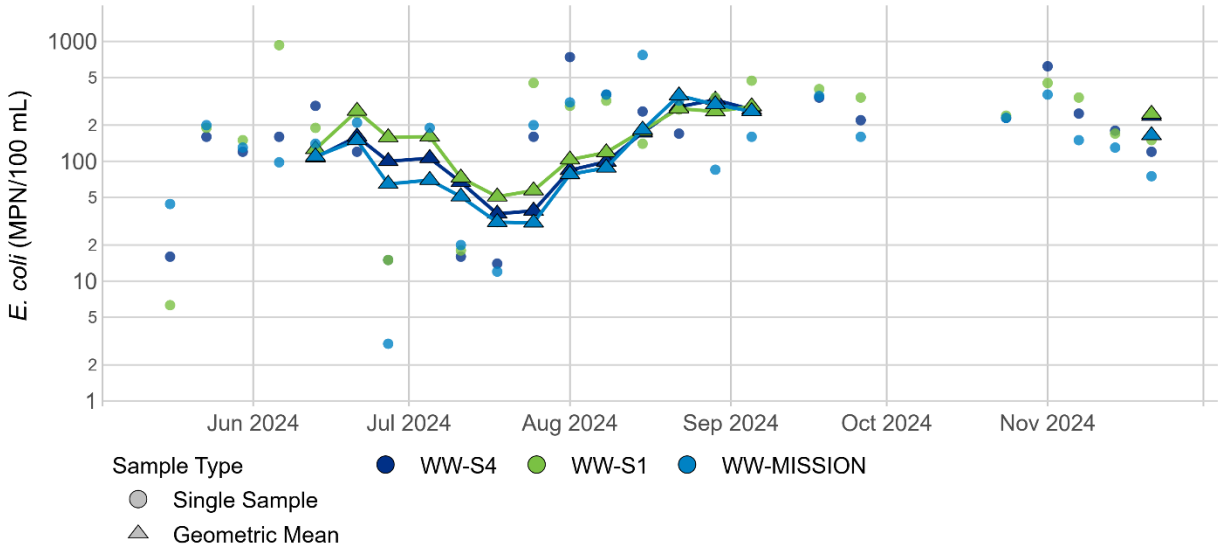

Figure ES-4: *E. coli*. for three Santa Ana River Reach 3 Sites (in order downstream to upstream WW-S4, WW-S1, WW-MISSION)

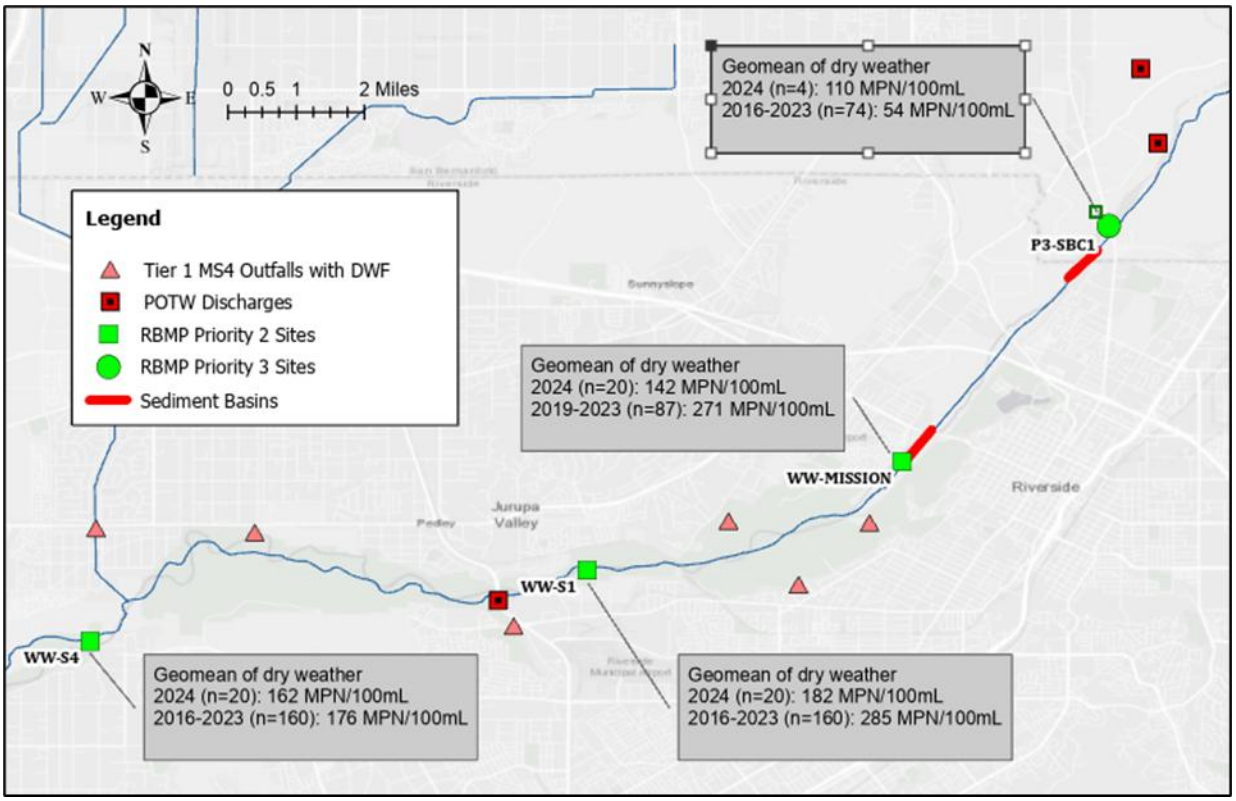

Figure ES-5. *E. coli*. for three SAR Reach 3 Sites (in order downstream to upstream WW-S4, WW-S1, WW-MISSION) and one Priority 3 Site in SAR Reach 4

Mill-Cucamonga Creek

Conditions in Mill-Cucamonga Creek (WW-M6) have improved since the completion of a project in 2015 to divert a portion of the flow for treatment within Mill Creek Wetland just upstream of the TMDL compliance monitoring location. Comprehensive analysis of six years of effectiveness monitoring for Mill Creek Wetlands showed a greater than 95 percent reduction in *E. coli* (more details on the 10-week synoptic surveys used to estimate this reduced loading are provided in the 2023 Triennial TMDL Report). Rolling 5-sample, 30 day *E. coli* geomean concentrations in Mill-Cucamonga Creek ranged from 75 to 475 MPN/100mL during dry weather in 2024. Temporal variability of *E. coli* concentrations within Mill-Cucamonga Creek was significant with multiple instances of differences in magnitude week to week, in samples collected on the same day of the week and approximate time of day.

Chino Creek

Chino Creek continued to exceed WLAs at the compliance monitoring site at Central Avenue (WW-C7). Relative to Mill-Cucamonga Creek, temporal variability in Chino Creek was muted. Rolling 5-sample, 30 day geomean concentrations in Chino Creek ranged from 257 to 464 MPN/100mL during dry weather in 2024.

Prado Park Lake

In Prado Park Lake, geomean concentrations have declined following the construction of a high flow bypass pipeline that ensures no stormwater is discharged to the lake (see TMDL Triennial Reports for additional detail). The rolling geomean concentrations in the 2024-2025 monitoring period hovered around the TMDL numeric target. Rolling 5-sample, 30 day geomean concentrations in Prado Park Lake ranged from 68 to 140 MPN/100mL during dry weather in 2024.

Wet Weather Event Summary

Wet weather samples were collected during the week of March 10 -14 based on forecasted rainfall Tuesday through Friday. Measured rainfall on March 11 and 12 was less than forecasted at Ontario Airport station; however, a storm of about 0.5 inches passed through and generated sufficient runoff to classify March 13 and 14 samples as collected during active wet weather. The TMDL Task Force decided to collect samples at the WW-MISSION site during the March 2025 wet event (previously done during dry weather only). Results showed wet weather brings significant loads of fecal bacteria into Reach 3 from the large upper watershed that is hydrologically disconnected throughout most of the warm season.

Priority 3 – Bacteria Impaired Waters Without an Existing TMDL

The Task Force has collaborated with the Regional Board to collect five consecutive-week dry weather samples during the warm season to characterize current fecal bacteria concentrations in waters that were added to the 303(d) list but do not have a TMDL. In some cases (Goldenstar Creek, Santa Ana River Reach 4, Bolsa Chica Channel, Borrego Channel, and Serrano Creek), the basis for original 303(d) listing involved data collected about 20 years ago and new monitoring data collected through this RBMP has provided more recent information. More recent additions to the 303(d) list include Warm Springs Creek and San Timoteo Creek. Figure ES-6 displays the 2024 5-week geomeans and single sample E. coli concentrations at Priority 3 sites. Table ES-2 compares the five-sample geomean calculated in 2024 to historical ranges over the period of the RBMP.

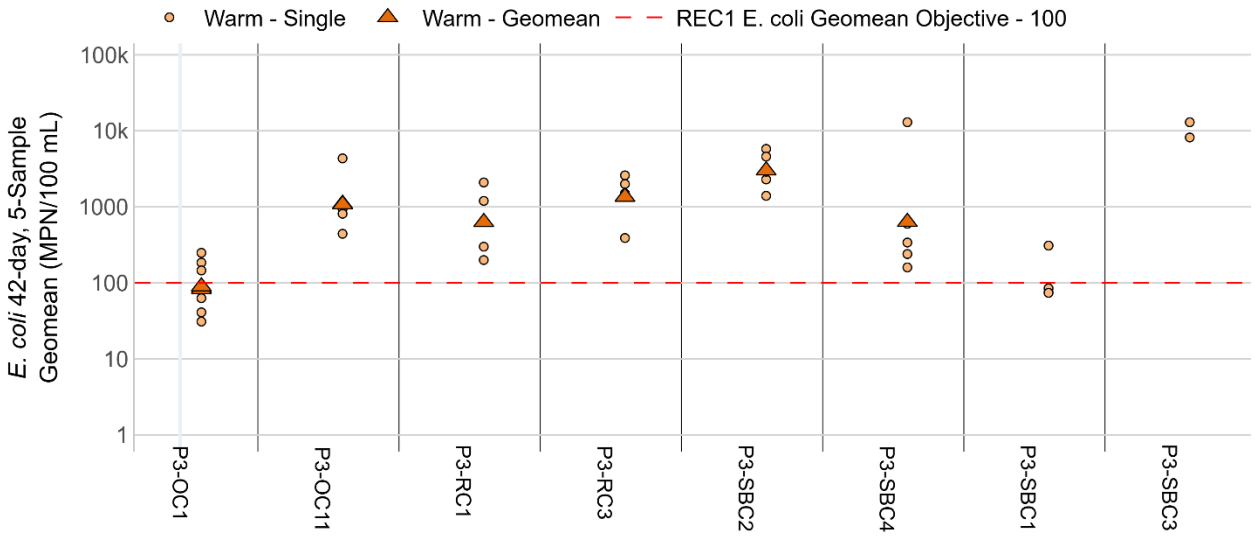

Figure ES-6. Distribution of *E. coli* Concentration Measurements at Priority 3 Sites

Table ES-2. Range of Dry Weather Flowrate and E. Coli Geometric Means at Priority 3 Sites in 2024 Compared to Historical Dataset (2016-2023)

Site	Range of Geomeans *E. coli* (MPN /100mL)		Range of Flow (cfs)	
	Historical	2024	Historical	2024
Bolsa Chica (P3-OC1)	22-533	70	0.07-4.1	1.2-5.5
Borrego Creek (P3-OC2) [1]	807-3,608	NA	0.4-0.98	NA
Serrano Creek (P3-OC11)	132-1,572	1,145	0.1-1.4	0.3-0.7
Goldenstar Creek (P3-RC1)	71-456	631	0.4-32.1	1.1-4.5
San Timoteo Creek Reach 3 (P3-RC3)	170-344	1,355	6.6-77.7	7.6-39.4
San Timoteo Creek Reach 2 (P3-SBC3)	414-486	n/a [2]	0.1-15.9	0.1-0.7
San Timoteo Creek Reach 1A (P3-SBC2)	40-3,072	3,015	0.3-14.9	0.1-0.6
Warm Creek (P3-SBC4)	236-4,689	633	0.1-13.7	0.04-1.8
Santa Ana River Reach 3 (P3-SBC1)	10-222	n/a [2]	2.6-70.4	11.1-20.2

1) Borrego Creek was dry during all five site visits in the 2024 warm season, historical range shown is based on three grab samples over two years.
2) Less than 5 samples collection in 2024 dry season therefore 5-sample geomean calculation not feasible. .

Common characteristics of the Priority 3 waters in the RBMP include 1) existing impairment without TMDL, 2) downstream of smaller watersheds than the TMDL waters, and 3) are flowing waters. Given these factors, the measured flow in these streams during dry weather is an important metric to assess long term benefits of outdoor water

use efficiency measures taken in MS4 drainage areas. In some cases, management of water and wastewater causes substantial change to the flow regime in downstream waters and must be accounted for when interpreting water quality conditions. Flow rates are included in Table ES-2 for 2024 and the range of results in prior years.

Priority 4 – Waters Re-Designated as REC2 Only

The Basin Plan Amendment includes provisions applicable to waters with completed UAAs supporting change of beneficial use from REC1 to REC2 only to assure bacteria water quality conditions do not degrade from baseline levels as a result of controllable factors. A statistical analysis of historical data (2002-2011) was completed to estimate a baseline of bacterial water quality including geometric mean, median, standard deviation, coefficient-of-variation, maximum value, and 75th percentile density. The 75th percentile density serves as the antidegradation target, meaning that 3 of 4 samples in data collected after the BPA must fall below these values to infer no degradation.

Several of the REC2-Only waters are upstream of Priority 2 TMDL waters, including Cucamonga Creek Reach 1 (P4-SBC1) and Temescal Creek (P4-RC1). The change in use designation to REC2-Only allows for regional bacteria control projects to most effectively protect downstream REC1. Regional treatment provides more effective control because the treatment is located closer to the waterbody with more frequent recreational use. In this case, there are fewer new potential sources of dry weather flow and bacteria load between the regional treatment and the recreational waterbody.

Each Priority 4 site is sampled once each year to evaluate compliance with the antidegradation target established for each waterbody. High conductivity in the tidal prisms for Santa Ana-Delhi Channel and Greenville-Banning Channel support the use of *Enterococcus* for antidegradation thresholds. Priority 4 water quality sample results were compared to site-specific antidegradation targets (Table 3-). In 2024, all Priority 4 sites met their antidegradation targets.

Table ES-3. Antidegradation Targets for Priority 4 Sites (no exceedances observed in 2024)

Site ID	Site Description	Antidegradation Target (MPN/100 mL)	*E. coli* Sample Result	*Enterococcus* Sample Result	Sample Date
P4-OC1	Santa Ana-Delhi Channel Upstream of Irvine Avenue	1,067	613		9/19/2024
P4-OC2	Santa Ana-Delhi Channel in Tidal Prism	464		<10	8/21/2024
P4-OC3	Greenville-Banning Channel in Tidal Prism	64		<10	8/21/2024
P4-RC2	Temescal Creek at Lincoln Avenue	725	73		8/29/2024
P4-SBC1	Cucamonga Creek at Hellman Avenue	1,385	400		6/21/2024

Retrospective

The RBMP Task Force is continuing to collaborate on common objectives to protect recreational use in the region's inland surface waters. We have used collective understanding of the watershed and scientific advancements to address fecal bacteria impairments and used the tools afforded in the Clean Water Act to prioritize use of resources to protect public health. The RBMP Task Force is collaborating with the Regional Board to ensure that the monitoring program is adapted to respond to several key regulatory activities including the 2022 statewide Bacteria Summit, the partially approved 2024 Integrated List of Waters for Santa Ana region,[2] MS4 permit reissuance, limited BPA for the MSAR bacteria TMDL, and 2024 EPA guidance for alternative water quality criteria for fecal bacteria in waters with non-human dominated sources. In addition, the Task Force has continued to stay at the forefront of environmental science and technology through the implementation of innovative studies using bacterial DNA sampling to determine or eliminate causes for degraded water quality.

[2] https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2024-integrated-report.html

1. Introduction

The Santa Ana River Watershed Regional Bacteria Monitoring Program (RBMP) was developed to achieve the following objectives through bacteria monitoring:

- Provide the data needed to determine if water quality is safe when and where people are most likely to engage in water contact recreation.
- Facilitate the Total Maximum Daily Load (TMDL) implementation process and track progress toward attainment of applicable water quality standards, where water quality is impaired due to excessive bacterial indicator levels.
- Apply a risk-based implementation strategy to allocate public resources in a manner that is expected to produce the greatest public health benefit.

1.1. Regulatory Background

The RBMP supports the implementation of several regulatory-related activities associated with the protection of recreational uses in the Santa Ana River Watershed, including the Basin Plan Amendment (BPA) to *Revise Recreation Standards for Inland Freshwaters in the Santa Ana Region* and the Middle Santa Ana River (MSAR) Bacteria TMDL. The approved BPA required establishment of a comprehensive RBMP for implementation throughout the Santa Ana Region to support implementation of the revised water quality standards. Santa Ana Watershed Project Authority's Regional Water Quality Monitoring Task Force (RWQMTF, which succeeded the SWQSTF) developed the RBMP Monitoring Plan and QAPP to conform to the requirements in the Basin Plan for both the MSAR TMDL and the recreational standards BPA. To facilitate efficient use of resources across the Santa Ana Region, the MSAR TMDL Watershed-wide Compliance Monitoring Program was incorporated into the Santa Ana Region RBMP. The Santa Ana Water Board approved the RBMP Monitoring Plan and QAPP (including the incorporated MSAR TMDL Monitoring Program) on March 11, 2016 (Santa Ana Water Board 2016).

Originally, the MSAR Task Force prepared two monitoring reports each year: Dry Season Report (by December 31) and Wet Season Report (by May 31). The biannual reporting requirement was established in Task 3 of the MSAR TMDLs Implementation Plan. This biannual reporting requirement was modified into a single annual report submitted by June 30th each year when the MSAR TMDL Watershed-wide Compliance Monitoring program was incorporated into the RBMP. The first RBMP Annual Report, which included water quality monitoring results from the 2016 dry season and 2016-2017 wet season, was prepared by the RWQMTF in June 2017. This report is the 2024-2025 RBMP Annual Report. Other RWQMTF-related documents are available on the 'Monitoring' tab at the SAWPA-administered website: https://sawpa.org/task-forces/regional-water-quality-monitoring-task-force/#geographic-setting.

Each of the activities addressed by the RBMP are described below.

1.1.1. Basin Plan Amendment

The Basin Plan identifies the beneficial uses for waterbodies in the Santa Ana River watershed, establishes the water quality objectives required to protect those uses, and provides an implementation plan to protect water quality in the region (Santa Ana Water Board 2019b). On June 15, 2012, the Santa Ana Regional Water Quality Control Board (Santa Ana Water Board) adopted the BPA to *Revise Recreation Standards for Inland Freshwaters in the Santa Ana Region.*[3] This BPA resulted in the following key modifications to the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) for the Santa Ana region:

- Addition of "Primary Contact Recreation" as an alternative name for the REC1 (water contact recreation) beneficial use.
- Addition of narrative text clarifying the nature of REC1 activities, and the bacteria objectives established to protect these activities.
- Differentiation of inland surface REC1 waters based on frequency of use and other characteristics for the purposes of assigning applicable single sample maximum values.
- Revision of water quality objectives to protect the REC1 use of inland freshwaters, specifically the addition of *Escherichia coli* (*E. coli*) and removal of fecal coliform.
- Addition of narrative text to clarify sources of fecal bacteria that may be considered "uncontrollable."
- Identification of criteria for temporary suspension of recreation use designations and objectives (high flow suspension).
- Revision of REC1/REC2 designations for specific inland surface waters based on the results of completed Use Attainability Analysis (UAA). Non-contact Water Recreation (REC2 Only: Secondary Contact Recreation) is defined as water used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. REC2 Only designations in upstream channels allow for regional water quality controls to be located downstream, closer to REC1 segments with active recreation.

Santa Ana Water Board staff developed the BPA in collaboration with the RBMP Task Force, composed of representatives from various stakeholder interests, including the Santa Ana Watershed Project Authority (SAWPA); the counties of Orange, Riverside,

[3] Santa Ana Water Board Resolution: R8-2012-0001, June 15, 2012.

and San Bernardino; the cities of Claremont and Pomona; Orange County Coastkeeper; Inland Empire Waterkeeper; and the Environmental Protection Agency (EPA) Region 9. The BPA was approved by the State Water Resources Control Board (State Water Board) on January 21, 2014, and the California Office of Administrative Law on July 2, 2014. However, the EPA did not approve all provisions of the BPA, which required revisions in the form of letters. The EPA issued its comment letter on April 8, 2015, and provided a letter of clarification on August 3, 2015. The BPA required the establishment of a comprehensive monitoring program to support implementation of the changes to the Basin Plan. The RBMP fulfills this requirement.

1.1.2. Statewide Bacteria Provisions

On August 7, 2018, the State Water Board adopted Bacteria Provisions and a Water Quality Standards Policy for Inland Surface Waters, Enclosed Bays, and Estuaries of California (Statewide Bacteria Provisions). The Statewide Bacteria Provisions developed new statewide numeric water quality objectives for bacteria to protect primary contact recreation beneficial use, as follows:

- *E. coli*: For all waters where the salinity is equal to or less than 1 part per thousand (ppth), 95 percent or more of the time, a six-week rolling geometric mean of at least five samples not to exceed 100 cfu/100 mL, calculated weekly, and a statistical threshold value (STV) of 320 cfu/100 mL not to be exceeded by more than 10 percent of the samples collected in a calendar month, calculated in a static manner.
- *Enterococcus*: For all waters where the salinity is greater than 1 ppth, 5 percent or more of the time, a six-week rolling geometric mean of at least five samples not to exceed 30 cfu/100mL, calculated weekly, and a STV of 110 cfu/100 mL not to be exceeded by more than 10 percent of the samples collected in a calendar month, calculated in a static manner.

The Statewide Bacteria Provisions supersede numeric water quality objectives (WQOs) for REC1 use contained in regional Basin Plans, except for cases involving a site-specific standard or if an existing TMDL was developed with targets based on prior regional Basin Plan REC1 WQOs (such as the MSAR Bacteria TMDL). Section 1.1.3 describes the MSAR Bacteria TMDL and associated numeric targets, which differ from those included in the Statewide Bacteria Provisions. This comprehensive monitoring program was developed to facilitate data collection needed to evaluate both TMDL numeric targets and Statewide Bacteria Provisions WQOs for the TMDL waters. Compliance metrics, however, are based solely on the TMDL numeric targets.

Lastly, the Statewide Bacteria Provisions do not supersede narrative WQOs in regional Basin Plans. The BPA to Revise Recreation Standards for Inland Freshwaters in the Santa Ana Region is composed of predominantly narrative criteria, which remain in

effect for the Santa Ana region. The narrative criteria in the BPA are largely consistent with narrative criteria contained in the Statewide Bacteria Provisions.

1.1.3. MSAR Bacteria TMDL

Total Maximum Daily Loads (TMDLs) are developed for waterbodies that are on California's List of Water Quality Limited Segments (Category 5 or 303(d) List) in California's Integrated Report prepared to comply with Clean Water Act Section 303(d) and 305(b) requirements. The Santa Ana Water Board adopted bacterial indicator TMDLs for five waterbodies in the MSAR watershed on August 26, 2005.[4] These TMDLs were adopted to address impairment of the water contact recreation use (REC1). The five waterbodies and original impairment findings included:

- Santa Ana River Reach 3 – In 1988, the lower portion of Reach 3 (Santa Ana River from Prado Dam upstream to the Mission Boulevard Bridge) was placed on the 303(d) list. Based on monitoring data, during development of the TMDLs the extent of impairment was expanded to include all of Santa Ana River Reach 3.
- Chino Creek, Reach 1 – This waterbody extends from the Chino Creek's confluence with the Santa Ana River upstream to the beginning of the concrete-lined channel south of Los Serranos Road. Chino Creek Reach 1 was placed on the 303(d) list in 1994. Except for a short segment in the upper portion of this reach which has been modified, Reach 1 has a natural bottom and banks.
- Chino Creek, Reach 2 – Placed on the 303(d) list in 1998, this waterbody extends from the concrete-lined channel south of Los Serranos Road upstream to the confluence of Chino Creek and San Antonio Creek. This entire reach is concrete lined along the bottom and banks.
- Mill Creek, Prado Area (also referred to as Mill-Cucamonga Creek) – Waterbody extends from Mill Creek's confluence with Chino Creek Reach 1 in the lower part of Prado Basin to Hellman Avenue (where it becomes Cucamonga Creek Reach 1). Mill Creek was placed on the 303(d) list in 1994.
- Cucamonga Creek, Reach 1 – Placed on the 303(d) list in 1998, this waterbody extends from Hellman Avenue upstream to 23rd Street in the City of Upland, California. This reach is listed as impaired in the MSAR TMDLs; however, since adoption of the TMDLs, REC1 was removed from Reach 1 through an approved UAA.
- Prado Park Lake – This small 60-acre, constructed lake is located within Prado Regional Park near the junction of Highway 83 (Euclid Avenue) and State Highway 71. The waterbody was placed on the 303(d) list in 1998.

[4] Santa Ana Water Board Resolution: R8-2005-0001, August 26, 2005.

The MSAR TMDLs became effective when the United States Environmental Protection Agency (USEPA) gave its final approval on May 16, 2007. The TMDLs specified numeric targets for fecal coliform and *E. coli* for all five waterbodies. It also established the dry summer condition and wet winter condition waste load allocations (WLAs) and load allocations (LAs) applicable to point and nonpoint sources, respectively. The TMDLs included a Phase 1 Implementation Plan, which established a variety of activities to be implemented by entities responsible for compliance with the WLAs/LAs as well as the Santa Ana Water Board.

1.1.4. Antidegradation Targets

The BPA established site-specific antidegradation targets for waterbodies with only a REC2 designation. For each of these waterbodies, the REC1 beneficial use was removed through an approved UAA. The antidegradation targets serve as triggers for additional monitoring or efforts to prevent degradation of water quality in REC2 waterbodies. The targets were developed using a statistical method that fits historical dry weather data to a lognormal distribution. The 75th percentile of the fitted lognormal distribution is required as the antidegradation target when relying on a single sample result (see Section 5 of Basin Plan for antidegradation targets for REC2 only freshwaters). Table 1-1 summarizes the antidegradation targets for the REC2 waterbodies included in RBMP.

Table 1-1. Antidegradation 75th Percentile Targets for Waterbodies with a REC2 Only Designation in the Santa Ana River RBMP (replicated from Basin Plan Tables 5-REC2 Only Targets-FW and Table 5-REC2 Only Targets - Other Waters).

Waterbody	*E. coli* (MPN/100 mL)	*Enterococcus* (MPN/100 mL)
Temescal Creek Reach 1a/1b	725 MPN/100 mL	
Santa Ana-Delhi Channel Reach 1/2	1,067 MPN/100 mL	
Santa Ana-Delhi Channel in Tidal Prism[1]		464 MPN/100 mL
Greenville-Banning Channel in Tidal Prism[1]		64 MPN/100 mL
Cucamonga Creek Reach 1	1,385 MPN/100 mL	

[1] Salinity at site is greater than 1 ppth 95 percent or more of the time.

1.2. Monitoring Strategy

One of the principal goals for updating recreational water quality standards in the Santa Ana region was to encourage the most cost-effective allocation of finite public resources. As such, all efforts undertaken to assure compliance with these revised

standards should concentrate on projects and programs that are likely to produce the greatest public health benefit.

This risk-based approach, which is designed to guide all aspects of protecting water contact recreation, provides the foundation for the RBMP. Just as it is prudent to prioritize mitigation projects in a manner that achieves the greatest public health benefit, it is wise to organize related water quality monitoring efforts along the same lines. The RBMP is structured to direct water quality monitoring resources to the highest priority waterbodies.

1.2.1. Priority Designation

Basin Plan Amendment requirements for an RBMP and the risk-based approach described above were used as a basis for developing a monitoring approach that designates monitoring priorities. General principles include:

- The most rigorous monitoring should occur in REC1 waterbodies where the expectation for water contact recreation is the highest. Data collection must occur at a sufficient frequency (a minimum of 5 samples per six-week period, year-round, unless documented waterbody conditions exist that justify a reduced frequency) to demonstrate that these waters are safe for recreation.
- Where a waterbody has an adopted TMDL for bacterial indicators, consider existing monitoring requirements that have already been established to evaluate progress towards achieving attainment with water quality objectives.
- For waterbodies listed as impaired, but no TMDL has been adopted, monitoring should occur periodically (on an annual basis) to provide additional data regarding the impairment status of these waterbodies.
- Ensure ongoing sample collection from REC2 Only waters to assess compliance with antidegradation targets established per the BPA.

These general principles provide the foundation for the development of the RBMP, which prioritizes waterbodies as follows:

- Priority 1: Establish a monitoring program that can determine whether fecal bacteria levels are "safe" at those locations where and when people are most likely to engage in water contact recreation. These waters are all Tier A waters per the 2012 BPA (Note: A Priority 1 water may also include impaired waterbodies that are designated Tier A REC1 Waters).
- Priority 2: Focus monitoring resources on those waterbodies that have been identified as "impaired" due to excessive bacterial indicator concentrations and a TMDL has already been adopted (Note: A Priority 2 water may also be Priority 1). Monitoring in these waters focuses on evaluating progress toward attainment with the TMDL numeric target for these impaired waters.

- Priority 3: Monitor 303(d)-listed or impaired waterbodies where a TMDL has not yet been developed. For these Priority 3 sites, the RBMP includes periodic sample collection for 5 consecutive weeks during dry weather in the warm season on an annual basis. Data from Priority 3 sites are used to evaluate compliance with the Santa Ana region *E. coli* water quality objective.
- Priority 4: Collect the bacteria indicator data needed to implement the antidegradation targets that have been established for waterbodies designated as REC2 Only. Data from Priority 4 sites are used to evaluate attainment of the site-specific antidegradation targets (Table 1-1).

1.2.2. Monitoring Plan and Quality Assurance Project Plan

To support the watershed-wide RBMP, the MSAR TMDL Task Force was expanded to include Santa Ana River watershed stakeholders and formed the MSAR TMDL/Regional Water Quality Monitoring Task Force (Task Force). The Task Force stakeholders worked collaboratively to prepare the RBMP Monitoring Plan (Monitoring Plan) and Quality Assurance Project Plan (QAPP) to support this monitoring program. The monitoring documents were last updated in 2022 and are anticipated to be updated or modified as needed during the 2025-2026 monitoring year.

1.2.3. Annual Report

This Annual Report summarizes the results of the 2024-2025 monitoring efforts. Annual Reports summarizing monitoring efforts from years 2016-2017 through 2023-2024 are available online under the 'Monitoring' tab on the SAWPA Task Force website.[5]

Additional information and analysis of MSAR bacteria data can be found in the 2023 MSAR TMDL Triennial Report (next update anticipated in February 2026), which summarizes decades of microbial source tracking data, mass balance analysis, and BMP effectiveness assessment, and provides recommendations for watershed management activities toward achieving the TMDL.

[5] https://sawpa.gov/task-force/regional-water-quality-monitoring-task-force/

2. Methods

The RBMP Monitoring Plan and QAPP provide detailed information regarding the collection and analysis of field measurements and water quality samples (SAWPA 2022).[6] The following sections summarize active monitoring locations (Section 2.1) and sampling frequency (Section 2.2) for the 2024-2025 period.

2.1. Monitoring Locations

Table 2-1 presents active monitoring sites sampled within the RBMP in the 2024-2025 period. Monitoring sites are mapped in Figure 2-1 with symbols used to show the priority type of sites. A summary of sites within each priority designation is provided below:

- Priority 1 - Eight monitoring sites, identified as REC1 inland surface waters with frequent water contact recreational use, are included for Priority 1 monitoring. This includes four lakes: Big Bear Lake, Lake Perris, Canyon Lake, and Lake Elsinore; and four flowing water sites: Santa Ana River Reach 3 (two sites), Lytle Creek, and Mill Creek Reach 2. Five sites are in Riverside County and three sites are in San Bernardino County.
- Priority 2 - are primarily the same monitoring sites previously established for evaluating attainment of the numeric targets in the MSAR Bacteria TMDL: two Santa Ana River Reach 3 sites (at MWD Crossing and at Pedley Avenue), and one site each on Mill-Cucamonga Creek, Chino Creek, and Prado Park Lake. As discussed in Section 2.2.1, the two Santa Ana River sites are also Priority 1 waters, i.e., they are locations where the risk of exposure to pathogens during recreational activities is highest. Santa Ana River at Mission Boulevard Bridge was added to the Priority 2 sampling to help define bacteria levels entering the MSAR Reach 3 from Reach 4 and is not appropriate for assessment of attainment with TMDL numeric targets in Reach 3..
- Priority 3 - There are currently twenty-four waterbodies in the Santa Ana River watershed included on the 303(d) List as impaired for indicator bacteria for which no TMDL has been adopted (i.e., Category 5 waters). Eight of these waterbodies were not included in the original RBMP for reasons described in Section 3.3.3.2 of the Monitoring Plan. In addition, five 303(d) listed bacteria impaired waters have advanced to more robust source investigation study (part of the Newport Bay watershed source identification study). Thus, 9 Priority 3 waterbodies are currently monitored in the RBMP, three are in Orange County, two are in Riverside County, and four are in San Bernardino County.

[6] Regional Bacteria Monitoring Program and QAPP, June 2022, https://sawpa.gov/task-force/regional-water-quality-monitoring-task-force/#monitoring-program

- Priority 4 - Five Priority 4 sites (two sites located on Delhi Channel) are monitored within four waterbodies designated REC2 Only as a result of approved UAAs including the Santa Ana Delhi Channel and Greenville-Banning Channel in Orange County, Temescal Creek in Riverside County, and Cucamonga Creek Reach 1 in San Bernardino County.

Table 2-1. Regional Bacteria Monitoring Program Sites

Priority	Site ID	Site Description	County	Latitude	Longitude
1	P1-1	Canyon Lake at Holiday Harbor	Riverside	33.6808	-117.2724
1	P1-2	Lake Elsinore at Launch Pointe	Riverside	33.6664	-117.3356
1	P1-3	Lake Perris at Perris Beach	Riverside	33.8618	-117.1928
1	P1-4	Big Bear Lake at Swim Beach	San Bernardino	34.2485	-116.9061
1	P1-5	Mill Creek Reach 2	San Bernardino	34.0891	-116.9247
1	P1-6	Lytle Creek at Middle Fork	San Bernardino	34.2480	-117.5110
1 & 2	WW-S1	Santa Ana River at MWD Crossing	Riverside	33.9681	-117.4479
1 & 2	WW-S4	Santa Ana River at Pedley Avenue	Riverside	33.9552	-117.5327
2	WW-M6	Mill-Cucamonga Creek d/s Wetlands	San Bernardino	33.9268	-117.6250
2	WW-C7	Chino Creek at Central Avenue	San Bernardino	33.9737	-117.6889
2	WW-C3	Prado Park Lake	San Bernardino	33.9400	-117.6473
2[1]	MISSION	Santa Ana River at Mission Blvd	Riverside	33.9833	-117.4018
3	P3-OC1	Bolsa Chica Channel u/s Westminster	Orange	33.7596	-118.0430
3	P3-OC2	Borrego Creek u/s Barranca Parkway	Orange	33.6546	-117.7321
3	P3-OC11	Serrano Creek u/s Barranca	Orange	33.6483	-117.7248
3	P3-RC1	Goldenstar Creek at Ridge Canyon Dr	Riverside	33.8964	-117.3586
3	P3-RC3	San Timoteo Creek Reach 3	Riverside	34.0025	-117.1645
3	P3-SBC1	Santa Ana River Reach 4 u/s Riverside	San Bernardino	34.0248	-117.3628
3	P3-SBC2	San Timoteo Crk Rch 1A at Anderson	San Bernardino	34.0615	-117.2629
3	P3-SBC3	San Timoteo Crk Rch 2 at Canyon Rd	San Bernardino	34.0328	-117.2089
3	P3-SBC4	Warm Creek below Fairway Dr	San Bernardino	34.0646	-117.3072
4	P4-RC2	Temescal Creek at Lincoln Ave	Riverside	33.8941	-117.5772
4	P4-OC1	Delhi Channel u/s of Irvine Ave	Orange	33.6602	-117.8810
4	P4-OC2	Delhi Channel in Tidal Prism	Orange	33.6529	-117.8837
4	P4-OC3	Greenville-Banning Channel	Orange	33.6594	-117.9479
4	P4-SBC1	Cucamonga Creek at Hellman Ave	San Bernardino	33.9493	-117.6104

1) Santa Ana River at Mission Avenue is at the upstream boundary of Reach 3. Site is used to characterize flows into Reach 3 and is not for TMDL compliance monitoring

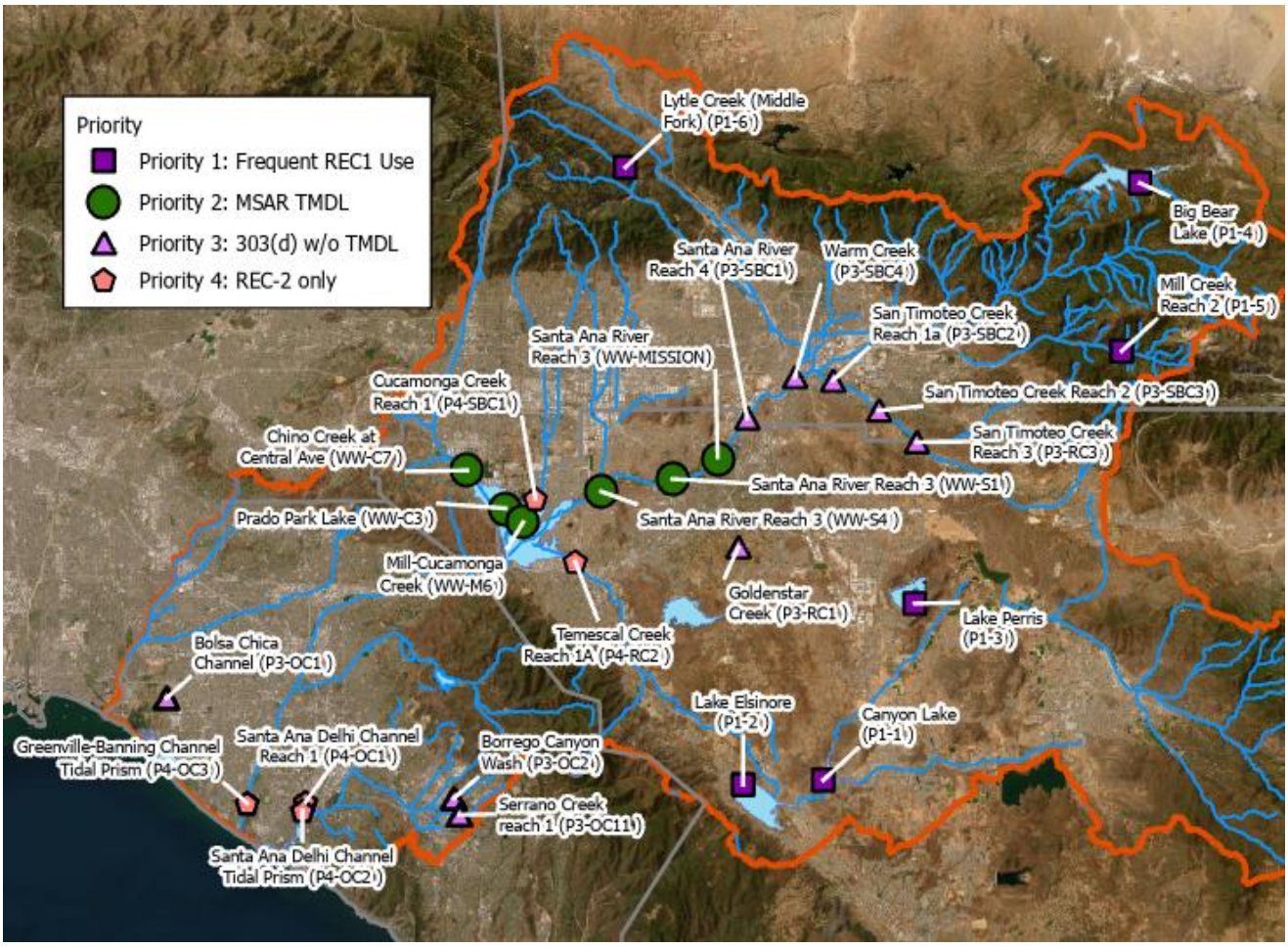

Figure 2-1. Monitoring Sites included in the Regional Bacteria Monitoring Program (2024-2025).

2.2. Sample Frequency

2.2.1. Dry Weather

Dry weather sample collection occurs during both warm, dry (April 1 – September 30) and cool, dry (October 1 – November 30) season periods. Target sample dates for each year of the monitoring program are established in Section 3.3 of the Monitoring Plan and are summarized in this section. Dry weather, warm season monitoring was conducted at all sites over a 20-week period from May 14 through September 26, 2024. During the week of September 9-13, samples collected from sites in Reach 3 of the Santa Ana River were impacted by wet weather in the eastern part of the watershed. No rainfall was measured at the Ontario Airport station which is used to support mobilization decisions. Given this scenario, the Monitoring Plan and QAPP should be revised to include multiple real time rainfall stations to ensure 72 hours of dry weather precedes dry condition grab samples. Mobilization decisions in future dry weather sampling will involve field team leader consulting real-time rainfall summary tables

available for all three counties[7] to ensure no rainfall was recorded in the preceding 72 hours. Dry weather, cool season monitoring occurred over a five-week period from October 22 through November 21, 2024.

During dry weather monitoring, the frequency of sample collection for each priority level varies as follows:

- Priority 1 and Priority 2 sites were monitored weekly for 20 consecutive weeks during the warm, dry season and for five consecutive weeks during the cool, dry season.
- Priority 3 sites were monitored weekly for five consecutive weeks during the warm or cool, dry seasons. Priority 3 sites were separated into groups to maximize efficiency and allow for collection of samples at different parts of the dry season.
- Priority 4 sites were sampled once in 2024 as follows: Cucamonga Creek at Hellman Ave (P4-SBC1) on June 21, Santa Ana-Delhi Channel in Tidal Prism (P4-OC2) and Greenville Banning Channel (P4-OC4) on August 21, Santa Ana-Delhi Channel at Irvine Ave (P4-OC1) on September 19, and Temescal Creek at Lincoln Ave (P4-RC2) on August 29. Results from the priority 4 samples all met their antidegradation targets in 2024 and did not require additional sampling.

2.2.2. Wet Weather

Wet weather sample collection occurs during the wet season (November 1 – March 31). Per the RBMP, wet weather monitoring is conducted for one storm event per wet season. For that storm event, samples are collected from Priority 2 sites on the day of the storm event as well as 24, 48, and 72 hours after the onset of the storm. During the 2024-2025 wet season, a precipitation event on March 13, 2025, was monitored with samples collected on March 11, 12, 13, and 14.[8]

2.2.3. Sample Analysis

Monitoring at each site included recording field measurements and collecting water quality samples. OCPW staff monitored all sites located in Orange County under their jurisdiction, while GEI and CWE, on behalf of the MSAR TMDL/Regional WQ Monitoring Task Force, monitored all sites located in Riverside County and San Bernardino County. The following water quality data were gathered from each site:

[7] RCFC&WCD rainfall_summary_report.pdf; SBCFCD Water Resources – Public Works; OCPW County of Orange Water Data Portal.
[8] Measured rainfall on March 11 and 12 was less than forecasted at Ontario Airport station and did not amount to any measurable rise in downstream runoff in Priority 2 waters. By March 13, a storm of about 0.5 inches passed through and generated sufficient runoff to classify the samples as collected during active wet weather.

- Field measurements:[9] temperature, pH, dissolved oxygen (DO), conductivity, turbidity, and flow.
- Laboratory analysis: total suspended solids (TSS), bacteria (*E. coli* or *Enterococcus*).
- *E. coli* is quantified at all but two sites in this RBMP where *Enterococcus* is collected instead (P4-OC2 and P4-OC3).
- *Enterococcus* is quantified where salinity is persistently greater than 1ppth: Lake Elsinore (P1-2)[10] and two Orange County sites, Santa Ana-Delhi Channel in Tidal Prism (P4-OC2) and Greenville-Banning Channel in Tidal Prism (P4-OC3).

2.2.4. Sample Handling

Sample collection and laboratory delivery followed approved chain-of-custody (COC) procedures, holding time requirements, and required storage procedures for each water quality sample as described in the Monitoring Plan and QAPP. Samples collected from Riverside County and San Bernardino County were analyzed for *Enterococcus*, *E. coli* and TSS concentrations by Babcock Laboratories (Babcock). Samples collected from Orange County by OCPW were analyzed by the Orange County Health Care Agency Water Quality Laboratory (OCPHL) for *Enterococcus* and *E. coli* and by Enthalpy Analytical for TSS. Appendix B includes a summary of quality assurance/quality control (QA/QC) activities conducted during the period covered by this report, including field blanks and field duplicates.

2.2.5. Data Handling

GEI and SAWPA maintain a file of all laboratory and field data records (e.g., data sheets, chain-of-custody forms) as required by the QAPP. GEI's field contractor (CWE), OCPW, and the Santa Ana Water Board provided GEI all field measurements and laboratory results, laboratory reports, field forms, photos, and COCs. GEI compiled the field measurements and laboratory analysis results into a project database that is compatible with guidelines and formats established by the California Surface Water Ambient Monitoring Program (SWAMP) for the California Environmental Data Exchange Network (CEDEN). GEI conducts a QA/QC review of the data for completeness and compatibility with the databases. After the QA/QC review, GEI updates the online data dashboard[11] and submits the data annually to CEDEN and to SAWPA.

[9] For the monitoring stations in lakes, field parameters are collected at the surface near the shore.

[10] Note that both *E. coli* and enterococcus are collected at Lake Elsinore.

[11] https://sarwqmdashboard.org/dashboard

2.2.6. Data Analysis

Data analysis relied primarily on the use of descriptive and correlation statistics. For statistical analyses, bacterial indicator data were assumed to be log-normally distributed as was observed in previous studies.[12] Accordingly, prior to conducting statistical analyses, the bacterial indicator data were log transformed. The average of log-transformed data is referred to as a geometric mean. Geometric means are calculated from different subsets of data to support the analysis, including:

- Long-term trend analysis: geomean of all samples collected in the latest monitoring period during the warm season or cool season can be related to past years (2016-2023) to assess long term changes.
- Assessment of REC1 uses in Priority 1 waters: Rolling geomeans are calculated for dates with collected samples within the 20 consecutive weeks in the dry season when at least five sample results exist within the preceding 42-day period. In the cool season, only five samples are collected, thus a single geomean value is calculated if five sample results exist within the preceding 42-day period. Geomeans are compared to the WQOs in the statewide bacteria provisions (100 MPN/100mL for *E. coli* and 30 MPN /100mL for *Enterococcus*)
- TMDL compliance analysis for Priority 2 waters: Rolling geomeans are calculated for dates with collected samples within the 20 consecutive weeks in the dry season when at least five sample results exist within the preceding 30-day period. In the cool season, only five samples are collected, thus a single geomean value is calculated if five sample results exist within the preceding 30-day period. Geomeans are compared to the WLAs in the MSAR bacteria TMDL (113 MPN /100mL for *E. coli*).
- Assessment of REC1 uses in Priority 3 waters: In the cool season, only five samples are collected, thus a single geomean value is calculated if five sample results exist within the preceding 42-day period. Geomeans are compared to the WQOs in the statewide bacteria provisions (100 MPN /100mL for *E. coli* and 30 MPN /100mL for *Enterococcus*).

Assessments also are performed to consider STVs in the statewide bacteria provisions (320 MPN/100mL) or single sample maximum (235 MPN/100mL) in the MSAR TMDL. The amount of data collected by the RBMP (weekly) to assess frequency of exceedance of the 90 percent STV in the statewide bacteria provisions (for priority 1 and 3 waters) is small enough for this criterion to be treated as a single sample maximum (i.e., <10 samples are collected per calendar month).

[12] Middle Santa Ana River Bacterial Indicator TMDL Data Analysis Report, prepared by CDM Smith on behalf of the Task Force. March 19, 2009. http://www.sawpa.org/wp-content/uploads/2015/02/FinalDataAnalysisReport_033109.pdf

Lasty, samples collected from Priority 4 waters are compared with antidegradation thresholds in Table 1-1 above to determine whether follow-up monitoring is needed to assess whether at least 3 of 4 samples are below the 75th percentile criteria thresholds.

2.3. Summary of Sample Collection Effort

The samples prescribed by the 2024-2025 monitoring program were collected as shown in Table 2-2. Minor adjustments to dry weather collection dates and timing were made following precipitation to meet the dry weather monitoring requirements that requires 72 hours of preceding dry weather conditions.

Table 2-2. Summary of Water Quality Sample Collection Activity

Priority	Planned/Collected	Dry Weather # of samples	Wet Event # of samples
Priority 1	Planned	150	0
	Collected	150	0
Priority 2	Planned	150	24
	Collected	147 [1]	27 [1]
Priority 3	Planned	45	0
	Collected	36 [1,2]	1 [1]
Priority 4	Planned	5	0
	Collected	5	0

1) Three priority 2 samples (WW-S4 on September 10 and WW-S1 and WW-MISSION on September 11) and one priority 3 sample (P3-SBC1 on September 11) collected during routine dry weather monitoring were reclassified to wet weather samples. An isolated summer thunderstorm occurred in the eastern part of the MSAR watershed and caused wet conditions to occur in Reach 3 of the SAR.

2) Dry conditions prevented sample collection at Borrego Channel (n=5) and San Timoteo Creek Reach 2 (n=3)

2.4. Summary of Weather

Precipitation varies considerably across the watershed with highest average precipitation occurring in the upper mountain areas of the watershed (San Gabriel, San Bernardino, and San Jacinto mountains). Key precipitation gauges in the Santa Ana River watershed were identified and considered representative of the variability across the watershed. Table 2-3 and Figure 2-2 provides the locations of key precipitation gages in the Santa Ana watershed and Table 2-4 summarizes the total monthly precipitation data from each location for the 2024-2025 monitoring year.

Table 2-3. Location of Key Precipitation Gages in the Santa Ana Watershed

Station No.	Station Name	Source	Latitude	Longitude
178	Riverside North	RCFC&WCD	34.0028	-117.3778
179	Riverside South	RCFC&WCD	33.9511	-117.3875
35	Corona	RCFC&WCD	33.845	-117.5744
131	Norco	RCFC&WCD	33.9215	-117.5724
67	Elsinore	RCFC&WCD	33.6686	-117.3306
90	Idyllwild	RCFC&WCD	33.7472	-116.7144
9022	Fawnskin	SBCFCD	34.2726	-116.9718
2965	Lytle Creek Canyon	SBCFCD	34.2164	-117.4553
2808	Highland Plunge Creek	SBCFCD	34.112	-117.1278
61	Tustin-Irvine Ranch	OCPW	33.72	-117.7231
169	Corona del Mar	OCPW	33.6093	-117.8583
219	Costa Mesa Water District	OCPW	33.6453	-117.9336
163	Yorba Reservoir	OCPW	33.8719	-117.8112
5	Buena Park	OCPW	33.8571	-117.9923

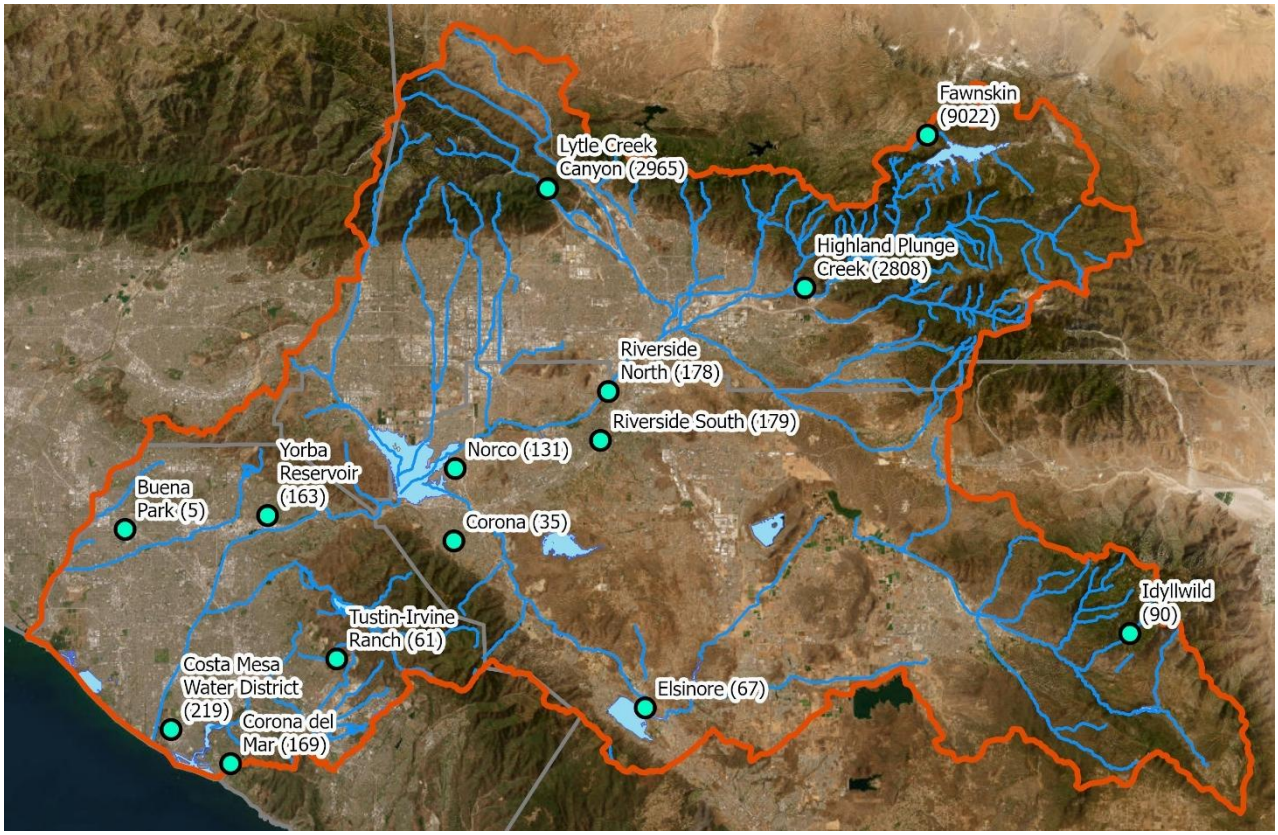

Figure 2-2. Key Rainfall Stations in the Santa Ana Region (2024-2025).

Table 2-4. Monthly Precipitation Totals (inches) During 2024 at Key Precipitation Gages

Station No.	Precipitation Gage	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
178	Riverside North	1.43	7.03	2	0.12	0	0	0	0	0.48	0.08	0.11	0.01	11.3
179	Riverside South	1.73	6.3	1.93	0.3	0.12	0	0	0	0.01	0	0.09	0.01	10.5
35	Corona	1.87	7.93	3.35	0.7	0.09	0	0	0	0	0	0.02	0	14
131	Norco	1.7	7.24	2.28	0.4	0.04	0	0	0	0	0	0.02	0	11.7
67	Elsinore	1.5	5.04	2.52	1.05	0.06	0	0	0.01	0.4	0.03	0	0	10.6
90	Idyllwild	4.45	9.36	5.35	1.71	0.44	0	0	0.02	0.26	0	0.06	0	21.7
9022	Fawnskin	0	0	3.15	2.01	0.118	0	0	0.24	0.75	0	0	0	6.3
2965	Lytle Creek Canyon	0	2.34	5.3	0.98	0.17	0	0	0	0.21	0.15	0.1	0	9.3
2808	Highland Plunge Creek	1.81	10.16	3.39	0.95	0.24	0	0	0.16	0	0	0.12	0	16.8
61	Tustin-Irvine Ranch	2.43	7.38	4.11	0.61	0.14	0	0	0	0.01	0	0.12	0.01	14.81
169	Corona del Mar	2.56	7.40	3.71	0.40	0.07	0.08	0	0	0	0.03	0.07	0.05	14.37
219	Costa Mesa Water District	2.82	7.0	3.50	0.54	0.07	0.04	0	0	0	0.04	0.04	0.07	14.12
163	Yorba Reservoir	2.8	8.26	3.27	0.44	0.07	0	0	0	0	0	0.12	0	14.96
5	Buena Park	2.28[2]	9.29[2]	2.17	0.42	0.11	0	0	0	0	0	0.07	0.02	14.36

[1] – Due to data loss from TB3 data logger at Yorba Reservoir, all data was replaced with telemetry data from Yorba Reservoir station (Coo: 33.871925, -117.811097)
[2] – Due to data loss at Buena Park, data was substituted with nearby telemetry station Fullerton Creek at Beach (Coo: 33.862372, -117.997953)

3. Results

This section summarizes results and provides interpretative findings of data collected in the 2024-2025 monitoring period, which includes the 2024 dry season (warm and cool) and a wet event in March 2025. Results for this monitoring period are compared to historical data collected by the RBMP since 2016. Appendix A provides all monitoring results at each site for the sample period covered by this report.

E. coli and enterococci concentrations observed at each site were summarized and compliance was assessed using the appropriate water quality standards, antidegradation targets established by the BPA, or WLAs established by the MSAR Bacteria TMDL.

3.1. Priority 1 Waters

Figure 3-1 presents the distribution of the 5-sample rolling geomeans of *E. coli* concentrations observed at Priority 1 sites during the warm, dry and cool, dry seasons. Results for the two monitoring sites in Reach 3 of the Santa Ana River are reported within the following section summarizing Priority 2 sampling. Geomeans from the warm, dry season are 5-sample, 6-week rolling geomeans, while the geomean from the cool, dry season is a single 5-week geomean. The graph shows the statewide objective of 100 MPN/100 mL, instead of the TMDL target of 113 MPN/100 mL. When sample concentrations were below the laboratory detection limit, the reporting limit was used to calculate the geometric mean. During the 2024-2025 season there were no Priority 1 samples that were below the 1 MPN/100 mL minimum detection limit.

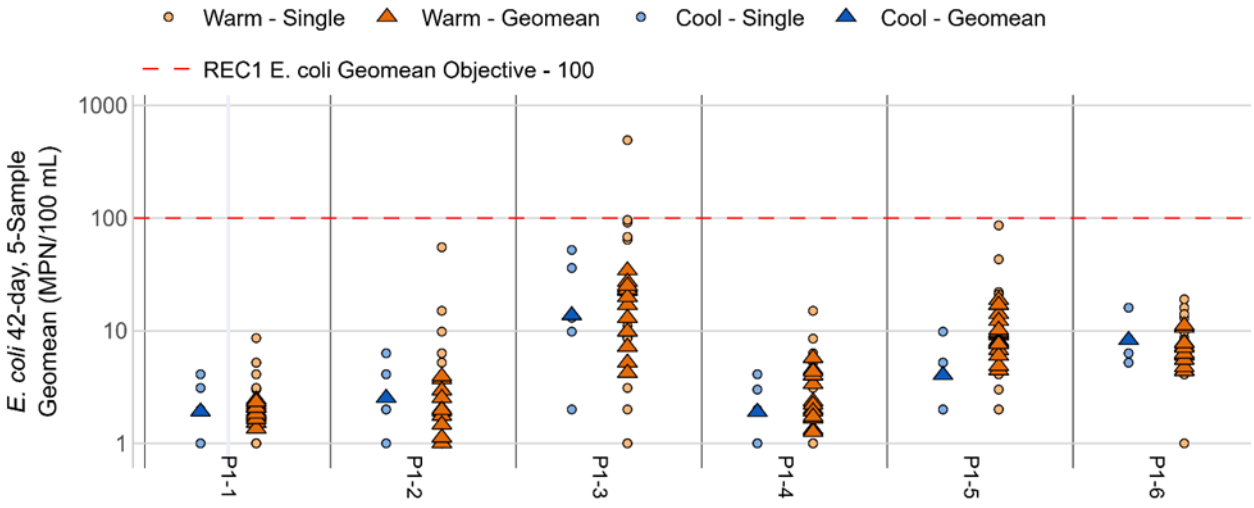

Figure 3-1. Distribution of *E. coli* Single Sample and Geomean Concentrations at Priority 1 Sites (2024).

Fecal bacteria conditions in Priority 1 waters during the 2024-2025 warm and cool dry sampling seasons were generally low and support recreational use, with the exception of the two Santa Ana River sites (WW-S1: Santa Ana River Reach 3 at MWD Crossing and WW-S4: Santa Ana River Reach 3 at Pedley Avenue) that are both Priority 1 and 2 sites. Results for these sites are presented in the following section focused on Priority 2, or MSAR TMDL waters. Conditions at the non-Santa Ana River Priority 1 sites are comparable to previous years (Table 3-1). For Lake Elsinore (P1-2), three exceedances of the rolling five sample REC1 geomean criteria (>30 MPN /100mL) were observed for *Enterococcus*.

Table 3-1. Range of Geometric Means at Priority 1 Sites in 2024 Compared to Historical Dataset (2016-2023)

Site	Indicator	Historical Range (2016-2023)		2024	
		Warm Dry (MPN/100mL)	Cool Dry (MPN/100mL)	Warm Dry (MPN/100mL)	Cool Dry (MPN/100mL)
Canyon Lake (P1-1)	*E. coli*	1 - 4	3 - 12	1 - 2	2
Lake Elsinore (P1-2)	*E. coli*	1 - 56	11 - 44	1 – 4	3
	Enterococcus	4 - 46	6 - 21	3 - 43	2
Lake Perris (P1-3)	*E. coli*	1 - 26	3 - 121	4 - 34	14
Big Bear Lake (P1-4)	*E. coli*	1 - 6	2 - 20	1 - 6	2
Mill Creek (P1-5)	*E. coli*	1 - 51	1 - 19	4 – 19	4
Lytle Creek (P1-6)	*E. coli*	1 - 154	2 - 63	4 - 11	8

Plots of all single samples and rolling geomeans are provided to show patterns of fecal indicator bacteria in the 2024 – 2025 monitoring period. Site specific plots are provided as follows:

- Figure 3-2: *E. coli*. for Canyon Lake at Holiday Harbor (P1-1)
- Figure 3-3: *E. coli*. for Lake Elsinore at Launch Point (P1-2)
- Figure 3-4: *Enterococcus* for Lake Elsinore at Launch Point (P1-2)
- Figure 3-4: *E. coli*. for Lake Perris at Perris Beach (P1-3)
- Figure 3-5: *E. coli*. for Big Bear Lake at Swim Beach (P1-4)
- Figure 3-6: *E. coli*. for Mill Creek Reach 2 at Torrey Pines Dr (P1-5)
- Figure 3-7: *E. coli*. for Lytle Creek Middle Fork (P1-6)

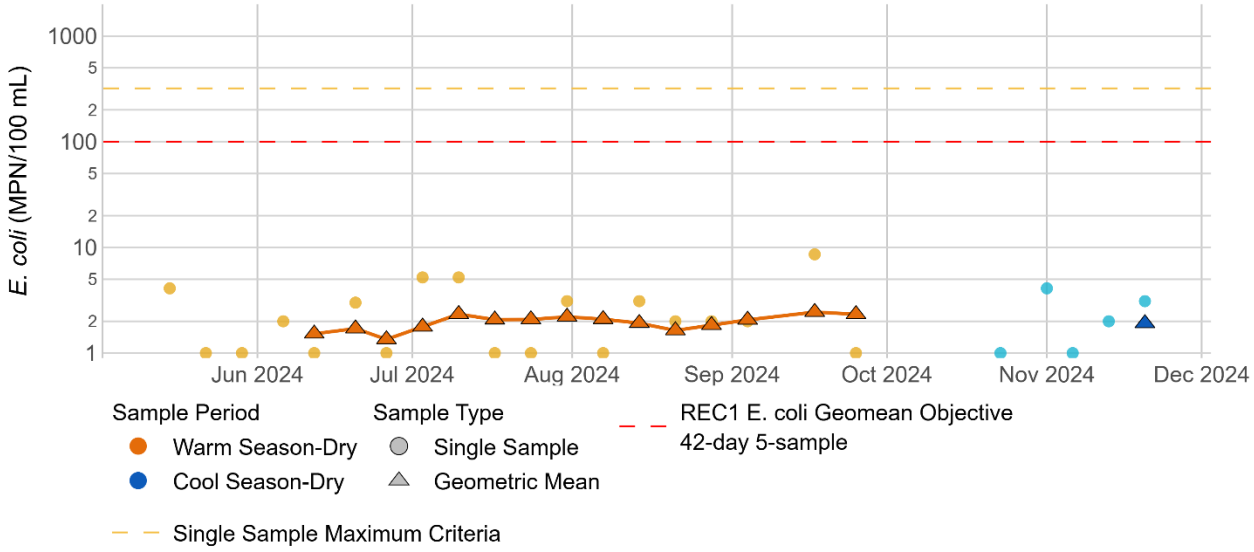

Figure 3-2. *E. coli* Single Sample and Rolling Geomean Concentrations at Canyon Lake (P1-1).

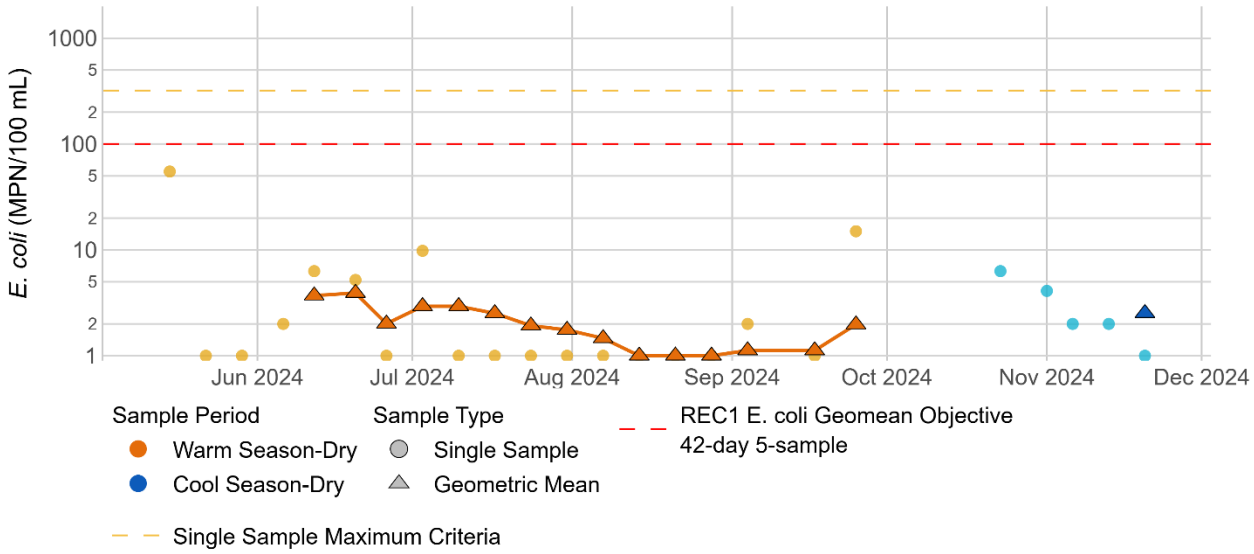

Figure 3-3. *E. coli* Single Sample and Rolling Geomean Concentrations at Lake Elsinore (P1-2).

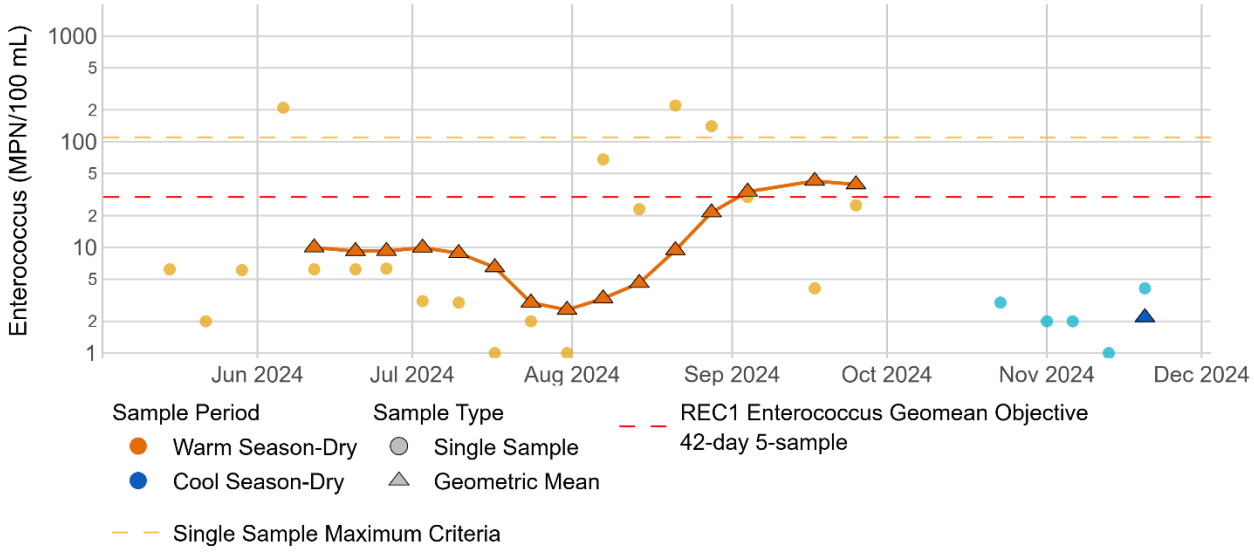

Figure 3-4. *Enterococcus* Single Sample and Rolling Geomean Concentrations at Lake Elsinore (P1-2).

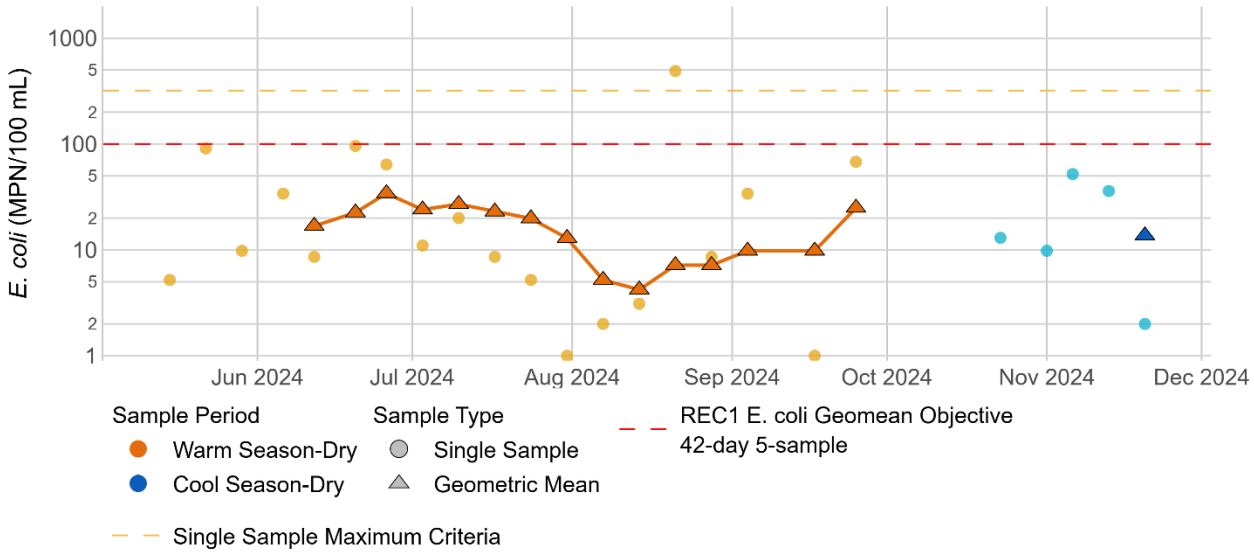

Figure 3-5. *E. coli* Single Sample and Rolling Geomean Concentrations at Lake Perris (P1-3).

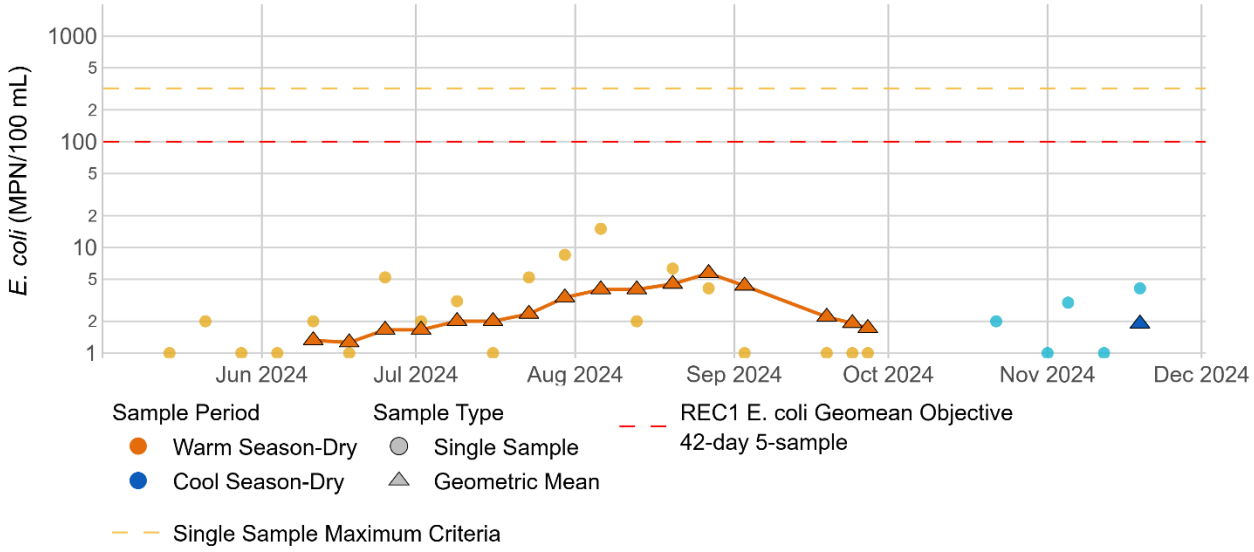

Figure 3-6. *E. coli* Single Sample and Rolling Geomean Concentrations at Big Bear Lake (P1-4).

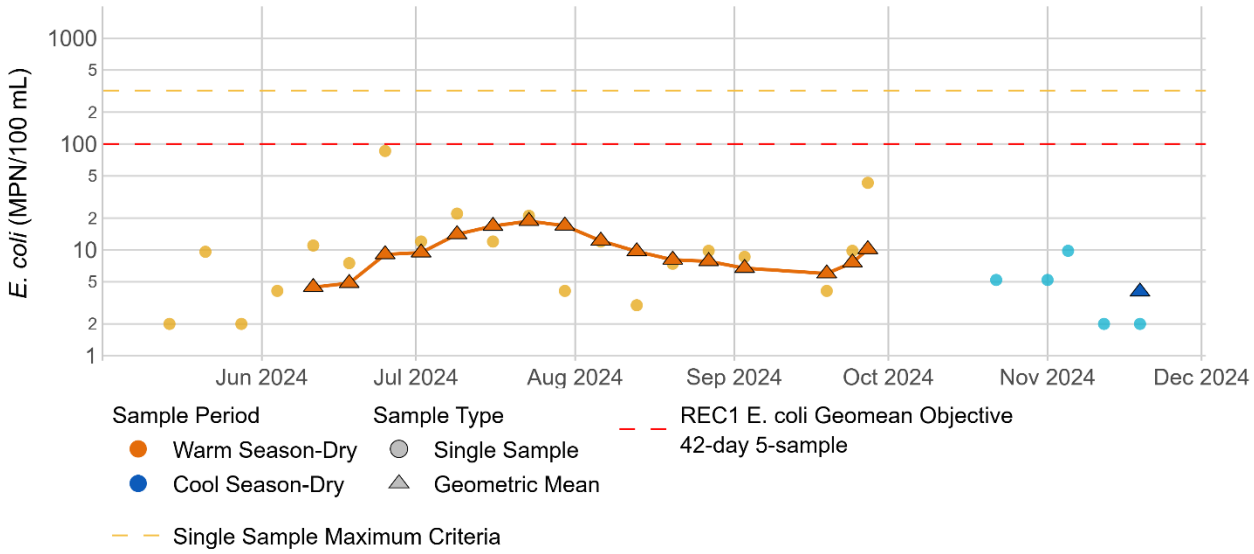

Figure 3-7. *E. coli* Single Sample and Rolling Geomean Concentrations at Mill Creek (P1-5).

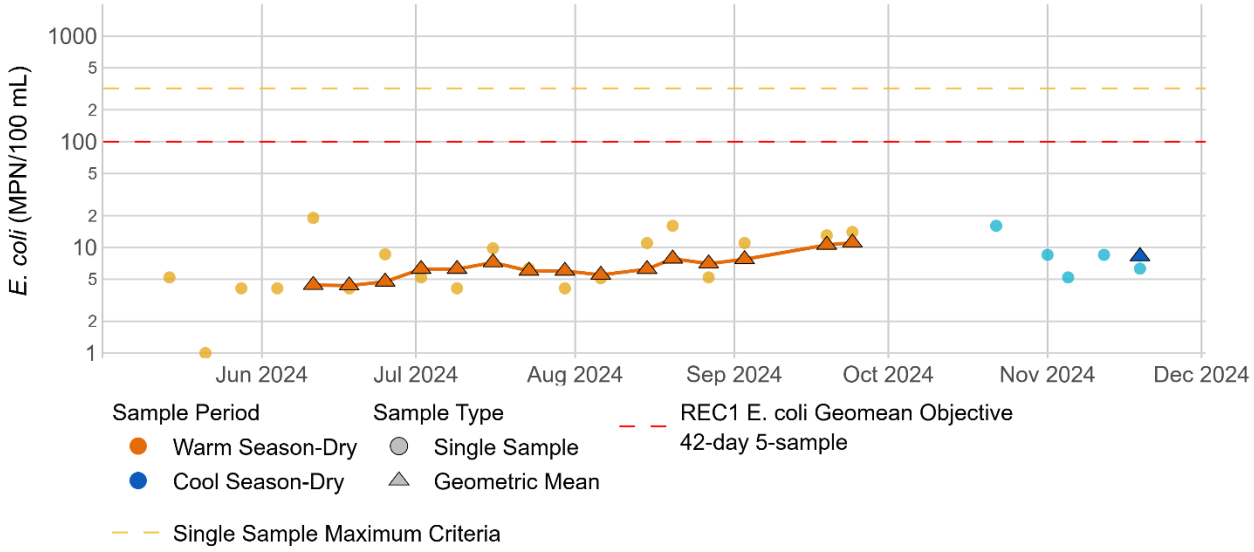

Figure 3-8. *E. coli* Single Sample and Rolling Geomean Concentrations at Lytle Creek (P1-6).

Table 3-2 summarizes compliance analysis for non-SAR Priority 1 waters comparing monitoring program data with both STV and geomean criteria in the Statewide Bacteria Provisions for REC-1 waters (see Section 1.1.2 above). All *E. coli* samples collected from all Priority 1 sites (excluding Reach 3 of the SAR) met geomean REC1 WQOs during the warm and cool dry seasons.

For Lake Elsinore, analysis of both *E. coli*. and *Enterococcus* is performed because of higher salinity levels. Lake Elsinore (P1-2) salinity was approximately 1.7 ppth in 2024 and has ranged from 1.9 to 3.7 ppth over the 2016-2023 period, based on a conversion of conductivity measurements as follows; TDS (ppth) = 0.66 * Conductivity (microsiemens / cm). In 2024, Lake Elsinore experienced the lowest salinity since the beginning of the RBMP, which may be due to a very wet year bringing large volumes of low TDS runoff over Railroad Canyon Dam. The Statewide Bacteria Provisions specify the use of *E. coli* with salinity <1 ppth and *Enterococcus* >1 ppth. *Enterococcus* bacteria are more resistant to high salinity and therefore outcompete *E. coli* in higher salinity waters. In 2024, three of the 15 rolling five sample geomeans exceeded REC1 WQO for *Enterococcus* (Table 3-2). These exceedances occurred following a rise in turbidity throughout August that coincided with an algae bloom. Algae in hypereutrophic Lake Elsinore may provide sufficient shading and substrate to allow for survival and growth of *Enterococcus* bacteria. Similar processes of increasing *Enterococcus* concurrent to severe algae blooms in Lake Elsinore have been observed in previous RBMP results.

Table 3-2. 2024-2025 Monitoring Season Frequency of Exceedance with REC1 Water Quality Objectives During Dry Weather

Site ID	Site	Geometric Mean Criterion Exceedance Frequency (%)	STV Criterion Exceedance Frequency (%)
P1-1	Canyon Lake at Holiday Harbor	0	0
P1-2 [1]	Lake Elsinore at Launch Point	20	12
P1-3	Lake Perris at Perris Beach	0	4
P1-4	Big Bear Lake at Swim Beach	0	0
P1-5	Mill Creek Reach 2 at Torrey Pines Dr	0	0
P1-6	Lytle Creek (Middle Fork)	0	0

[1] Lake Elsinore Water Quality Objective compliance values are calculated using *Enterococcus*

In addition to fecal indicator bacteria, the RBMP collects samples for TSS laboratory analysis and collects field measurements of water temperature, pH, conductivity, dissolved oxygen (DO), and turbidity (Table 3-3). Results for these parameters are provided in Appendix A. Generally, these measurements provide supporting information for use in water quality assessment and potential insights into sources of dry weather flow. For example, DO measurements at Holiday Harbor in Canyon Lake (P1-1) declined from 5.7 to 1.6 mg/L between November 1 and 20, 2024. This finding has been shared with the Lake Elsinore and Canyon Lake nutrient TMDL monitoring program team. Elevated pH was observed at all sites which may be associated with high concentrations of algae in the warm season. Low pH was observed at sites in the national forest following the Line Fire event.

Table 3-3. Range of Field Measurements at Priority 1 Sites during Dry Weather Monitoring in 2024

Site ID	pH	DO (mg/L)	Temp (°C)	Cond (µS/cm)	TSS (mg/L)	Turbidity (NTU)	Flow (cfs)
P1-1	7.2-9.2	1.6-12.4	15.8-30.7	603-1223	2-6	0.1-3	N/A
P1-2	7.4-9.3	4.1-15.0	15.2-29.3	2439-4788	3-110	0.1-26.5	N/A
P1-3	7.5-9.3	7.2-11.4	18.2-30.3	491-946	2-34	0.1-9.8	N/A
P1-4	6.3-9.3	6.8-10.2	6.7-23.9	203-683	4-73	0.5-31.5	N/A
P1-5	6.2-9.5	8.1-9.3	7.7-16	163-311	0.5-14	0.1-13.1	9.1-94
P1-6	4.1-9.6	8.3-9.8	10.8-22.9	230-499	0.5-4	0.1-2.1	2.6-72.5

3.2. Priority 2 Waters

3.2.1. Dry Weather

Geomeans for Priority 2 sites were calculated using a five-sample minimum, 30-day geomean per the 2005 TMDL requirements. When sample concentrations were below the laboratory detection limit, one-half of that detection limit was used to calculate the geometric mean. During the 2024-2025 season, there were two Priority 2 samples that were below the 10 MPN/100 mL minimum detection limit.

Conditions in Priority 2 waters are within the range of concentrations from previous years, and may show potential improvement in some waters, despite the reductions in disinfected POTW effluent (Table 3-4). Thus, concentrations within the receiving waters show that implementation of the CBRP has effectively reduced bacteria load with apparent progress within the TMDL waters (see MSAR bacteria TMDL Triennial Report for more in-depth demonstration of the CBRP implementation and effectiveness). Note that the Santa Ana River at Mission Blvd Bridge site (WW-MISSION) is included with Priority 2 monitoring summaries; however, the site is not used to assess TMDL compliance. Instead, this site provides an understanding of loads from upstream sources, comprised of non-MS4 flows during typical dry weather conditions. Figure 3-9 summarizes the distribution of individual grab sample and 5-sample rolling geomeans of *E. coli* concentrations observed at Priority 2 sites during the warm, and cool, dry seasons in 2024.

Table 3-4. Range of *E. Coli* Geometric Means at Priority 2 Sites in 2024 Compared to Historical Dataset (2016-2023)

Waterbody	Site	Historical Range (2016-2023)		2024	
		Warm Dry (MPN/100mL)	Cool Dry (MPN/100mL)	Warm Dry (MPN/100mL)	Cool Dry (MPN/100mL)
Reach 3 of the Santa Ana River	WW-MISSION [1]	59 – 1052	87 – 298	31 - 353	165
	WW-S1	124 - 830	71 - 214	51 – 287	248
	WW-S4	81 – 1,402	91 - 200	36 - 325	238
Mill-Cucamonga Creek	WW-M6	56 - 526	98 – 356	75 - 475	504
Chino Creek	WW-C7	17 - 969	60 - 792	257 – 464	306
Prado Park Lake	WW-C3	11 - 1,147	38 - 1,328	68 - 140	86

1) Santa Ana River at Mission Blvd Bridge site (WW-MISSION) is included with Priority 2 monitoring summaries, however, the site is not used to assess TMDL compliance. Instead, this site provides an understanding of loads from upstream sources, comprised of non-MS4 flows during typical dry weather conditions. Historical dataset with sufficient density to compute geomeans at Mission Avenue spans 2019-2023.

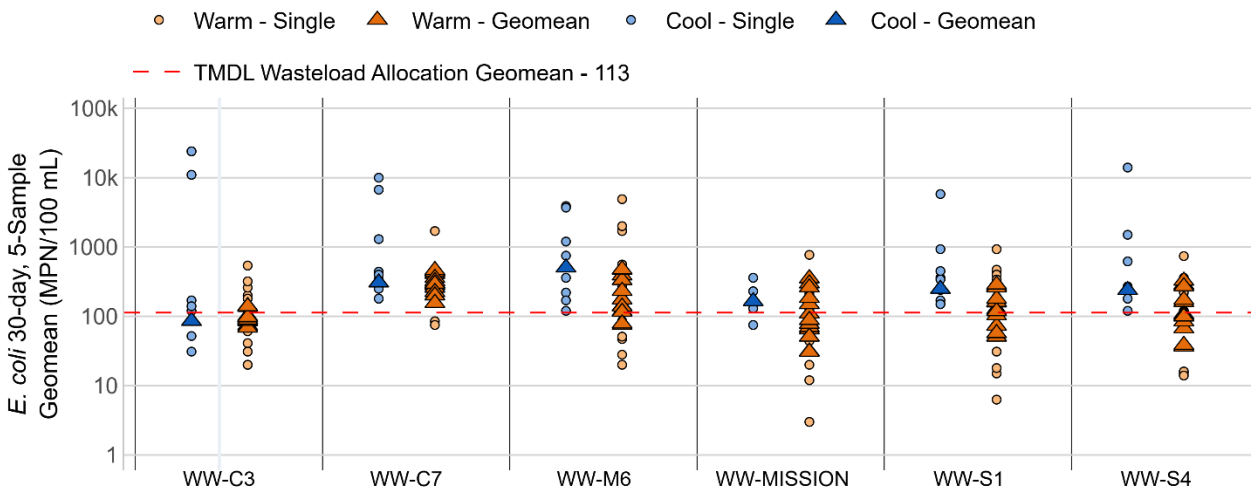

Figure 3-9. Distribution of *E. coli* Concentrations at Priority 2 Sites

To assess compliance with the TMDL, results are compared to the geomean WLAs/LAs of 113 organisms/100 mL for a 5-sample/30-day geomean and no more than 10% of the samples collected for any 30-day period can exceed STV WLA of 212 organisms/100 mL. Geometric means were calculated only when at least five dry weather sample results were available from the previous 30-day period. Table 3- and Table 3- show the geomean and STV exceedance frequencies. Many of the Priority 2 geomeans exceeded the MSAR TMDL WLAs/LAs, including all geomeans calculated at Chino Creek at Central Avenue (WW-C7) in both the warm and cool seasons, and in the single cool, dry geomeans at Mill-Cucamonga Creek (WW-M6), MWD Crossing (WW-S1), and Pedley Avenue (WW-S4). Mission Boulevard Bridge (WW-MISSION) is not included because it is not a compliance monitoring site in the TMDL. Fecal bacteria load measured at WW-MISSION provides an estimate of in-stream sources from upstream Reach 4 because there are negligible external loads during typical dry weather conditions.

Table 3-5. Frequency of Exceedance with MSAR TMDL WLAs/LAs for *E. coli* (113 MPN/100 mL) for the 2024 Dry Weather Samples

Site ID	Site	Warm, Dry Season Geomean WLA/LA Exceedance Frequency (%)	Cool, Dry Season Geomean WLA/LA Exceedance Frequency (%) (n=1)
WW-C3	Prado Park Lake	19% (n=16)	0%
WW-C7	Chino Creek at Central Avenue	100% (n=16)	100%
WW-M6	Mill-Cucamonga Creek	83% (n=12[1])	100%
WW-S1	Santa Ana River at MWD Crossing	69% (n=13[2])	100%
WW-S4	Santa Ana River at Pedley Avenue	38% (n=13[2])	100%

1) Mill-Cucamonga Creek sample scheduled for August 1 was not collected due to wildlife (a black bear) creating unsafe conditions to complete the monitoring event. A make-up sample was collected on September 5, but this resulted in several weeks of less than 5 samples within 30 days that would be needed for rolling geomean calculation.

2) Samples were collected at WW-S4 on September 10 and WW-S1 on September 11, were both influenced by isolated rainfall in the eastern part of the MSAR watershed. These sample results were reclassified as wet and thus removed from calculations of geomeans for dry conditions. This resulted in several weeks of less than 5 samples within 30 days that would be needed for rolling geomean calculation.

Table 3-6. Monthly Frequency of Exceedance of MSAR TMDL STV (212 MPN/100 mL) During the 2024 Dry Weather Samples

Month	Number of Samples Collected	STV Criterion Exceedance Frequency[2] (%)				
		Prado Park Lake (WW-C3)	Chino Creek at Central Avenue (WW-C7)	Mill-Cucamonga Creek (WW-M6)	SAR at MWD Crossing (WW-S1)	SAR at Pedley Avenue (WW-S4)
May	3	0%	33%	33%	0%	0%
June	4	0%	50%	0%	25%	0%
July	5	0%	60%	25%[1]	20%[1]	20%[1]
August	4	50%	50%	50%	50%	25%
September	4	0%	0%	20%	100%	50%
October	1	0%	100%	0%	0%	0%
November	4	0%	50%	75%	50%	25%

1) Sample taken on August 1st included in July total to match sampling of other sites which were taken July 31st. In case of WW-M6, the August 1 sample was missed due to wildlife (a black bear) creating unsafe conditions to complete the monitoring event, thus STVs are based on 4 samples in July.

2) WLA states not more than 10% of the samples exceed 212 organisms/100mL for any 30-day period.

Generally, *E. coli* concentrations in grab samples ranged widely week-to-week as has been observed historically. The sources and mobilization pathways responsible for the high level of temporal variability during dry weather conditions is not fully understood in the MSAR TMDL waters and has been the subject of multiple special studies since the adoption of the 2005 TMDL.

The following sections provide a summary of current conditions and understanding of fecal bacteria sources within each of the MSAR TMDL waters. Several of the findings are based on more extensive analysis conducted to support TMDL Triennial Reports. The next TMDL Triennial Report will be submitted to the Regional Board in February of 2026. For each TMDL water, plots of all single samples and rolling geomeans are provided to show patterns of fecal indicator bacteria in the 2024 – 2025 monitoring period.

3.2.1.1. Santa Ana River Reach 3

Reach 3 of the SAR begins at Mission Avenue and flows downstream to Prado Dam. At some point in the warm season, DWF coming into Reach 3 from Reach 4 is comprised of entirely POTW effluent after baseflow from the mountains recedes and all flow is recharged into the river bottom within Reach 4 upstream of the Rialto WWTP outfall into Rialto Channel. In the early part of the dry season (May/June), dry weather flow from the upper watershed makes its way to Reach 3 of the SAR. USGS gauge data for the Santa Ana River at E Street suggests dry weather flow from the upper watershed ceased to connect to Reach 3 around June 19, 2024. *E. coli.* in samples (n=5) collected prior to June 19 were within the range of samples (n=15) collected after the dry upstream condition is estimated to have commenced (Figure 3-10). After mid-June, observable dry weather flow coming into Reach 3 is comprised of entirely tertiary treated disinfected POTW effluent from the Rialto and Rapid Ion Exchange (RIX) WWTPs, because all MS4 outfalls between the Rialto WWTP discharge and the Mission Avenue bridge are persistently dry during dry weather.

Downstream of the POTW effluent, *E. coli* concentrations rise from NPDES permit limits (<2 MPN /100mL total coliform) to levels that exceed the TMDL numeric targets at the WW-MISSION station. The inclusion of the WW-MISSION sampling site in the RBMP in 2020 has facilitated a large dataset to support a key finding from the 2023 TMDL Triennial Report that “bacteria load from unknown non-point sources consume nearly 100% of the total allowable load for *E. coli* bacteria in the receiving water”. In other words, attainment of TMDL numeric targets may not be possible even with complete drying of all MS4 inflows that occur downstream of WW-MISSION. The TMDL Task Force continues to implement the CBRP and conduct supplemental special studies to improve understanding of this source of fecal bacteria and its controllability. This finding is supported by measured data at the two TMDL compliance monitoring sites downstream of WW-MISSION, which are strongly influenced by *E. coli* at the upstream inflow to Reach 3 (Figure 3-10).

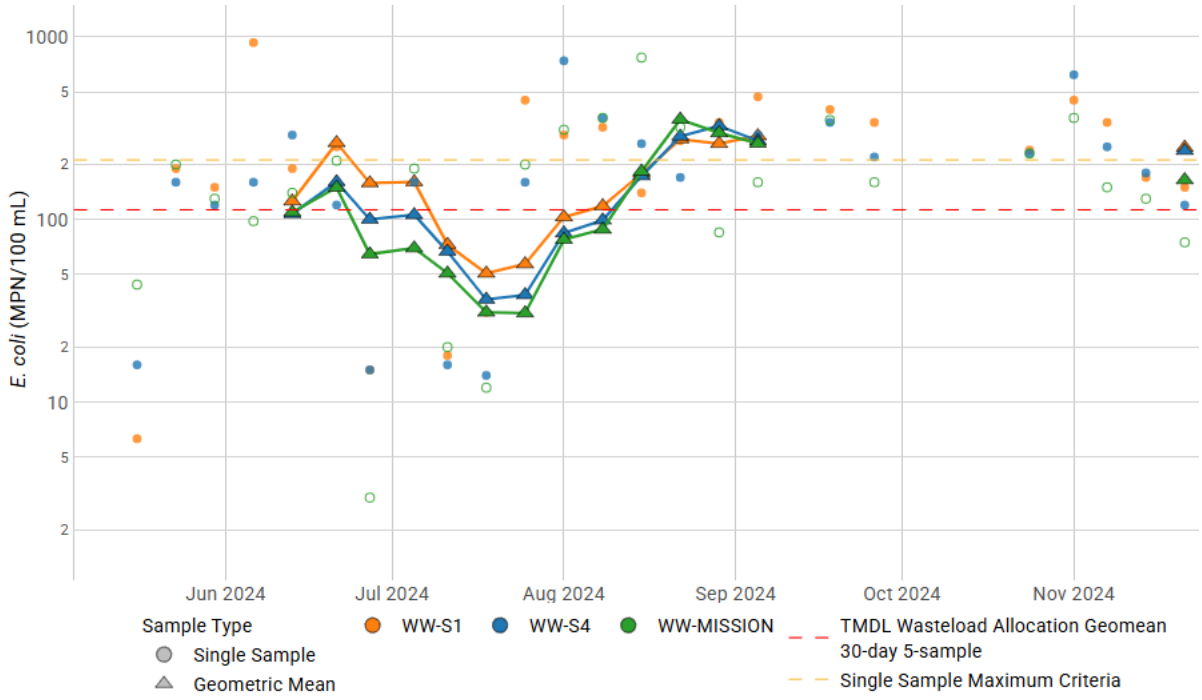

Figure 3-10: *E. coli*. for three Santa Ana River Reach 3 Sites (in order downstream to upstream WW-S4, WW-S1, WW-MISSION)

Five-sample rolling geomeans of *E. coli* concentration reached all time warm season lows at the three sites in Reach 3 of the SAR during July (WW-MISSION at 31 MPN /100mL; WW-S1 at 51 MPN /100mL; WW-S4 at 36 MPN /100mL). This improved water quality condition may have begun in 2023 when all time low cool season *E. coli* geomeans were recorded at WW-S1 (71 MPN /100mL) and WW-MISSION (87 MPN /100mL). It is possible that the improved water quality could be attributed to construction activity within the river bottom including homeless encampment cleanups, reworking the sediment of the riverbed, and rerouting of the low flow channel away from levees. It is also possible that the increased rainfall observed in this past year led to increases in river flows diluting concentrations. Figure 3-11 portrays the location of sampling sites and river bottom re-construction and compares seasonal geomeans in 2024 with past years of the RBMP. Areas where reworking of the river bottom sediment to route low flows away from the levees are referred to as ‘new low flow segments’ in the map. Unfortunately, *E. coli* concentrations rose in August and remained within historical ranges for the remainder of the warm season and into the cool season. Further study into in-stream fecal bacteria sources in Reach 3 of the SAR was recommended for consideration in the 2023 Triennial TMDL Report to either identify a controllable source

to be eliminated or to determine the portion of upstream loading that may be associated with uncontrollable[13] sources.

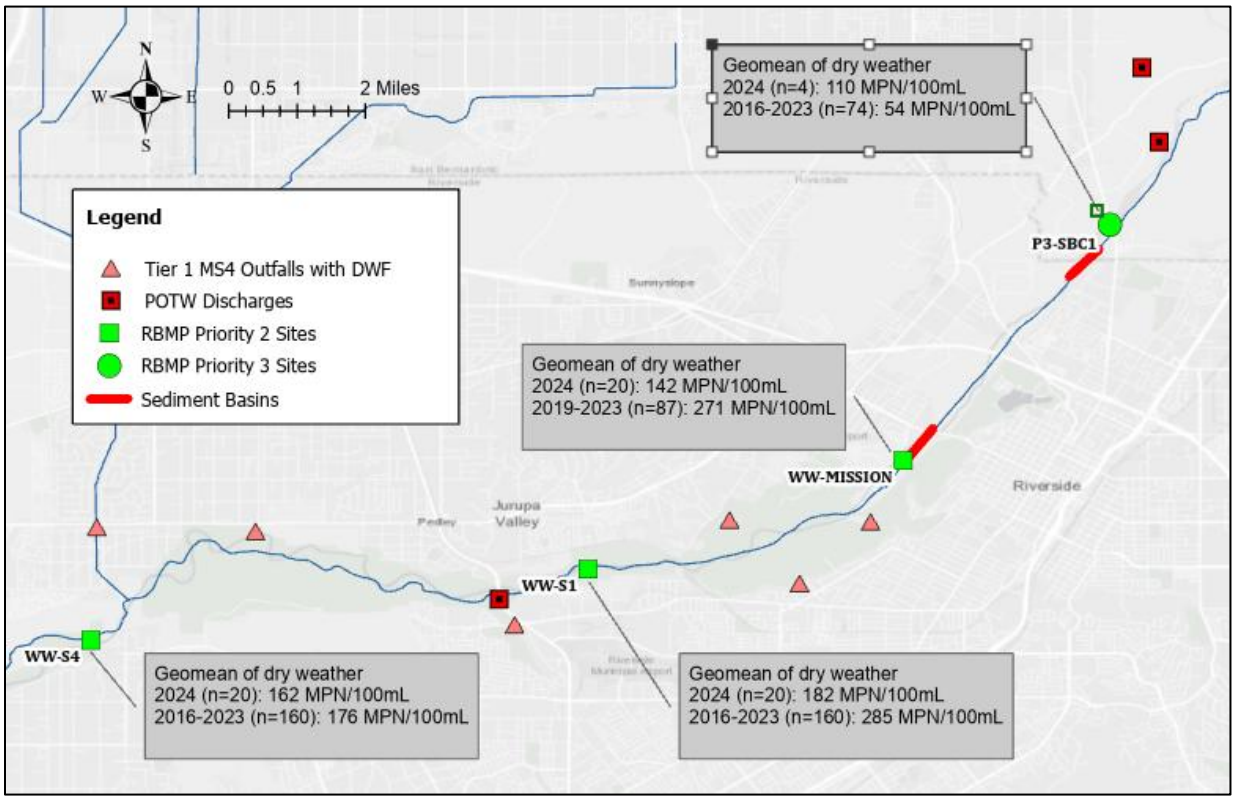

Figure 3-11: *E. coli*. for three Santa Ana River Reach 3 Sites (in order downstream to upstream WW-S4, WW-S1, WW-MISSION

3.2.1.2. Mill-Cucamonga Creek

Mill-Cucamonga Creek is a tributary to Chino Creek Reach 1 in Prado Basin and has two parts: (a) the downstream natural channel segment, Mill Creek (referred to as Mill-Cucamonga Creek), which extends from its confluence with Chino Creek upstream to Hellman Avenue and (b) the concrete-lined channel above Hellman Avenue (referred to as Cucamonga Creek Reach 1). For the latter, REC1 use was removed through an approved UAA, thereby making Cucamonga Creek Reach 1 into a REC2 Only waterbody. REC2 Only waters are monitored in Priority 4 of the RBMP, and a station was added at the Hellman Avenue location to collect data needed to demonstrate compliance with antidegradation thresholds (see Section 1.1.4). The following data and analysis only apply to the REC1 segment downstream of Hellman Avenue.

Three dynamic sources of dry weather inflow to Mill-Cucamonga Creek exist and influence water quality at the TMDL compliance monitoring site WW-M6; including

[13] Includes the following as expressed in the Basin Plan: wildlife activity and waste, bacterial regrowth within sediment or biofilm, resuspension from disturbed sediment, marine vegetation (wrack) along high tide line, concentrations (flocks) of semi-wild waterfowl, and shedding during swimming.

tertiary treated effluent from the IEUA Regional Water Recycling Plant No. 1 (RP-1) facility, dry weather flow from MS4 outfalls to Cucamonga Creek Reach 1, and treated return flows from the offline Mill Creek Wetlands. Two synoptic studies by the MSAR TMDL Task Force in 2012 and 2019 as well as annual source tracking efforts since 2016 by SBCFCD (referred to as 10-week surveys) have developed a strong understanding into these sources and their influence upon fecal bacteria loads to Mill-Cucamonga Creek (see 2023 Triennial TMDL Report). Dry weather flows from MS4s to Cucamonga Creek are limited to outfalls downstream of multiple points of hydrologic disconnection (most downstream being the Turner Basins just upstream of Ontario airport). Flow and water quality change substantially when diversions are offline, a condition that is assessed with each Triennial TMDL Report.

Figure 3-12 shows measured *E. coli.* at the TMDL compliance monitoring site WW-M6 and calculated geomeans. Breaks in the geomean indicate 30 days periods with less than 5 samples as influenced by obstacles faced by the field program in some weeks (see Section 2.3 above). In the 2024-2025 monitoring period, E. coli concentrations in Mill-Cucamonga Creek were within the range observed in recent years, but significantly lower than historical levels prior to the completion of Mill Creek Wetlands and the Turner Basins. Comprehensive analysis of six years of effectiveness monitoring for Mill Creek Wetlands showed a greater than 95 percent reduction in *E. coli*.

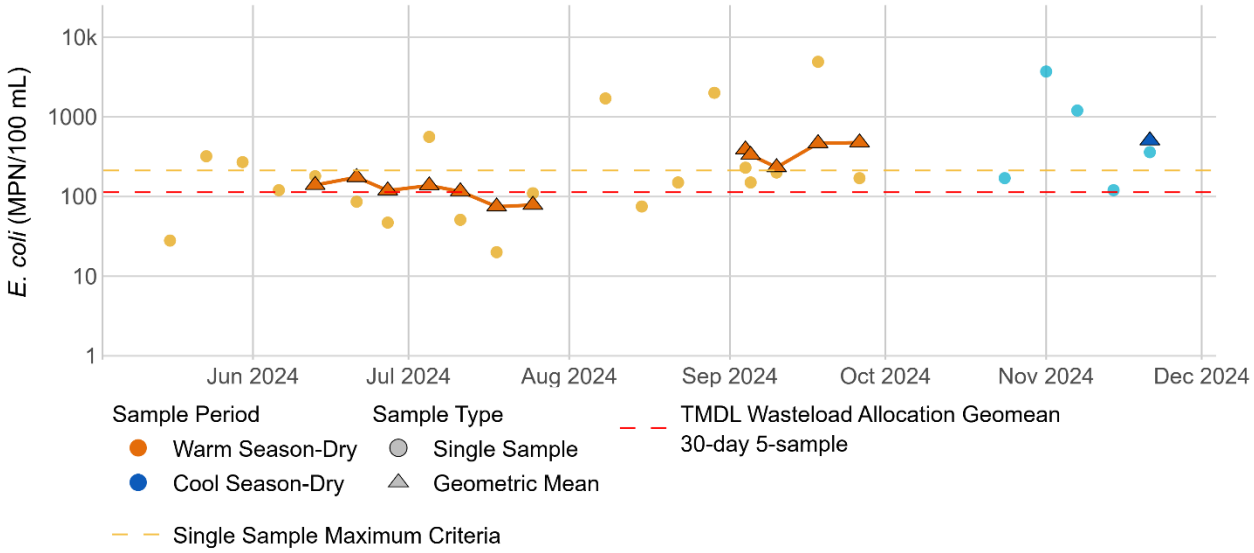

Figure 3-12: *E. coli*. for Mill-Cucamonga Creek below Wetlands (WW-M6)

The median measured flow rate at WW-M6 in 2024-2025 dry weather samples was 10 cfs, substantially lower than median flow measured in Cucamonga Creek in 2005 at the time of TMDL adoption (~50 cfs). The reduction in dry weather flow (DWF) is associated with increased water recycling, flow diversion for groundwater recharge, and outdoor water use efficiency measures in the upstream watershed. The geomean of *E. coli*

samples collected at WW-M6 was 125 MPN /100mL when flow was below 10 cfs and 250 MPN /100mL when flow was above 10 cfs.

3.2.1.3. Chino Creek

Chino Creek is tributary to Santa Ana River Reach 3 in the Prado Basin area. Per the TMDLs, Chino Creek is divided into two parts: (a) the downstream natural channel segment, Chino Creek Reach 1, that extends from the confluence with the Santa Ana River upstream to the beginning of the concrete-lined channel south of Los Serranos Road and (b) the concrete-lined channel above Los Serranos Road to the confluence with San Antonio Channel, referred to as Chino Creek Reach 2. The TMDL compliance monitoring location is within the natural channel segment of Chino Creek Reach 1 where there is a greater potential for water contact recreational use.

Dry weather inflow to Chino Creek Reach 2 is comprised of MS4 flow from a few cities (mostly Pomona, Chino Hills, and Chino) and rising groundwater. Diversions from San Antonio Channel to groundwater recharge basins create large areas of hydrologic disconnection (most downstream being the Brooks Basins in Montclair). POTW effluent from Inland Empire Utility Agency's (IEUA) Carbon Canyon Water Reclamation Facility discharges treated effluent to Chino Creek at the transition from Reach 2 to Reach 1. This discharge has declined significantly since the time of TMDL adoption as a result of increased water recycling and is typically zero in the warm season in recent years. Two synoptic studies by the MSAR TMDL Task Force in 2012 and 2019 as well as annual source tracking efforts since 2017 by SBCFCD (referred to as 10-week surveys) have developed a strong understanding into these sources and their influence upon fecal bacteria loads to Chino Creek (see 2023 Triennial TMDL Report).

Figure 3-13 shows measured *E. coli.* at the TMDL compliance monitoring site WW-C7 and calculated geomeans. In the 2024-2025 monitoring period, *E. coli* concentrations in Chino Creek were within the range observed in recent years. Concentrations showed less temporal variability at this site relative to the other Priority 2 waters.

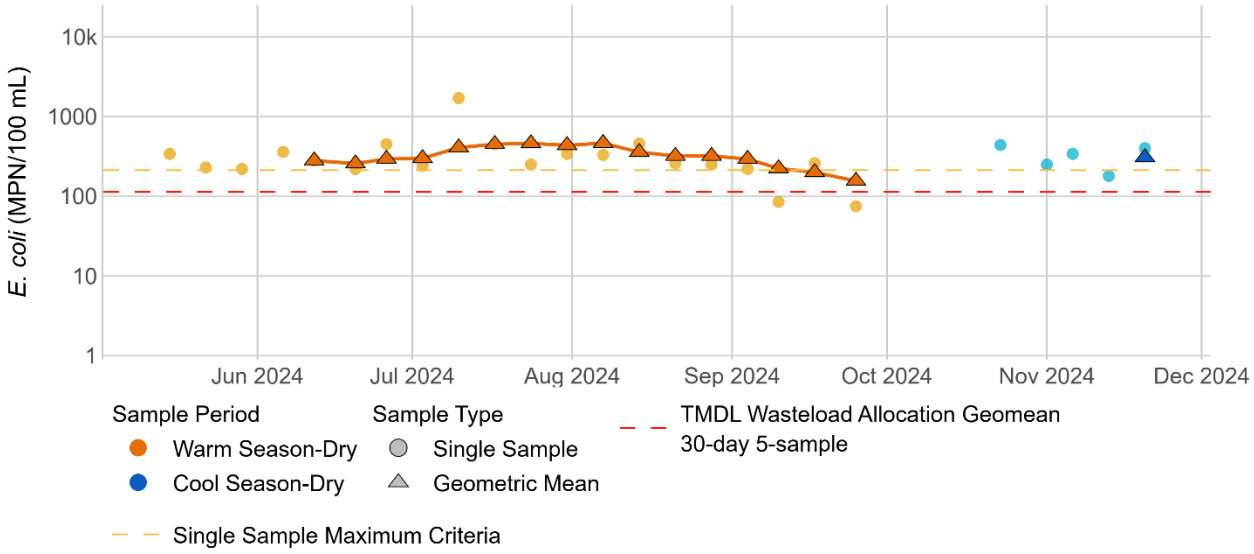

Figure 3-13: *E. coli*. for Chino Creek at Central (WW-C7)

3.2.1.4. Prado Park Lake

Prado Park Lake is located in Prado Regional Park in San Bernardino County near where Chino Creek enters Prado Basin. The TMDL Staff Report described this lake as follows:

> *"at the confluence of two drainage channels – Euclid Avenue storm channel and the Grove Avenue storm channel. During low-flow conditions, urban runoff from these two channels flows under the lake through pipes and discharges into the lake's outlet structure. However, these pipes are undersized and, during large storm events, they cannot handle the storm flows. Consequently, stormwater is discharged directly into the lake."*

The referenced under lake pipeline was replaced in 2017 to restore the original MS4 conveyance that ensured that stormwater bypassed the lake. During the construction project, the lake was drained and kept dry during most of 2017. Geomean concentrations declined sharply following the bypass, but not to levels that would support delisting. The rolling geomean concentrations in the 2024-2025 monitoring period hovered around the TMDL numeric target (Figure 3-14).

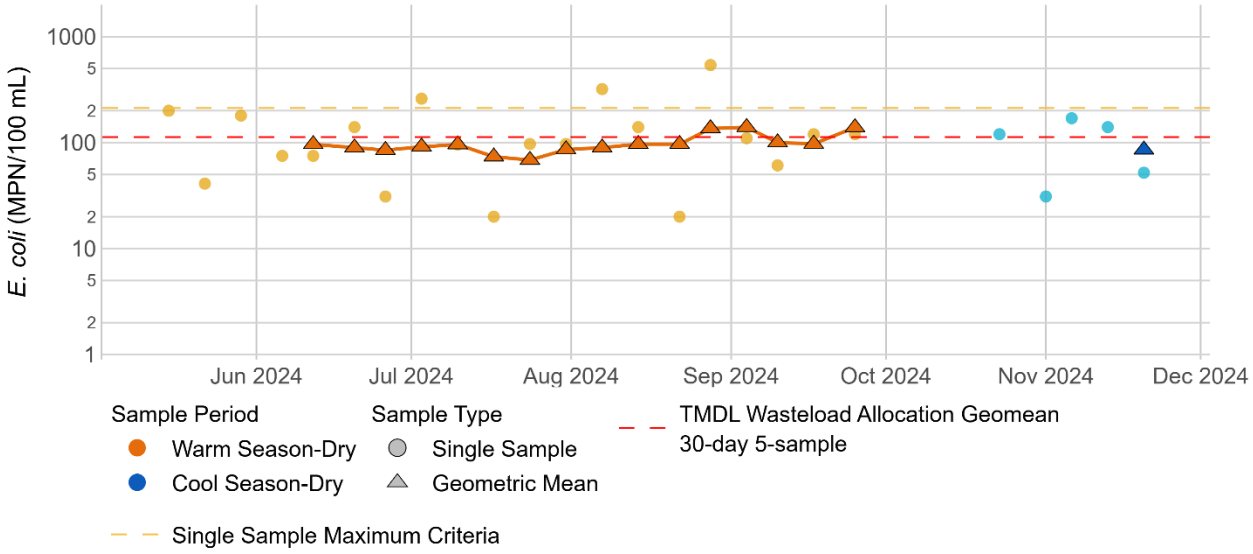

Figure 3-14: *E. coli*. for Prado Park Lake (WW-C3)

In addition to fecal indicator bacteria, the RBMP collects samples for TSS laboratory analysis and collects field measurements of water temperature, pH, conductivity, dissolved oxygen (DO), and turbidity (Table 3-7). Results for these parameters are provided in Appendix A. Generally, these measurements provide supporting information for use in water quality assessment and potential insights into sources of DWF. For flow measurements on these larger waters, USGS gauge data is used for loading analysis and to characterize diurnal or intermittent water operational patterns that cause changes in stream flow. pH >8.5 and DO < 5 mg/L was observed during some field visits, which may be associated with high concentrations of algae in the warm season.

Table 3-7. Range of Field Measurements at Priority 2 Sites during Dry Weather Monitoring in 2024

Site ID	pH	DO (mg/L)	Temp (°C)	Cond (µS/cm)	TSS (mg/L)	Turbidity (NTU)	Flow (cfs)
WW-S1	7.7-8.7	7.8-8.9	18.2-22.7	931-1877	3-42	0.1-19.4	7.3-77
WW-S4	7.6-8.6	7.8-8.8	19.4-24.2	924-1932	2-39	0.3-21.8	23.4-342.5
WW-M6	7.2-8.9	3.5-8.7	19-26.4	595-1524	3-25	0.2-6.9	5.7-43.4
WW-C7	7.6-8.9	5-10.5	17.7-29.7	872-2378	1-9	0.5-4.2	5.6-63.4
WW-C3	8.4-9.6	6.2-10.3	15.7-26.5	1077-2187	8-25	0.5-9.1	0.9-18.4
MISSION	7.5-8.8	7.6-8.8	19.4-29	697-1550	6-96	0.3-49	3.8-79.8

3.2.2. Wet Weather in Priority 2 Waters

The 2024-2025 wet season, wet weather samples were collected during the week of March 10 -14 based on forecasted rainfall Tuesday through Friday. *E. coli* concentrations in grab samples collected during this wet weather event are summarized in Table 3-8. Measured rainfall on March 11 and 12 was less than forecasted at Ontario Airport station and did not amount to any measurable rise in downstream runoff in Priority 2 waters. By Thursday, a storm of about 0.5 inches passed through and generated sufficient runoff to classify the samples as collected during active wet weather. Precipitation records from the Ontario International Airport show that the area received the following rainfall during the targeted storm event:

- 0.04 inches on March 12, 2025
- 0.50 inches on March 13, 2025
- 0.37 inches of March 14, 2025

In addition to this targeted event, two samples collected on September 11, 2024 during the warm season were determined to be influenced by isolated wet weather in the eastern part of the MSAR watershed (not recorded at Ontario Airport). This rain event caused wet weather conditions to occur at the Santa Ana River stations during the time of routine dry weather sampling. Given this, the results intended to be dry weather were reclassified as wet and therefore removed from dry weather rolling geomean calculations and chart in Figure 3-10 above.

Table 3-8. *E. coli* Concentrations (MPN/100 mL) Observed During the March 11-14, 2025 Storm Event and Wet Samples from September 11, 2024

Waterbody	Site	Pre-Storm [1]		Wet Condition		
		March 11	March 12	March 13	March 14	September 10-11, 2024 [2]
Reach 3 of the Santa Ana River	WW-MISSION	190	470	11,000	1,400	5,800
	WW-S1	98	490	12,000	930	4,600
	WW-S4	440	1000	8,700	2,600	14,000
Mill-Cucamonga Creek	WW-M6	41	160	3,900	1,400	
Chino Creek	WW-C7	140	140	5,500	700	
Prado Park Lake	WW-C3	63	85	3,300	73	

1) Weather forecasts met mobilization criteria to begin the wet event on March 11; however, rainfall did not occur until March 13. Samples collected on March 11 and 12 are classified as pre-storm.
2) Samples were collected at WW-S4 on September 10 and WW-MISSION and WW-S1 on September 11 and were determined to be influenced by an isolated wet weather event during routine dry weather sampling in the eastern part of the MSAR watershed.

The TMDL Task Force decided to collect samples at the WW-MISSION site during the March 2025 wet event (previously done during dry weather only). Results are presented in Table 3-8 above and show wet weather brings significant loads of fecal bacteria into Reach 3 from the large upper watershed.

Figure 3-15 and Figure 3-16 display changing E. coli concentrations at two stations (Chino Creek: WW-C7 and Mill-Cucamonga Creek: WW-M6) over the wet event sampling period. Discharge data from USGS gauges located upstream of the compliance monitoring sites on Chino Creek (11073495) and Cucamonga Creek (11073360) are also shown on the figures. As discussed above, the rainfall forecasted over the first two days of the wet event did not materialize as forecasted. A small rise in the hydrographs on the morning of March 11 was observed in all three MSAR flowing waters (Chino Creek, Mill-Cucamonga Creek, and Reach 3 of the SAR); however, the much larger pulse of wet weather occurred on March 13, day three of the wet event.

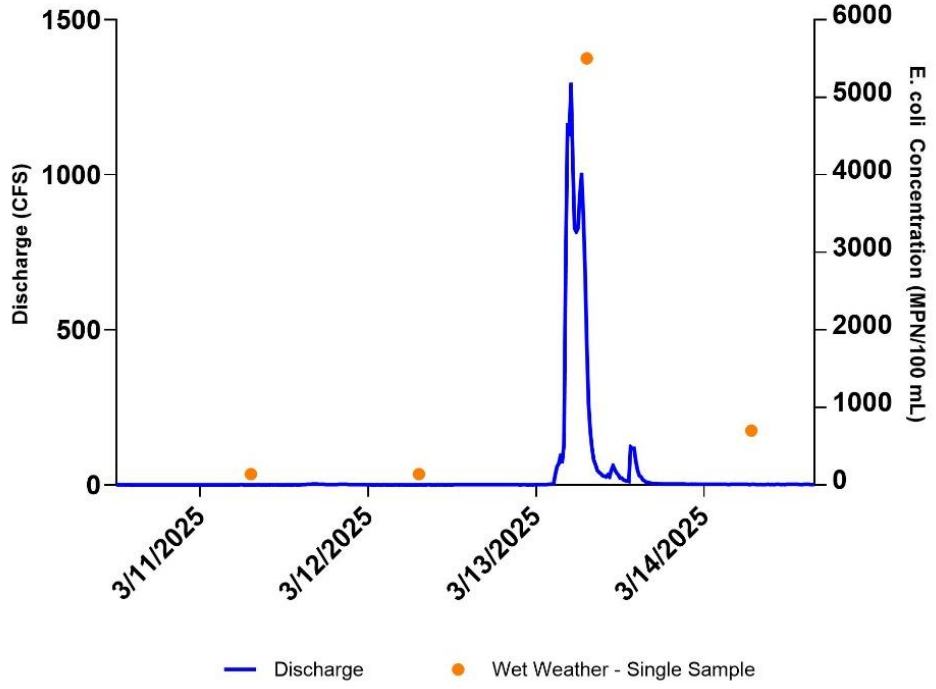

Figure 3-15. E. coli Concentrations Observed at Chino Creek Before, During, and After the March 11-14 Wet Weather Event

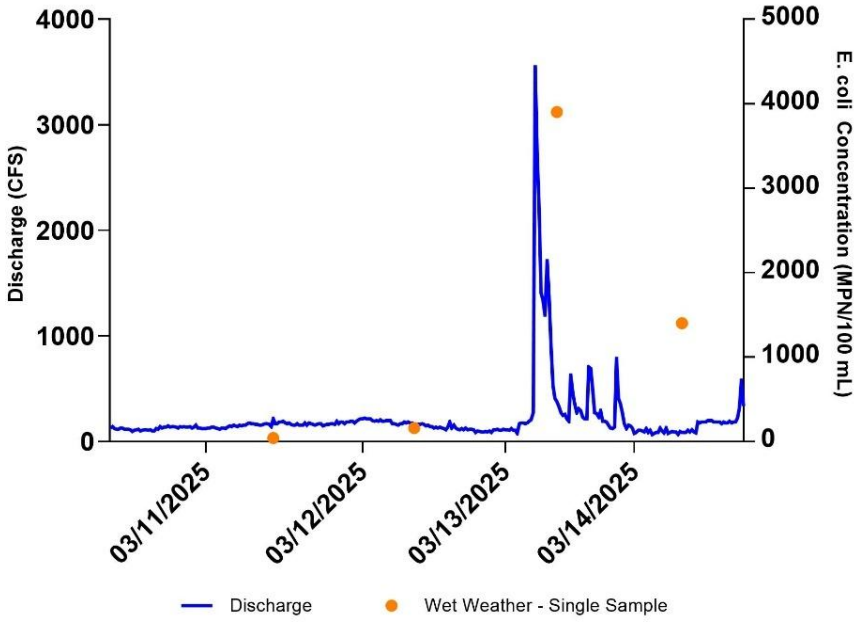

Figure 3-16. *E. coli* Concentrations Observed at Mill-Cucamonga Creek Before, During, and After the March 11-14 Wet Weather Event

Figure 3-17. shows a hydrograph analysis that was conducted for all storm events sampled by the MSAR Task Force since 2007 to determine which follow-up samples were collected during active wet weather and which were post-storm, that is, analyzing whether or not flow had returned to pre-wet weather event conditions when sample was collected. Analysis of the full set of post-storm samples shows that *E. coli* concentrations decline most sharply within the first 24 hours following a return to a pre-event flow condition for all the impaired waters. Thus, it is possible that existing and potential future controls implemented to address dry weather *E. coli* loads may also provide protection for potential swimmers 24 hours post-storm.

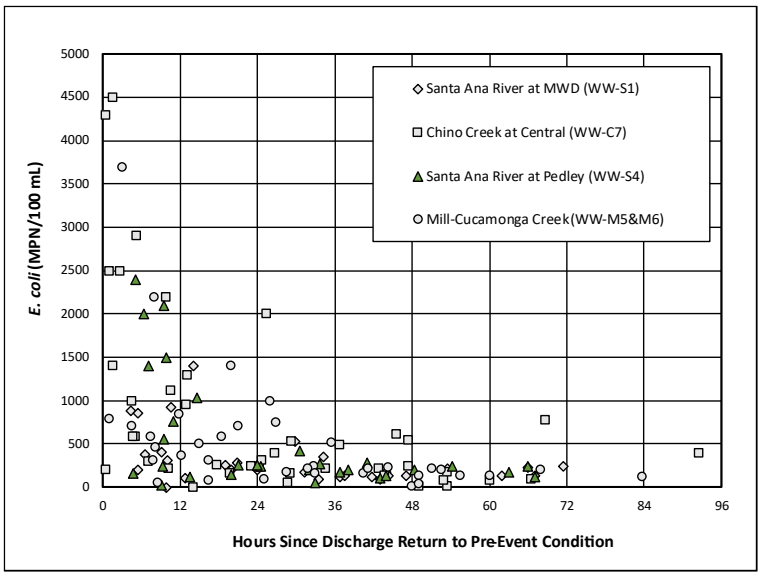

Figure 3-17. *E. coli* Concentrations for All Post-storm Samples Based on the Time Since the Return of Pre-Wet Weather Event Flow Conditions (2007-2024)

3.3. Priority 3 Waters

Priority 3 of the RBMP involves collection of five consecutive-week samples each warm, dry season to characterize current fecal bacteria concentrations in waters that were added to the 303(d) list but do not have a TMDL. In some cases (Goldenstar Creek, Santa Ana River Reach 4, Bolsa Chica Channel, Borrego Channel, and Serrano Creek), the basis for original 303(d) listing involved data collected about 20 years ago and new monitoring data collected through this RBMP has provided updated information. More recent additions to the 303(d) list include Warm Springs Creek and San Timoteo Creek, and RBMP began collecting samples at these locations in 2020.

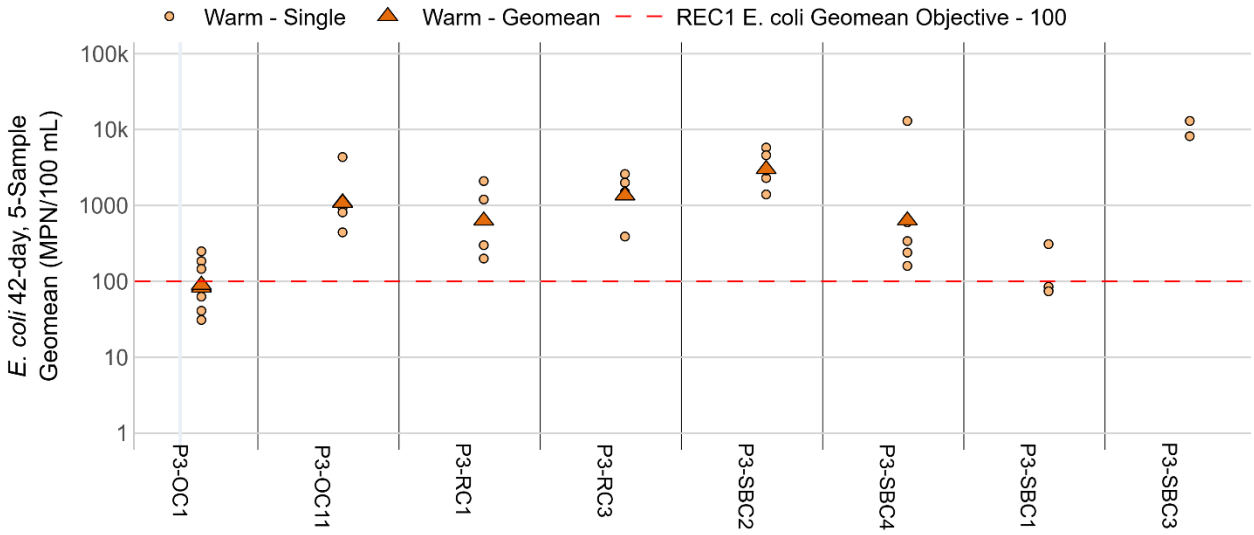

Figure **3-1**8 displays the 2024 5-sample geomeans and individual *E. coli* concentrations at Priority 3 sites during dry weather.

Table 3-9 compares the five-sample geomean calculated in 2024 to historical ranges over the period of the RBMP. Common characteristics of the Priority 3 waters in the RBMP include 1) existing impairment without TMDL, 2) downstream of smaller watersheds than the TMDL waters, and 3) are flowing waters. Given these factors, the measured flow in these streams during dry weather is an important metric to assess long term benefits outdoor water use efficiency measures taken in MS4 drainage areas. In some cases, management of water and wastewater causes substantial change to the flow regime in downstream waters and must be accounted for when interpreting water quality conditions. Flow rates are included in Table 3-9 for 2024 and the range of results in prior years.

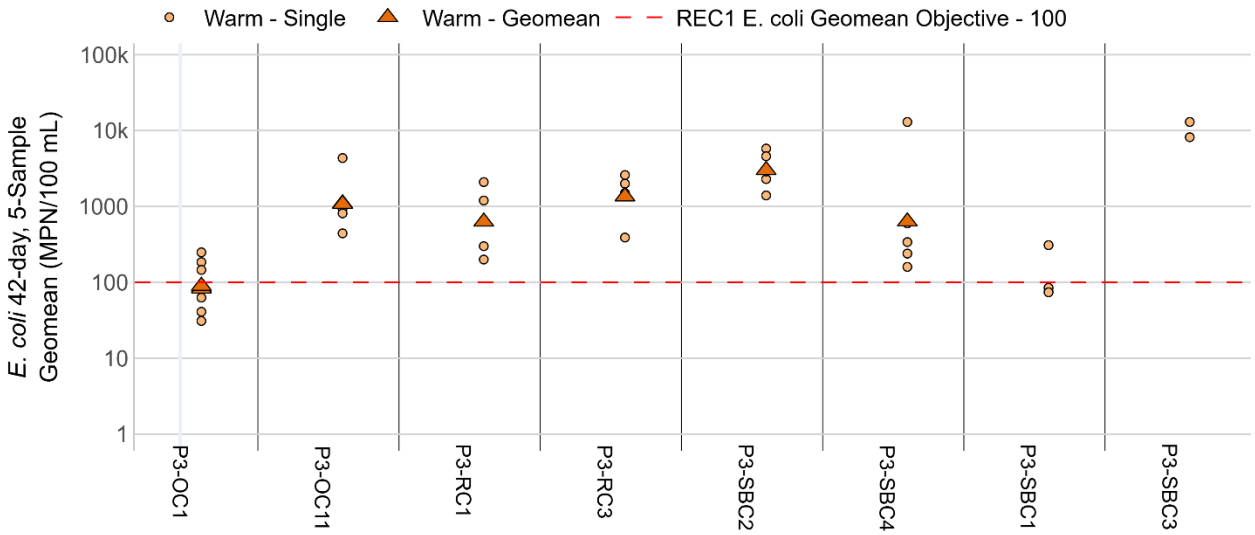

Figure 3-18. Distribution of E. coli Concentration Measurements at Priority 3 Sites

Table 3-9. Range of Dry Weather Flowrate and *E. Coli* Geometric Means at Priority 3 Sites in 2024 Compared to Historical Dataset (2016-2023)

Site	Range of Geomeans *E. coli* (MPN /100mL)		Range of Flow (cfs)	
	Historical	2024	Historical	2024
Bolsa Chica (P3-OC1)	22-533	70	0.07-4.1	1.2-5.5
Borrego Creek (P3-OC2) [1]	807-3,608	NA	0.4-0.98	NA
Serrano Creek (P3-OC11)	132-1,572	1,145	0.1-1.4	0.3-0.7
Goldenstar Creek (P3-RC1)	71-456	631	0.4-32.1	1.1-4.5
San Timoteo Creek Reach 3 (P3-RC3)	170-344	1,355	6.6-77.7	7.6-39.4
San Timoteo Creek Reach 2 (P3-SBC3)	414-486	n/a [2]	0.1-15.9	0.1-0.7
San Timoteo Creek Reach 1A (P3-SBC2)	40-3,072	3,015	0.3-14.9	0.1-0.6
Warm Creek (P3-SBC4)	236-4,689	633	0.1-13.7	0.04-1.8
Santa Ana River Reach 3 (P3-SBC1)	10-222	n/a [2]	2.6-70.4	11.1-20.2

1) Borrego Creek was dry during all five site visits in the 2024 warm season, historical range shown is based on three grab samples over two years.
2) Less than 5 samples collection in 2024 dry season therefore 5-sample geomean calculation not feasible.

Notes about each of the Priority 3 sites are provided below:

- Bolsa Chica Channel (P3-OC1): This site met the WQOs for *E. coli* in 2024 as it had in previous years. *Enterococcus* is not sampled at this site through the RBMP; however, salinity levels from tidal exchange may exceed 1ppth under most conditions.
- Borrego Creek (P3-OC2): This site is typically dry during field visits. Three samples have been collected over the course of 25 field visits since 2020.
- Serrano Creek (P3-OC11): In 2024, the five-sample geomean E. coli concentration in Serrano Creek was 1,145 MPN/100mL . Changes to land use in the upstream drainage area have significantly reduced dry weather flow in Serrano Creek. Further investigation may be considered to identify and mitigate the source of fecal bacteria.
- Goldenstar Creek (P3-RC1): The geometric mean of *E. coli* concentrations exceeded WQOs in the 2024 dry season and was higher than the entire historical range. Further study may be warranted to identify sources of fecal bacteria that may be mitigated with non-structural BMPs.
- San Timoteo Creek (P3-RC3 → P3-SBC3 → P3-SBC2): Three monitoring sites were added to the RBMP and sampling began in the 2020 warm season. San Timoteo Creek is dominated by POTW effluent flows at its headwaters from Yucaipa Valley Water District (YVWD) and the City of Beaumont. Much of this flow is percolated within spreading basins between sites P3-RC3 and P3-SBC3. Thus, much lower rates of downstream flow at site P3-SBC2 may be associated with local urban DWF. Figure 3-19 shows an increase in *E. coli* concentration from upstream (P3-RC3 on Reach 2 within Riverside County) to downstream segments (P3-SB3 and then P3-SB2 in San Bernardino County).
- Warm Creek (P3-SBC4): Warm Creek was added to the 303(d) list and incorporated into the RBMP in the same cycle as San Timoteo Creek, thus sampling begin in the 2020 warm season. The 2024 geomean (633 MPN/100mL) was lower than in 2023 (4,689 MPN/100mL).
- Reach 4 of the Santa Ana River (P3-SBC1): Dry weather *E. coli* concentrations ranged from 74 – 310 MPN/100mL within Reach 4 of the Santa Ana River near the San Bernardino/Riverside County boundary. Reclassification of the sample collected on September 11 at this site to wet weather excluded the calculation of a 5-sample geomean. This site is upstream of WW-MISSION and within the segment that receives large volumes of POTW effluent, therefore provides additional data to estimate fecal bacteria loads in the SAR from Reach 4 to Reach 3 (one of the Priority 2 MSAR TMDL waters).

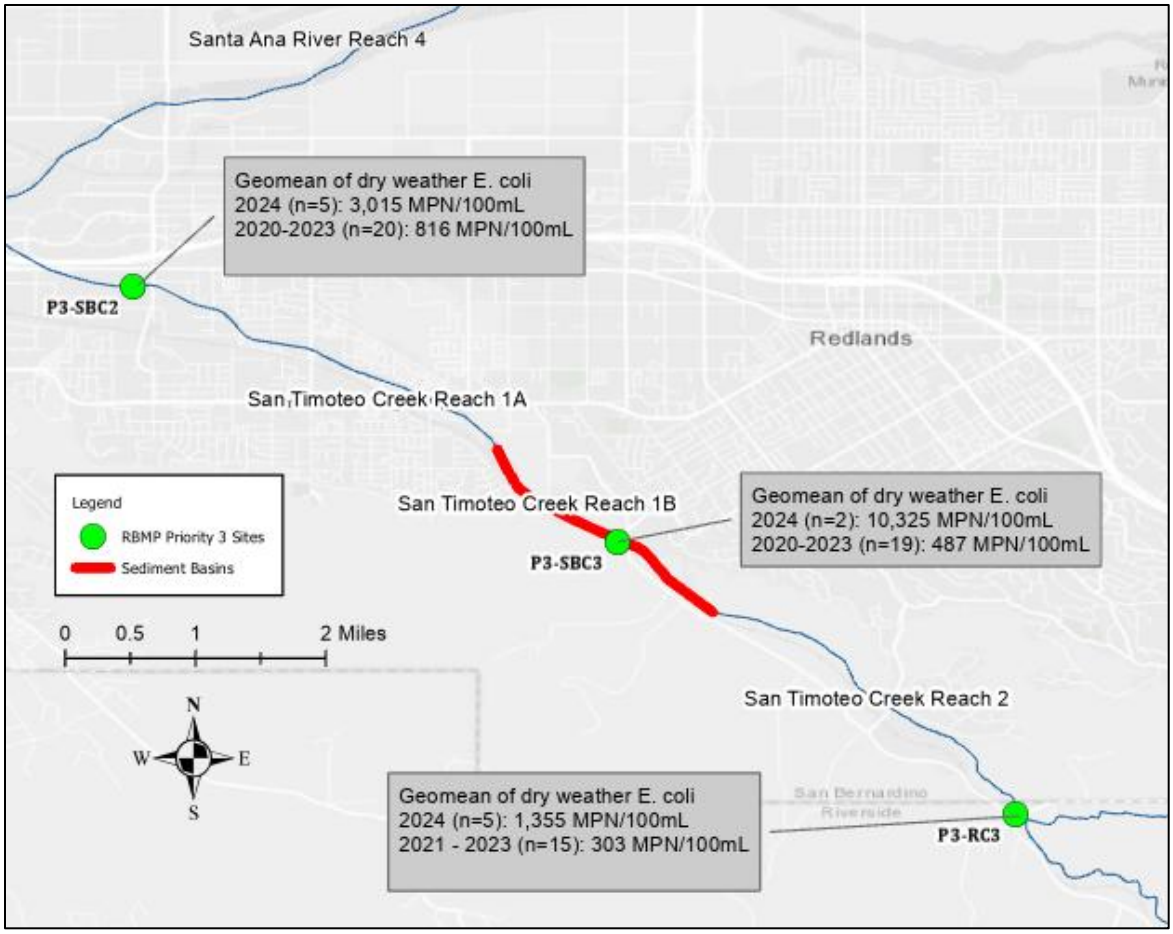

Figure 3-19. Current (2024) and Long-term *E. Coli* Geomean Concentrations during Warm Season, Dry Weather at Priority 3 Sites on San Timoteo Creek

In addition to fecal indicator bacteria, the RBMP collects samples for TSS laboratory analysis and collects field measurements of water temperature, pH, conductivity, dissolved oxygen (DO), and turbidity (Table 3-10). Results for these parameters are provided in Appendix A. Generally, these measurements provide supporting information for use in water quality assessment and potential insights into sources of dry weather flow. For example, differences in specific conductivity between the three sites along San Timoteo Creek suggests that different relative proportions of POTW discharge and urban DWF exist at each site. TSS and flow are elevated in San Timoteo Creek at the upstream site (P3-RC3), and a series of in-channel sediment basins serve to capture sediment and percolate mostly recycled water flows before the confluence with the SAR. The extent to which the upstream source of DWF percolates into the channel bottom, impacts flow and bacteria at downstream sites.

Table 3-10. Range of Field Measurements at Priority 3 Sites during Dry Weather Monitoring in 2024

Site ID	pH	DO (mg/L)	Temp (°C)	Cond (µS/cm)	TSS (mg/L)	Turbidity (NTU)	Flow (cfs)
P3-OC1	7.7-8	7.2-9.8	22.1-25.8	1561-2912	5-36	2.1-3.4	1.2-5.5
P3-OC11	8.4-8.8	9-11.1	21.1-24.3	1320-1666	11-43	2.7-13.9	0.3-0.7
P3-RC1	8.3-8.7	8.3-8.7	18.9-22.8	2032-2138	1-5	0.1-1.1	1.1-4.5
P3-RC3	8.4-8.6	7.9-8.2	23-26.4	507-573	43-250	22.9-106.3	7.6-39.4
P3-SBC1 [2]	7.5-8	7.5-7.9	25.5-28.1	865-869	1-3	0.7-0.9	11.1-20.2
P3-SBC2	8.3-8.8	9-10.1	19.7-24.5	383-514	2-17	0.4-13.4	0.1-0.6
P3-SBC3 [1]	8.6-8.8	8.6-8.8	21.1-25.6	656-713	51-180	79.1-129.6	0.1-0.7
P3-SBC4	8.3-8.5	8.5-9	19-23.3	474-769	4-8	0.2-3.7	0.04-1.8

1) Range of two samples, site was dry during the other three visits.
2) Range of four samples, sample collected on September 11 was reclassified to wet weather because of an isolated wet weather event during routine dry weather sampling in the eastern part of the MSAR watershed.

3.4. Priority 4 Waters

The Basin Plan Amendment includes provisions applicable to waters with completed UAAs supporting change of beneficial use from REC1 to REC2 only to assure bacteria water quality conditions do not degrade from baseline levels as a result of controllable factors. A statistical analysis of historical data (2002-2011) was completed to estimate a baseline of bacterial water quality including geometric mean, median, standard deviation, coefficient-of-variation, maximum value, and 75th percentile density. The 75th percentile density serves as the antidegradation target (see Table 1-1 above), meaning that 3 of 4 samples in data collected after the BPA must fall below these values to infer no degradation.

Several of the REC2-Only waters are upstream of Priority 2 TMDL waters, including Cucamonga Creek Reach 1 (P4-SBC1) and Temescal Creek (P4-RC1). The change in use designation to REC2-Only allows for regional bacteria control projects to most effectively protect downstream REC1. Regional treatment provides more effective control because the treatment is located closer to the waterbody with more frequent recreational use. In this case, there are fewer new potential sources of dry weather flow and bacteria load between the regional treatment and the recreational waterbody.

Each Priority 4 site is sampled once each year to evaluate compliance with the antidegradation target established for each waterbody.

Table 3-summarizes the water quality field parameters from each Priority 4 site in 2024. High conductivity in the tidal prisms for Santa Ana-Delhi Channel and Greenville-Banning Channel support the use of *Enterococcus* for antidegradation thresholds.

Priority 4 water quality sample results were compared to site-specific antidegradation targets (Table 3-). In 2024, all Priority 4 sites met their antidegradation targets. TSS and other field measured parameters are reported in Table 3-12.

Table 3-11. Antidegradation Targets for Priority 4 Sites (no exceedances observed in 2024)

Site ID	Site Description	Antidegradation Target (MPN/100 mL)	*E. coli* Sample Result	*Enterococcus* Sample Result	Sample Date
P4-OC1	Santa Ana-Delhi Channel Upstream of Irvine Avenue	1,067	613		9/19/2024
P4-OC2	Santa Ana-Delhi Channel in Tidal Prism	464		<10	8/21/2024
P4-OC3	Greenville-Banning Channel in Tidal Prism	64		<10	8/21/2024
P4-RC2	Temescal Creek at Lincoln Avenue	725	73		8/29/2024
P4-SBC1	Cucamonga Creek at Hellman Avenue	1,385	400		6/21/2024

Table 3-12. Summary of Water Quality Data Collected from Priority 4 Sites

Parameter	Santa Ana-Delhi Channel (P4-OC1)	Santa Ana-Delhi Channel in Tidal Prism (P4-OC2)	Greenville-Banning Channel in Tidal Prism (P4-OC3)	Temescal Creek at Lincoln Avenue (P4-RC2)	Cucamonga Creek at Hellman Avenue (P4-SBC1)
Sample Date	9/19/24	8/21/24	8/21/24	8/29/24	6/21/24
pH	7.5	7.2	7.9	8.5	8.9
Water Temperature (°C)	21.1	26.5	27	23.1	19.2
Dissolved Oxygen (mg/L)	7.8	5.8	9.9	1.4	13.2
Conductivity (µS/cm)	1996	49136	2867	1362	809
Turbidity (NTU)	--	2.2	6.9	1.1	16.9
TSS (mg/L)	2.2	5.8	20	4	3
Flow (cfs)	NA	NA	NA	4.7	18.4

4. Recommendations

This section describes recommendations and updates to the RBMP Monitoring Plan for the 2025-2026 monitoring year.

- Update MP/QAPP documents - Complete an update to the RBMP Monitoring Plan and QAPP to document changes to roles and responsibilities, waterbody sampling site information, provide more flexibility in the wet event sampling, and incorporation of new source tracking methods that may be deployed for source investigations efforts to implement the CBRPs. Coordinate with the MSAR bacteria TMDL Task Force on data needed to support wet weather CBRP development.

- Evaluate measured or estimated salinity ranges at all sites in the RBMP to assess whether the correct fecal bacteria indicator is monitored per the statewide bacteria provisions.

- Consider other concrete lined open channels in the watershed that would be candidates for changing the designated use to REC2-Only based on archetypes created in the 2015 BPA to *Revise Recreation Standards for Inland Freshwaters in the Santa Ana Region.*

- Consider removing laboratory analysis of TSS from dry weather samples and instead using field measured turbidity to support qualitative interpretation of differences in results.

Appendix A Data Summary

Table A.1 through A.45 summarizes the water quality results obtained for *E. coli*, *Enterococcus*, TSS, and field measurements from Priority 1, Priority 2, and Priority 3 sites during 2024 dry weather sampling activities and storm event. Data from Priority 4 sites are included in Section 3.4 and are not reproduced in this appendix. Table A.46 through Table A.48 summarizes the daily mean flow measured at key USGS gages in the Santa Ana River watershed.

Table A.1. *E. coli* (MPN/100 mL) Concentrations Observed at Priority 1 Sites (P1-1, P1-2, P1-3) during the 2024 Dry Season; Enterococci (MPN/100 mL) Concentrations Observed at P1-2 during the 2024 Dry Season

Week Beginning Date	Canyon Lake (P1-1)		Lake Elsinore (P1-2)			Lake Perris (P1-3)	
	Sampled Date	*E. coli*	Sampled Date	*E. coli*	Enterococci	Sampled Date	*E. coli*
5/12/2024	5/15/24 10:30 AM	4.1	5/15/24 9:50 AM	55	6.2	5/15/24 11:48 AM	5.2
5/19/2024	5/22/24 9:45 AM	1	5/22/24 8:55 AM	1	2	5/22/24 10:36 AM	91
5/26/2024	5/29/24 9:45 AM	1	5/29/24 9:10 AM	1	6.1	5/29/24 11:00 AM	9.8
6/2/2024	6/6/24 9:10 AM	2	6/6/24 8:29 AM	2	210	6/6/24 10:02 AM	34
6/9/2024	6/12/24 9:40 AM	1	6/12/24 9:07 AM	6.3	6.2	6/12/24 10:40 AM	8.6
6/16/2024	6/20/24 9:07 AM	3	6/20/24 8:28 AM	5.2	6.2	6/20/24 9:57 AM	96
6/23/2024	6/25/24 9:05 AM	1	6/26/24 8:21 AM	1	6.3	6/26/24 9:53 AM	64
6/30/2024	7/3/24 9:44 AM	5.2	7/3/24 9:00 AM	9.8	3.1	7/3/24 10:44 AM	11
7/7/2024	7/10/24 9:50 AM	5.2	7/10/24 9:04 AM	1	3	7/10/24 10:47 AM	20
7/14/2024	7/17/24 10:32 AM	1	7/17/24 9:41 AM	1	1	7/17/24 11:35 AM	8.6
7/21/2024	7/24/24 9:50 AM	1	7/24/24 9:10 AM	1	2	7/24/24 10:50 AM	5.2
7/28/2024	7/31/24 9:50 AM	3.1	7/31/24 8:55 AM	1	1	7/31/24 10:53 AM	1
8/4/2024	8/7/24 8:39 AM	1	8/7/24 8:03 AM	1	68	8/7/24 9:31 AM	2
8/11/2024	8/14/24 9:01 AM	3.1	8/14/24 8:24 AM	1	23	8/14/24 9:47 AM	3.1
8/18/2024	8/21/24 9:35 AM	2	8/21/24 8:55 AM	1	220	8/21/24 10:30 AM	490
8/25/2024	8/28/24 9:36 AM	2	8/28/24 8:53 AM	1	140	8/28/24 10:25 AM	8.6
9/1/2024	9/4/24 10:50 AM	2	9/4/24 10:10 AM	2	30	9/4/24 11:50 AM	34
9/8/2024	9/11/24 7:43 AM	110	9/11/24 7:05 AM	3.1	30	9/11/24 8:34 AM	870
9/15/2024	9/17/24 10:00 AM	8.6	9/17/24 9:15 AM	1	4.1	9/17/24 11:00 AM	1
9/22/2024	9/25/24 10:00 AM	1	9/25/24 9:15 AM	15	25	9/25/24 10:55 AM	68
10/20/2024	10/23/24 9:35 AM	1	10/23/24 8:56 AM	6.3	3	10/23/24 10:29 AM	13
10/27/2024	11/1/24 10:30 AM	4.1	11/1/24 9:39 AM	4.1	2	11/1/24 11:35 AM	9.8
11/3/2024	11/6/24 9:35 AM	1	11/6/24 8:50 AM	2	2	11/6/24 10:45 AM	52
11/10/2024	11/12/24 9:07 AM	2	11/13/24 8:30 AM	2	1	11/13/24 9:58 AM	36
11/17/2024	11/20/24 10:05 AM	3.1	11/20/24 9:20 AM	1	4.1	11/20/24 11:10 AM	2

Table A.2. *E. coli* (MPN/100 mL) Concentrations Observed at Priority 1 Sites (P1-4, P1-5, P1-6) during the 2024 Dry Season

Week Beginning Date	Big Bear Lake (P1-4)		Mill Creek Reach 2 (P1-5)		Lytle Creek (P1-6)	
	Sampled Date	*E. coli*	Sampled Date	*E. coli*	Sampled Date	*E. coli*
5/12/2024	5/14/24 9:55 AM	1	5/14/24 11:30 AM	2	5/14/24 8:10 AM	5.2
5/19/2024	5/21/24 9:58 AM	2	5/21/24 11:34 AM	9.6	5/21/24 7:51 AM	1
5/26/2024	5/28/24 9:30 AM	1	5/28/24 10:45 AM	2	5/28/24 7:45 AM	4.1
6/2/2024	6/4/24 9:28 AM	1	6/4/24 10:44 AM	4.1	6/4/24 7:31 AM	4.1
6/9/2024	6/11/24 10:13 AM	2	6/11/24 11:40 AM	11	6/11/24 7:38 AM	19
6/16/2024	6/18/24 9:18 AM	1	6/18/24 10:42 AM	7.5	6/18/24 7:18 AM	4.1
6/23/2024	6/25/24 9:06 AM	5.2	6/25/24 10:24 AM	86	6/25/24 7:17 AM	8.6
6/30/2024	7/2/24 9:56 AM	2	7/2/24 11:21 AM	12	7/2/24 7:57 AM	5.2
7/7/2024	7/9/24 10:00 AM	3.1	7/9/24 11:31 AM	22	7/9/24 7:50 AM	4.1
7/14/2024	7/16/24 9:50 AM	1	7/16/24 11:34 AM	12	7/16/24 7:50 AM	9.8
7/21/2024	7/23/24 9:40 AM	5.2	7/23/24 11:05 AM	21	7/23/24 7:30 AM	6.3
7/28/2024	7/30/24 9:15 AM	8.5	7/30/24 10:32 AM	4.1	7/30/24 7:30 AM	4.1
8/4/2024	8/6/24 9:19 AM	15	8/6/24 10:36 AM	12	8/6/24 7:27 AM	5.1
8/11/2024	8/13/24 10:39 AM	2	8/13/24 11:45 AM	3	8/15/24 2:10 PM	11
8/18/2024	8/20/24 10:40 AM	6.3	8/20/24 11:50 AM	7.4	8/20/24 7:30 AM	16
8/25/2024	8/27/24 9:40 AM	4.1	8/27/24 11:08 AM	9.8	8/27/24 7:25 AM	5.2
9/1/2024	9/3/24 9:50 AM	1	9/3/24 11:15 AM	8.6	9/3/24 7:50 AM	11
9/8/2024	--	--	--	--	9/10/24 6:38 AM	23
9/15/2024	9/19/24 9:45 AM	1	9/19/24 11:00 AM	4.1	9/19/24 7:20 AM	13
9/22/2024	9/24/24 9:35 AM	1	9/24/24 10:55 AM	9.8	9/24/24 7:35 AM	14
	9/27/24 8:22 AM	1	9/27/24 9:50 AM	43	--	--
10/20/2024	10/22/24 9:38 AM	2	10/22/24 10:49 AM	5.2	10/22/24 7:21 AM	16
10/27/2024	11/1/24 9:55 AM	1	11/1/24 11:20 AM	5.2	11/1/24 7:57 AM	8.5
11/3/2024	11/5/24 9:30 AM	3	11/5/24 1:00 AM	9.8	11/5/24 7:30 AM	5.2
11/10/2024	11/12/24 9:02 AM	1	11/12/24 10:15 AM	2	11/12/24 7:14 AM	8.5
11/17/2024	11/19/24 9:50 AM	4.1	11/19/24 11:00 AM	2	11/19/24 7:40 AM	6.3

Table A.3. *E. coli* (MPN/100 mL) Concentrations Observed at Priority 2 Sites (WW-3, WW-M6, WW-C7) during the 2024 Dry Season

Week Beginning Date	**Prado Park Lake Outlet (WW-C3)**		**Mill-Cucamonga Creek Below Wetlands (WW-M6)**		**Chino Creek @ Central Avenue (WW-C7)**	
	Sampled Date	*E. coli*	Sampled Date	*E. coli*	Sampled Date	*E. coli*
5/12/2024	5/15/24 8:20 AM	200	5/16/24 7:30 AM	28	5/15/24 7:20 AM	340
5/19/2024	5/22/24 7:49 AM	41	5/23/24 7:15 AM	320	5/22/24 7:10 AM	230
5/26/2024	5/29/24 7:50 AM	180	5/30/24 7:30 AM	270	5/29/24 7:15 AM	220
6/2/2024	6/6/24 7:25 AM	75	6/6/24 7:41 AM	120	6/6/24 6:55 AM	360
6/9/2024	6/12/24 7:45 AM	75	6/13/24 7:49 AM	180	6/12/24 7:10 AM	280
6/16/2024	6/20/24 7:23 AM	140	6/21/24 6:41 AM	86	6/20/24 6:52 AM	220
6/23/2024	6/26/24 7:11 AM	31	6/27/24 7:45 AM	47	6/26/24 6:42 AM	450
6/30/2024	7/3/24 7:45 AM	260	7/5/24 7:21 AM	560	7/3/24 7:05 AM	240
7/7/2024	7/10/24 7:40 AM	96	7/11/24 7:15 AM	51	7/10/24 6:58 AM	1700
7/14/2024	7/17/24 8:15 AM	20	7/18/24 7:30 AM	20	7/17/24 7:30 AM	450
7/21/2024	7/24/24 7:50 AM	97	7/25/24 7:17 AM	110	7/24/24 7:00 AM	250
7/28/2024	7/31/24 7:40 AM	97	--	--	7/31/24 7:02 AM	340
8/4/2024	8/7/24 7:58 AM	320	8/8/24 6:50 AM	1700	8/7/24 6:30 AM	330
8/11/2024	8/14/24 7:16 AM	140	8/15/24 7:01 AM	75	8/14/24 6:45 AM	460
8/18/2024	8/22/24 6:50 AM	20	8/22/24 7:40 AM	150	8/21/24 7:10 AM	260
8/25/2024	8/28/24 7:37 AM	540	8/29/24 7:18 AM	2000	8/28/24 7:05 AM	250
9/1/2024	9/4/24 7:45 AM	110	9/4/24 8:30 AM	230	9/4/24 7:05 AM	220
	--	--	9/5/24 7:20 AM	150	--	--
9/8/2024	9/10/24 8:45 AM	61	9/10/24 9:25 AM	200	9/10/24 8:10 AM	85
9/15/2024	9/17/24 8:00 AM	120	9/18/24 7:25 AM	4900	9/17/24 7:15 AM	260
9/22/2024	9/25/24 7:55 AM	120	9/26/24 7:15 AM	170	9/25/24 7:10 AM	75
10/20/2024	10/23/24 7:42 AM	120	10/24/24 7:31 AM	170	10/23/24 7:14 AM	440
10/27/2024	11/1/24 8:48 AM	31	11/1/24 8:00 AM	3700	11/1/24 7:50 AM	250
11/3/2024	11/6/24 7:35 AM	170	11/7/24 7:15 AM	1200	11/6/24 7:05 AM	340
11/10/2024	11/13/24 7:24 AM	140	11/14/24 7:27 AM	120	11/13/24 6:57 AM	180
11/17/2024	11/20/24 8:00 AM	52	11/21/24 7:30 AM	360	11/20/24 7:20 AM	400

Table A.4. *E. coli* (MPN/100 mL) Concentrations Observed at Priority 2 Sites (WW-S1, WW-S4, WW-MISSION) during the 2024 Dry Season

Week Beginning Date	SAR @ MWD Crossing (WW-S1)		SAR @ Pedley Avenue (WW-S4)		SAR @ Mission Avenue (WW-MISSION)	
	Sampled Date	*E. coli*	Sampled Date	*E. coli*	Sampled Date	*E. coli*
5/12/2024	5/16/24 9:30 AM	6.3	5/16/24 8:25 AM	16	5/16/24 10:18 AM	44
5/19/2024	5/23/24 9:13 AM	190	5/23/24 8:30 AM	160	5/23/24 9:55 AM	200
5/26/2024	5/30/24 9:55 AM	150	5/30/24 9:00 AM	120	5/30/24 10:40 AM	130
6/2/2024	6/6/24 9:40 AM	930	6/6/24 8:55 AM	160	6/6/24 10:32 AM	98
6/9/2024	6/13/24 9:26 AM	190	6/13/24 8:30 AM	290	6/13/24 10:10 AM	140
6/16/2024	6/21/24 8:36 AM	250	6/21/24 7:59 AM	120	6/21/24 9:10 AM	210
6/23/2024	6/27/24 9:45 AM	15	6/27/24 8:50 AM	15	6/27/24 10:45 AM	3
6/30/2024	7/5/24 9:00 AM	160	7/5/24 8:19 AM	160	7/5/24 9:43 AM	190
7/7/2024	7/11/24 9:20 AM	18	7/11/24 8:20 AM	16	7/11/24 10:10 AM	20
7/14/2024	7/18/24 9:30 AM	31	7/18/24 8:35 AM	14	7/18/24 10:23 AM	12
7/21/2024	7/25/24 8:55 AM	450	7/25/24 8:10 AM	160	7/25/24 10:00 AM	200
7/28/2024	8/1/24 8:35 AM	290	8/1/24 7:45 AM	740	8/1/24 9:35 AM	310
8/4/2024	8/8/24 8:17 AM	320	8/8/24 7:37 AM	360	8/8/24 8:53 AM	360
8/11/2024	8/15/24 8:38 AM	140	8/15/24 7:58 AM	260	8/15/24 9:12 AM	770
8/18/2024	8/22/24 9:33 AM	270	8/22/24 8:52 AM	170	8/22/245 10:10 AM	320
8/25/2024	8/29/24 9:25 AM	340	8/29/24 8:51 AM	310	8/29/24 9:57 AM	85
9/1/2024	9/5/24 9:18 AM	470	9/5/24 8:45 AM	290	9/4/24 9:45 AM	160
9/8/2024	9/11/24 10:42 AM	4600	9/10/24 10:20 AM	14000	9/11/24 10:04 AM	5800
9/15/2024	9/18/24 9:30 AM	400	9/18/24 8:30 AM	340	9/18/24 10:15 AM	350
9/22/2024	9/26/24 8:55 AM	340	9/26/24 8:10 AM	220	9/26/24 9:40 AM	160
10/20/2024	10/24/24 9:01 AM	240	10/24/24 8:20 AM	230	10/24/24 9:41 AM	230
10/27/2024	11/1/24 9:50 AM	450	11/1/24 9:10 AM	620	11/1/24 10:45 AM	360
11/3/2024	11/7/24 9:00 AM	340	11/7/24 8:10 AM	250	11/7/24 9:52 AM	150
11/10/2024	11/14/24 8:59 AM	170	11/14/24 8:18 AM	180	11/14/24 9:29 AM	130
11/17/2024	11/21/24 9:00 AM	150	11/21/24 8:30 AM	120	11/21/24 10:00 AM	75

Table A.5. *E. coli* (MPN/100 mL) Concentrations Observed at Priority 3 Sites in Riverside and San Bernardino Counties during the 2024 Dry Season

Week Beginning Date	Goldenstar Creek (P3-RC1)		Santa Ana River Reach 3 (P3-SBC1)		San Timoteo Creek Reach 3 (P3-RC3)		San Timoteo Creek Reach 1A (P3-SBC2)		San Timoteo Creek Reach 2 (P3-SBC3)		Warm Creek (P3-SBC4)	
	Sampled Date	*E. coli*	Sampled Date	*E. coli*	Sampled Date	*E. coli*	Sampled Date	*E. coli*	Sampled Date	*E. coli*	Sampled Date	*E. coli*
7/21/2024	7/26/24 10:45 AM	1200	--	--	7/26/24 9:20 AM	2600	7/26/24 8:15 AM	2300	--	--	7/26/24 7:30 AM	340
7/28/2024	8/2/24 11:40 AM	200	--	--	8/2/24 9:25 AM	2000	8/2/24 8:05 AM	5800	8/2/24 8:45 AM	13000	8/2/24 7:30 AM	13000
8/4/2024	8/7/24 10:50 AM	2100	--	--	8/9/24 9:14 AM	1500	8/9/24 8:19 AM	2900	--	--	8/9/24 7:38 AM	240
8/11/2024	8/14/24 10:32 AM	660	--	--	8/16/24 8:55 AM	390	8/16/24 7:55 AM	4600	8/16/24 8:30 AM	8200	8/16/24 7:30 AM	600
8/18/2024	8/21/24 11:25 AM	300	--	--	8/23/24 9:50 AM	1500	8/23/24 8:11 AM	1400	--	--	8/23/24 7:37 AM	160
9/1/2024	--	--	9/5/2024 10:50	75	--	--	--	--	--	--	--	--
9/8/2024	--	--	9/11/24 9:32 AM	770	--	--	--	--	--	--	--	
9/15/2024	--	--	9/17/24 12:20 PM	310	--	--	--	--	--	--	--	--
	--	--	9/18/24 11:00 AM	85	--	--	--	--	--	--	--	--
9/22/2024	--	--	9/26/24 10:20 AM	74	--	--	--	--	--	--	--	--

Table A.6. *E. coli* (MPN/100 mL) Concentrations Observed at Priority 3 Sites in Orange County during the 2024 Dry Season

Week Beginning Date	**Bolsa Chica Channel (P3-OC1)**		**Serrano Creek (P3-OC11)**	
	Sampled Date	*E. coli*	Sampled Date	*E. coli*
7/21/2024	7/24/24 9:53 AM	249	7/24/24 8:52 AM	443
7/28/2024	7/31/24 9:51 AM	41	7/31/24 8:44 AM	933
8/4/2024	8/8/24 9:40 AM	86	8/8/24 8:30 AM	4352
8/11/2024	8/15/24 9:48 AM	31	8/15/24 8:40 AM	1046
8/18/2024	8/21/24 9:19 AM	63	8/21/24 8:10 AM	1046

Table A.7. Total Suspended Solids (mg/L) Concentrations Observed at Priority 1 Sites (P1-1, P1-2, P1-3) during the 2024 Dry Season

Week Beginning Date	Canyon Lake (P1-1)		Lake Elsinore (P1-2)		Lake Perris (P1-3)	
	Sampled Date	TSS	Sampled Date	TSS	Sampled Date	TSS
5/12/2024	5/15/24 10:35 AM	5	5/15/24 9:50 AM	44	5/15/24 11:48 AM	9
5/19/2024	5/22/24 9:45 AM	6	5/22/24 8:55 AM	3	5/22/24 10:36 AM	14
5/26/2024	5/29/24 9:45 AM	3	5/29/24 9:10 AM	30	5/29/24 11:00 AM	34
6/2/2024	6/6/24 9:10 AM	5	6/6/24 8:29 AM	17	6/6/24 10:02 AM	28
6/9/2024	6/12/24 9:40 AM	4	6/12/24 9:07 AM	27	6/12/24 10:40 AM	19
6/16/2024	6/20/24 9:07 AM	4	6/20/24 8:28 AM	110	6/20/24 9:57 AM	20
6/23/2024	6/25/24 9:05 AM	4	6/26/24 8:21 AM	42	6/26/24 9:53 AM	16
6/30/2024	7/3/24 9:44 AM	2	7/3/24 9:00 AM	8	7/3/24 10:44 AM	10
7/7/2024	7/10/24 9:50 AM	4	7/10/24 9:04 AM	7	7/10/24 10:47 AM	8
7/14/2024	7/17/24 10:32 AM	5	7/17/24 9:41 AM	5	7/17/24 11:35 AM	10
7/21/2024	7/24/24 9:50 AM	5	7/24/24 9:10 AM	11	7/24/24 10:50 AM	9
7/28/2024	7/31/24 9:50 AM	4	7/31/24 8:55 AM	11	7/31/24 10:53 AM	9
8/4/2024	8/7/24 8:39 AM	4	8/7/24 8:03 AM	24	8/7/24 9:31 AM	20
8/11/2024	8/14/24 9:01 AM	4	8/14/24 8:24 AM	17	8/14/24 9:47 AM	4
8/18/2024	8/21/24 9:35 AM	4	8/21/24 8:55 AM	23	8/21/24 10:30 AM	7
8/25/2024	8/28/24 9:36 AM	4	8/28/24 8:53 AM	21	8/28/24 10:25 AM	5
9/1/2024	9/4/24 10:50 AM	5	9/4/24 10:10 AM	29	9/4/24 11:50 AM	5
9/8/2024	9/11/24 7:43 AM	4	9/11/24 7:05 AM	13	9/11/24 8:34 AM	11
9/15/2024	9/17/24 10:00 AM	4	9/17/24 9:15 AM	13	9/17/24 11:00 AM	4
9/22/2024	9/25/24 10:00 AM	3	9/25/24 9:15 AM	11	9/25/24 10:55 AM	7
10/20/2024	10/23/24 9:35 AM	2	10/23/24 8:56 AM	6	10/23/24 10:29 AM	2
10/27/2024	11/1/24 10:30:00 AM	3	11/1/24 9:39:00 AM	7	11/1/24 11:35:00 AM	4
11/3/2024	11/6/24 9:35 AM	3	11/6/24 8:50 AM	8	11/6/24 10:45 AM	20
11/10/2024	11/13/24 9:07 AM	4	11/13/24 8:30 AM	8	11/13/24 9:58 AM	6
11/17/2024	11/20/24 10:05 AM	4	11/20/24 9:20 AM	12	11/20/24 11:10 AM	5

Table A.8. Total Suspended Solids (mg/L) Concentrations Observed at Priority 1 Sites (P1-4, P1-5, P1-6) during the 2024 Dry Season (BDL = below detection limit)

Week Beginning Date	Big Bear Lake (P1-4)		Mill Creek Reach (P1-5)		Lytle Creek (P1-6)	
	Sampled Date	TSS	Sampled Date	TSS	Sampled Date	TSS
5/12/2024	5/14/24 9:55 AM	6	5/14/24 11:30 AM	2	5/14/24 8:10 AM	0.9
5/19/2024	5/21/24 9:58 AM	33	5/21/24 11:34 AM	6	5/21/24 7:51 AM	0.9
5/26/2024	5/28/24 9:30 AM	19	5/28/24 10:45 AM	2	5/28/24 7:45 AM	1
6/2/2024	6/4/24 9:28 AM	8	6/4/24 10:44 AM	2	6/4/24 7:31 AM	0.8
6/9/2024	6/11/24 10:13 AM	16	6/11/24 11:40 AM	1	6/11/24 7:38 AM	BDL
6/16/2024	6/18/24 9:18 AM	22	6/18/24 10:42 AM	BDL	6/18/24 7:18 AM	0.7
6/23/2024	6/25/24 9:06 AM	25	6/25/24 10:24 AM	2	6/25/24 7:17 AM	0.8
6/30/2024	7/2/24 9:56 AM	15	7/2/24 11:21 AM	1	7/2/24 7:57 AM	0.7
7/7/2024	7/9/24 10:00 AM	7	7/9/24 11:31 AM	0.8	7/9/24 7:50 AM	BDL
7/14/2024	7/16/24 9:50 AM	7	7/16/24 11:34 AM	1	7/16/24 7:50 AM	0.5
7/21/2024	7/23/24 9:40 AM	22	7/23/24 11:05 AM	11	7/23/24 7:30 AM	0.6
7/28/2024	7/30/24 9:15 AM	7	7/30/24 10:32 AM	0.5	7/30/24 7:30 AM	BDL
8/4/2024	8/6/24 9:19 AM	20	8/6/24 10:36 AM	0.7	8/6/24 7:27 AM	3
8/11/2024	8/13/24 10:39 AM	73	8/13/24 11:45 AM	0.7	8/15/24 2:10 PM	4
8/18/2024	8/20/24 10:40 AM	12	8/20/24 11:50 AM	0.5	8/20/24 7:30 AM	0.7
8/25/2024	8/27/24 9:40 AM	8	8/27/24 11:08 AM	BDL	8/27/24 7:25 AM	0.5
9/1/2024	9/3/24 9:50 AM	14	9/3/24 11:15 AM	0.5	9/3/24 7:50 AM	0.5
9/8/2024	--	--	--	--	9/10/24 6:38 AM	0.5
9/15/2024	9/19/24 9:45 AM	BDL	9/19/24 11:00 AM	14	9/19/24 7:20 AM	BDL
9/22/2024	9/24/24 9:35 AM	9	9/24/24 10:55 AM	BDL	9/24/24 7:35 AM	2
	9/27/24 8:22 AM	16	9/27/24 9:50 AM	BDL	--	--
10/20/2024	10/22/24 9:38 AM	5	10/22/24 10:49 AM	0.7	10/22/24 7:21 AM	3
10/27/2024	11/1/24 9:55:00 AM	5	11/1/24 11:20:00 AM	BDL	11/1/24 7:57:00 AM	3
11/3/2024	11/5/24 9:30 AM	7	11/5/24 1:00 AM	0.5	11/5/24 7:30 AM	2
11/10/2024	11/12/24 9:02 AM	6	11/12/24 10:15 AM	0.6	11/12/24 7:14 AM	BDL
11/17/2024	11/19/24 9:50 AM	4	11/19/24 11:00 AM	BDL	11/19/24 7:40 AM	BDL

Table A.9. Total Suspended Solids (mg/L) Concentrations Observed at Priority 2 Sites (WW-C3, WW-C7, WW-M6) during the 2024 Dry Season

Week Beginning Date	Prado Park Lake Outlet (WW-C3)		Chino Creek @ Central Avenue (WW-C7)		Mill-Cucamonga Creek Below Wetlands (WW-M6)	
	Sampled Date	TSS	Sampled Date	TSS	Sampled Date	TSS
5/12/2024	5/15/24 8:20 AM	13	5/15/24 7:30 AM	2	5/16/24 7:30 AM	5
5/19/2024	5/22/24 7:49 AM	19	5/22/24 7:10 AM	2	5/23/24 7:15 AM	5
5/26/2024	5/29/24 7:50 AM	22	5/29/24 7:15 AM	4	5/30/24 7:30 AM	4
6/2/2024	6/6/24 7:25 AM	25	6/6/24 6:55 AM	5	6/6/24 7:41 AM	3
6/9/2024	6/12/24 7:45 AM	21	6/12/24 7:10 AM	3	6/13/24 7:49 AM	9
6/16/2024	6/20/24 7:23 AM	14	6/20/24 6:52 AM	6	6/21/24 6:41 AM	6
6/23/2024	6/26/24 7:11 AM	16	6/26/24 6:42 AM	4	6/27/24 7:45 AM	7
6/30/2024	7/3/24 7:45 AM	8	7/3/24 7:05 AM	4	7/5/24 7:21 AM	10
7/7/2024	7/10/24 7:40 AM	13	7/10/24 6:58 AM	5	7/11/24 7:15 AM	7
7/14/2024	7/17/24 8:15 AM	19	7/17/24 7:30 AM	3	7/18/24 7:30 AM	8
7/21/2024	7/24/24 7:50 AM	16	7/24/24 7:00 AM	4	7/25/24 7:17 AM	8
7/28/2024	7/31/24 7:40 AM	16	7/31/24 7:02 AM	4	--	--
8/4/2024	8/7/24 7:58 AM	18	8/7/24 6:30 AM	6	8/8/24 6:50 AM	8
8/11/2024	8/14/24 7:16 AM	16	8/14/24 6:45 AM	4	8/15/24 7:01 AM	8
8/18/2024	8/22/24 6:50 AM	14	8/21/24 7:10 AM	3	8/22/24 7:40 AM	10
8/25/2024	8/28/24 7:37 AM	16	8/28/24 7:05 AM	6	8/29/24 7:18 AM	11
9/1/2024	9/4/24 7:45 AM	17	9/4/24 7:05 AM	5	9/4/24 8:30 AM	10
	--	--	--	--	9/5/24 7:20 AM	8
9/8/2024	9/10/24 8:45 AM	13	9/10/24 8:10 AM	2	9/10/24 9:25 AM	4
9/15/2024	9/17/24 8:00 AM	16	9/17/24 7:15 AM	3	9/18/24 7:25 AM	23
9/22/2024	9/25/24 7:55 AM	17	9/25/24 7:10 AM	1	9/26/24 7:15 AM	6
10/20/2024	10/23/24 7:42 AM	14	10/23/24 7:14 AM	3	10/24/24 7:31 AM	12
10/27/2024	11/1/24 8:48:00 AM	15	11/1/24 7:50:00 AM	9	11/1/24 8:00:00 AM	5
11/3/2024	11/6/24 7:35 AM	22	11/6/24 7:05 AM	7	11/7/24 7:15 AM	4
11/10/2024	11/13/24 7:24 AM	17	11/13/24 6:57 AM	8	11/14/24 7:27 AM	7
11/17/2024	11/20/24 8:00 AM	25	11/20/24 7:20 AM	8	11/21/24 7:30 AM	25

Table A.10. Total Suspended Solids (mg/L) Concentrations Observed at Priority 2 Sites (WW-S1, WW-S4, WW-MISSION) during the 2024 Dry Season

Week Beginning Date	SAR @ MWD Crossing (WW-S1)		SAR @ Pedley Avenue (WW-S4)		SAR @ Mission (WW-MISSION)	
	Sampled Date	TSS	Sampled Date	TSS	Sampled Date	TSS
5/12/2024	5/16/24 9:30 AM	42	5/16/24 8:35 AM	39	5/16/24 10:18 AM	96
5/19/2024	5/23/24 9:13 AM	32	5/23/24 8:30 AM	35	5/23/24 9:55 AM	58
5/26/2024	5/30/24 9:55 AM	17	5/30/24 9:00 AM	14	5/30/24 10:40 AM	20
6/2/2024	6/6/24 9:40 AM	9	6/6/24 8:55 AM	17	6/6/24 10:32 AM	6
6/9/2024	6/13/24 9:26 AM	9	6/13/24 8:30 AM	9	6/13/24 10:10 AM	8
6/16/2024	6/21/24 8:36 AM	8	6/21/24 7:59 AM	5	6/21/24 9:10 AM	8
6/23/2024	6/27/24 9:45 AM	7	6/27/24 8:50 AM	9	6/27/24 10:45 AM	10
6/30/2024	7/5/24 9:00 AM	9	7/5/24 8:19 AM	8	7/5/24 9:43 AM	12
7/7/2024	7/11/24 9:20 AM	6	7/11/24 8:20 AM	5	7/11/24 10:10 AM	16
7/14/2024	7/18/24 9:30 AM	6	7/18/24 8:35 AM	6	7/18/24 10:23 AM	14
7/21/2024	7/25/24 8:55 AM	11	7/25/24 8:10 AM	8	7/25/24 10:00 AM	11
7/28/2024	8/1/24 8:35 AM	6	8/1/24 7:45 AM	6	8/1/24 9:35 AM	16
8/4/2024	8/8/24 8:17 AM	17	8/8/24 7:37 AM	2	8/8/24 8:53 AM	6
8/11/2024	8/15/24 8:38 AM	3	8/15/24 7:58 AM	5	8/15/24 9:12 AM	8
8/18/2024	8/22/24 9:33 AM	5	8/22/24 8:52 AM	4	8/22/245 10:10 AM	14
8/25/2024	8/29/24 9:25 AM	3	8/29/24 8:51 AM	6	8/29/24 9:57 AM	10
9/1/2024	9/5/24 9:18 AM	8	9/5/24 8:45 AM	6	9/4/24 9:45 AM	22
9/8/2024	9/11/24 10:42 AM	9	9/10/24 10:20 AM	18	9/11/24 10:04 AM	9
9/15/2024	9/18/24 9:30 AM	6	9/18/24 8:30 AM	10	9/18/24 10:15 AM	11
9/22/2024	9/26/24 8:55 AM	8	9/26/24 8:10 AM	13	9/26/24 9:40 AM	12
10/20/2024	10/24/24 9:01 AM	4	10/24/24 8:20 AM	7	10/24/24 9:41 AM	7
10/27/2024	11/1/24 9:50:00 AM	20	11/1/24 9:10:00 AM	13	11/1/24 10:45:00 AM	29
11/3/2024	11/7/24 9:00 AM	4	11/7/24 8:10 AM	6	11/7/24 9:52 AM	11
11/10/2024	11/14/24 8:59 AM	3	11/14/24 8:18 AM	4	11/14/24 9:29 AM	7
11/17/2024	11/21/24 9:00 AM	10	11/21/24 8:30 AM	6	11/21/24 10:00 AM	11

Table A.11. Total Suspended Solids (mg/L) Concentrations Observed at Priority 3 Sites in Riverside and San Bernardino Counties during the 2024 Dry Season

Week Beginning Date	Goldenstar Creek (P3-RC1)		San Timoteo Creek Reach 3 (P3-RC3)		Santa Ana River Reach 3 (P3-SBC1)		San Timoteo Creek Reach 1A (P3-SBC2)		San Timoteo Creek Reach 2 (P3-SBC3)		Warm Creek (P3-SBC4)	
	Sampled Date	TSS	Sampled Date	TSS	Sampled Date	TSS	Sampled Date	TSS	Sampled Date	TSS	Sampled Date	TSS
7/21/2024	7/26/24 10:45 AM	2	7/26/24 9:20 AM	110	--	--	7/26/24 8:15 AM	4	--	--	7/26/24 7:30 AM	5
7/28/2024	8/2/24 11:40 AM	1	8/2/24 9:25 AM	43	--	--	8/2/24 8:05 AM	17	8/2/24 8:45 AM	180	8/2/24 7:30 AM	8
8/4/2024	8/7/24 10:50 AM	5	8/9/24 9:14 AM	150	--	--	8/9/24 8:19 AM	2	--	--	8/9/24 7:38 AM	7
8/11/2024	8/14/24 10:32 AM	2	8/16/24 8:55 AM	250	--	--	8/16/24 7:55 AM	5	8/16/24 8:30 AM	51	8/16/24 7:30 AM	4
8/18/2024	8/21/24 11:25 AM	1	8/23/24 9:50 AM	120	--	--	8/23/24 8:11 AM	2	--	--	8/23/24 7:37 AM	6
9/1/2024	--	--	--	--	9/5/24 10:50 AM	2	--	--	--	--	--	--
	--	--	--	--	9/11/24 9:32 AM	13	--	--	--	--	--	--
9/15/2024	--	--	--	--	9/17/24 12:20 PM	1	--	--	--	--	--	--
	--	--	--	--	9/18/24 11:00 AM	2	--	--	--	--	--	--
9/22/2024	--	--	--	--	9/26/24 10:20 AM	3	--	--	--	--	--	--

Table A.12. Total Suspended Solids (mg/L) Concentrations Observed at Priority 3 Sites in Orange County during the 2024 Dry Season

Week Beginning Date	Bolsa Chica Channel (P3-OC1)		Serrano Creek (P3-OC11)	
	Sampled Date	TSS	Sampled Date	TSS
7/21/2024	7/24/24 9:53 AM	5.5	7/24/24 8:52 AM	43
7/28/2024	7/31/24 9:51 AM	5.8	7/31/24 8:44 AM	16
8/4/2024	8/8/24 9:40 AM	36.1	8/8/24 8:30 AM	28
8/11/2024	8/15/24 9:48 AM	5.6	8/15/24 8:40 AM	11
8/18/2024	8/21/24 9:19 AM	5.3	8/21/24 8:10 AM	22

Table A.13. Dissolved Oxygen (mg/L) Concentrations Observed at Priority 1 Sites (P1-1, P1-2, P1-3) during the 2024 Dry Season

Week Beginning Date	Canyon Lake (P1-1)		Lake Elsinore (P1-2)		Lake Perris (P1-3)	
	Sampled Date	Dissolved Oxygen	Sampled Date	Dissolved Oxygen	Sampled Date	Dissolved Oxygen
5/12/2024	5/15/24 10:35 AM	9.9	5/15/24 9:50 AM	15	5/15/24 11:48 AM	9.7
5/19/2024	5/22/24 9:45 AM	10.3	5/22/24 8:55 AM	7.8	5/22/24 10:36 AM	9.5
5/26/2024	5/29/24 9:45 AM	10.1	5/29/24 9:10 AM	5.8	5/29/24 11:00 AM	10.3
6/2/2024	6/6/24 9:10 AM	9.9	6/6/24 8:29 AM	12.5	6/6/24 10:02 AM	10.5
6/9/2024	6/12/24 9:40 AM	9.9	6/12/24 9:07 AM	6.6	6/12/24 10:40 AM	11.4
6/16/2024	6/20/24 9:07 AM	10.5	6/20/24 8:28 AM	10.8	6/20/24 9:57 AM	8.5
6/23/2024	6/25/24 9:05 AM	10.5	6/26/24 8:21 AM	11.3	6/26/24 9:53 AM	8
6/30/2024	7/3/24 9:44 AM	9.3	7/3/24 9:00 AM	12.2	7/3/24 10:44 AM	8.4
7/7/2024	7/10/24 9:50 AM	10.6	7/10/24 9:04 AM	7.2	7/10/24 10:47 AM	8.2
7/14/2024	7/17/24 10:32 AM	10.8	7/17/24 9:41 AM	5.3	7/17/24 11:35 AM	8.1
7/21/2024	7/24/24 9:50 AM	9.4	7/24/24 9:10 AM	8.5	7/24/24 10:50 AM	8.9
7/28/2024	7/31/24 9:50 AM	12.4	7/31/24 8:55 AM	7.3	7/31/24 10:53 AM	7.3
8/4/2024	8/7/24 8:39 AM	9.3	8/7/24 8:03 AM	11.3	8/7/24 9:31 AM	7.8
8/11/2024	8/14/24 9:01 AM	7.9	8/14/24 8:24 AM	6.1	8/14/24 9:47 AM	7.6
8/18/2024	8/21/24 9:35 AM	8	8/21/24 8:55 AM	8.6	8/21/24 10:30 AM	7.8
8/25/2024	8/28/24 9:36 AM	8.4	8/28/24 8:53 AM	10.3	8/28/24 10:25 AM	7.4
9/1/2024	9/4/24 10:50 AM	9	9/4/24 10:10 AM	9.2	9/4/24 11:50 AM	7.7
9/8/2024	9/11/24 7:43 AM	7.8	9/11/24 7:05 AM	7.3	9/11/24 8:34 AM	7.4
9/15/2024	9/17/24 10:00 AM	7.6	9/17/24 9:15 AM	7.4	9/17/24 11:00 AM	7.2
9/22/2024	9/25/24 10:00 AM	8.3	9/25/24 9:15 AM	6.6	9/25/24 10:55 AM	8.1
10/20/2024	10/23/24 9:35 AM	6	10/23/24 8:56 AM	4.1	10/23/24 10:29 AM	9.1
10/27/2024	11/1/24 10:30 AM	5.7	11/1/24 9:39 AM	6.7	11/1/24 11:35 AM	8.3
11/3/2024	11/6/24 9:35 AM	2.3	11/6/24 8:50 AM	7.1	11/6/24 10:45 AM	8.6
11/10/2024	11/13/24 9:07 AM	2.4	11/13/24 8:30 AM	8.2	11/13/24 9:58 AM	8.7
11/17/2024	11/20/24 10:05 AM	1.6	11/20/24 9:20 AM	10.6	11/20/24 11:10 AM	10

Table A.14. Dissolved Oxygen (mg/L) Concentrations Observed at Priority 1 Sites (P1-4, P1-5, P1-6) during the 2024 Dry Season

	Big Bear Lake (P1-4)		Mill Creek Reach 2 (P1-5)		Lytle Creek (P1-6)	
Week Beginning Date	Sampled Date	Dissolved Oxygen	Sampled Date	Dissolved Oxygen	Sampled Date	Dissolved Oxygen
5/12/2024	5/14/24 9:55 AM	8.6	5/14/25 11:30 AM	9	5/14/24 8:10 AM	9.8
5/19/2024	5/21/24 9:58 AM	7.9	5/21/24 11:34 AM	9.3	5/21/24 7:51 AM	9.8
5/26/2024	5/28/24 9:30 AM	6.8	5/28/24 10:45 AM	9.2	5/28/24 7:45 AM	9.7
6/2/2024	6/4/24 9:28 AM	7.2	6/4/2410:44:00 AM	8.9	6/4/24 7:31 AM	9.7
6/9/2024	6/11/24 10:13 AM	7.9	6/11/24 11:40 AM	8.7	6/11/24 7:38 AM	9.7
6/16/2024	6/18/24 9:18 AM	8	6/18/24 10:42 AM	8.9	6/18/24 7:18 AM	9.7
6/23/2024	6/25/24 9:06 AM	8.1	6/25/24 10:24 AM	8.5	6/25/24 7:17 AM	9.4
6/30/2024	7/2/24 9:56 AM	7.3	7/2/24 11:21 AM	8.6	7/2/24 7:57 AM	9.7
7/7/2024	7/9/24 10:00 AM	7.5	7/9/24 11:31 AM	8.4	7/9/24 7:50 AM	9.5
7/14/2024	7/16/24 9:50 AM	9.1	7/16/24 11:34 AM	8.3	7/16/24 7:50 AM	9.4
7/21/2024	7/23/24 9:40 AM	7.3	7/23/24 11:05 AM	8.7	7/23/24 7:30 AM	8.3
7/28/2024	7/30/24 9:15 AM	7.3	7/30/24 10:32 AM	8.7	7/30/24 7:30 AM	9.8
8/4/2024	8/6/24 9:19 AM	7.1	8/6/24 10:36 AM	8.3	8/6/24 7:27 AM	9.4
8/11/2024	8/13/24 10:39 AM	7.6	8/13/24 11:45 AM	8.2	8/15/24 2:10 PM	9.3
8/18/2024	8/20/24 10:40 AM	8.2	8/20/24 11:50 AM	8.1	8/20/24 7:30 AM	9.2
8/25/2024	8/27/24 9:40 AM	7.7	8/27/24 11:08 AM	8.5	8/27/24 7:25 AM	9.4
9/1/2024	9/3/24 9:50 AM	7.1	9/3/24 11:15 AM	8.2	9/3/24 7:50 AM	9.2
9/8/2024	--	--	--	--	9/10/24 6:38 AM	9.2
9/15/2024	9/19/24 9:45 AM	8.1	9/19/24 11:00 AM	8.7	9/19/24 7:20 AM	9.4
9/22/2024	9/24/24 9:35 AM	7.4	9/24/24 10:55 AM	8.4	9/24/24 7:35 AM	9.3
	9/27/24 8:22 AM	7.5	9/27/24 9:50 AM	8.7	--	--
10/20/2024	10/22/24 9:38 AM	10.2	10/22/24 10:49 AM	9.4	10/22/24 7:21 AM	9.7
10/27/2024	11/1/24 9:55 AM	9.8	11/1/24 11:20 AM	9.8	11/1/24 7:57 AM	10.1
11/3/2024	11/5/24 9:30 AM	9.3	11/5/24 1:00 AM	9.4	11/5/24 7:30 AM	9.8
11/10/2024	11/12/24 9:02 AM	9.5	11/12/24 10:15 AM	9.9	11/12/24 7:14 AM	9.8
11/17/2024	11/19/24 9:50 AM	9.3	11/19/24 11:00 AM	9.8	11/19/24 7:40 AM	9.9

Table A.15. Dissolved Oxygen (mg/L) Concentrations Observed at Priority 2 Sites (WW-C3, WW-C7, WW-M6) during the 2024 Dry Season

Week Beginning Date	Prado Park Lake Outlet (WW-C3)		Chino Creek @ Central Avenue (WW-C7)		Mill-Cucamonga Creek Below Wetlands (WW-M6)	
	Sampled Date	Dissolved Oxygen	Sampled Date	Dissolved Oxygen	Sampled Date	Dissolved Oxygen
5/12/2024	5/15/24 8:20 AM	8.1	5/15/24 7:30 AM	7	5/16/24 7:30 AM	6.3
5/19/2024	5/22/24 7:49 AM	9.2	5/22/24 7:10 AM	7.4	5/23/24 7:15 AM	7.0
5/26/2024	5/29/24 7:50 AM	8.7	5/29/24 7:15 AM	6.9	5/30/24 7:30 AM	5.9
6/2/2024	6/6/24 7:25 AM	10.2	6/6/24 6:55 AM	7.2	6/6/24 7:41 AM	5.7
6/9/2024	6/12/24 7:45 AM	9.7	6/12/24 7:10 AM	6.6	6/13/24 7:49 AM	5.7
6/16/2024	6/20/24 7:23 AM	7.6	6/20/24 6:52 AM	6.8	6/21/24 6:41 AM	4.6
6/23/2024	6/26/24 7:11 AM	7.9	6/26/24 6:42 AM	6.6	6/27/24 7:45 AM	5.3
6/30/2024	7/3/24 7:45 AM	6.8	7/3/24 7:05 AM	6	7/5/24 7:21 AM	4.7
7/7/2024	7/10/24 7:40 AM	7.3	7/10/24 6:58 AM	5.7	7/11/24 7:15 AM	4.0
7/14/2024	7/17/24 8:15 AM	8.1	7/17/24 7:30 AM	6.4	7/18/24 7:30 AM	4.5
7/21/2024	7/24/24 7:50 AM	10.3	7/24/24 7:00 AM	10.5	7/25/24 7:17 AM	8.4
7/28/2024	7/31/24 7:40 AM	8.5	7/31/24 7:02 AM	6.4	--	--
8/4/2024	8/7/24 7:58 AM	7.1	8/7/24 6:30 AM	5	8/8/24 6:50 AM	4.1
8/11/2024	8/14/24 7:16 AM	6.5	8/14/24 6:45 AM	5.3	8/15/24 7:01 AM	3.5
8/18/2024	8/22/24 6:50 AM	6.2	8/21/24 7:10 AM	5.5	8/22/24 7:40 AM	5.1
8/25/2024	8/28/24 7:37 AM	6.8	8/28/24 7:05 AM	6.3	8/29/24 7:18 AM	5.3
9/1/2024	9/4/24 7:45 AM	7.1	9/4/24 7:05 AM	5.9	9/4/24 8:30 AM	5.6
	--	--	--	--	9/5/24 7:20 AM	8.7
9/8/2024	9/10/24 8:45 AM	7.6	9/10/24 8:10 AM	7.1	9/10/24 9:25 AM	8.4
9/15/2024	9/17/24 8:00 AM	7.9	9/17/24 7:15 AM	7.2	9/18/24 7:25 AM	7.6
9/22/2024	9/25/24 7:55 AM	7.6	9/25/24 7:10 AM	7.6	9/26/24 7:15 AM	6.3
10/20/2024	10/23/24 7:42 AM	8.7	10/23/24 7:14 AM	7.1	10/24/24 7:31 AM	6.6
10/27/2024	11/1/24 8:48 AM	7.8	11/1/24 7:50 AM	6.8	11/1/24 8:00 AM	6.8
11/3/2024	11/6/24 7:35 AM	9.9	11/6/24 7:05 AM	7.3	11/7/24 7:15 AM	6.7
11/10/2024	11/13/24 7:24 AM	8.7	11/13/24 6:57 AM	7.6	11/14/24 7:27 AM	6.9
11/17/2024	11/20/24 8:00 AM	12.1	11/20/24 7:20 AM	7.5	11/21/24 7:30 AM	8.3

Table A.16. Dissolved Oxygen (mg/L) Concentrations Observed at Priority 2 Sites (WW-S1, WW-S4, WW-MISSION) during the 2024 Dry Season

Week Beginning Date	SAR @ MWD Crossing (WW-S1)		SAR @ Pedley Avenue (WW-S4)		SAR @ Mission (WW-MISSION)	
	Sampled Date	Dissolved Oxygen	Sampled Date	Dissolved Oxygen	Sampled Date	Dissolved Oxygen
5/12/2024	5/16/24 9:30 AM	8.7	5/16/24 8:35 AM	8.6	5/16/24 10:18 AM	8.8
5/19/2024	5/23/24 9:13 AM	8.9	5/23/24 8:30 AM	8.6	5/23/24 9:55 AM	8.8
5/26/2024	5/30/24 9:55 AM	8.4	5/30/24 9:00 AM	8.4	5/30/24 10:40 AM	8.0
6/2/2024	6/6/24 9:40 AM	8.3	6/6/24 8:55 AM	8.1	6/6/24 10:32 AM	7.7
6/9/2024	6/13/24 9:26 AM	8.7	6/13/24 8:30 AM	8.2	6/13/24 10:10 AM	8.6
6/16/2024	6/21/24 8:36 AM	8.6	6/21/24 7:59 AM	8.5	6/21/24 9:10 AM	8.4
6/23/2024	6/27/24 9:45 AM	8.3	6/27/24 8:50 AM	8.0	6/27/24 10:45 AM	7.6
6/30/2024	7/5/24 9:00 AM	8.5	7/5/24 8:19 AM	8.2	7/5/24 9:43 AM	7.9
7/7/2024	7/11/24 9:20 AM	8.3	7/11/24 8:20 AM	7.9	7/11/24 10:10 AM	7.7
7/14/2024	7/18/24 9:30 AM	8.3	7/18/24 8:35 AM	7.9	7/18/24 10:23 AM	7.8
7/21/2024	7/25/24 8:55 AM	8.3	7/25/24 8:10 AM	8.8	7/25/24 10:00 AM	8.5
7/28/2024	8/1/24 8:35 AM	8.5	8/1/24 7:45 AM	7.9	8/1/24 9:35 AM	8.2
8/4/2024	8/8/24 8:17 AM	8.1	8/8/24 7:37 AM	7.9	8/8/24 8:53 AM	8.0
8/11/2024	8/15/24 8:38 AM	8.1	8/15/24 7:58 AM	8.0	8/15/24 9:12 AM	8.2
8/18/2024	8/22/24 9:33 AM	8.5	8/22/24 8:52 AM	8.0	8/22/245 10:10 AM	8.0
8/25/2024	8/29/24 9:25 AM	7.9	8/29/24 8:51 AM	8.1	8/29/24 9:57 AM	8.3
9/1/2024	9/5/24 9:18 AM	8.3	9/5/24 8:45 AM	7.8	9/4/24 9:45 AM	8.0
9/8/2024	9/11/24 10:42 AM	7.8	9/10/24 10:20 AM	7.4	9/11/24 10:04 AM	7.5
9/15/2024	9/18/24 9:30 AM	8.7	9/18/24 8:30 AM	8.4	9/18/24 10:15 AM	8.5
9/22/2024	9/26/24 8:55 AM	8.6	9/26/24 8:10 AM	8.0	9/26/24 9:40 AM	8.4
10/20/2024	10/24/24 9:01 AM	9.1	10/24/24 8:20 AM	8.6	10/24/24 9:41 AM	8.8
10/27/2024	11/1/24 9:50 AM	9.1	11/1/24 9:10 AM	8.8	11/1/24 10:45 AM	8.8
11/3/2024	11/7/24 9:00 AM	9.3	11/7/24 8:10 AM	9.3	11/7/24 9:52 AM	9.3
11/10/2024	11/14/24 8:59 AM	9.4	11/14/24 8:18 AM	9.2	11/14/24 9:29 AM	9.3
11/17/2024	11/21/24 9:00 AM	9.7	11/21/24 8:30 AM	9.4	11/21/24 10:00 AM	9.5

Table A.17. Dissolved Oxygen (mg/L) Concentrations Observed at Priority 3 Sites in Riverside and San Bernardino Counties during the 2024 Dry Season

Week Beginning Date	Goldenstar Creek (P3-RC1)		Santa Ana River Reach 3 (P3-SBC1)		San Timoteo Creek Reach 3 (P3-RC3)		San Timoteo Creek Reach 1A (P3-SBC2)		San Timoteo Creek Reach 2 (P3-SBC3)		Warm Creek (P3-SBC4)	
	Sampled Date	DO	Sampled Date	DO	Sampled Date	DO	Sampled Date	DO	Sampled Date	DO	Sampled Date	DO
7/21/2024	7/26/24 10:45 AM	8.3	--	--	7/26/24 9:20 AM	7.9	7/26/24 8:15 AM	10.1	--	--	7/26/24 7:30 AM	8.7
7/28/2024	8/2/24 11:40 AM	8.7	--	--	8/2/24 9:25 AM	8.0	8/2/24 8:05 AM	9.0	8/2/24 8:45 AM	8.6	8/2/24 7:30 AM	8.5
8/4/2024	8/7/24 10:50 AM	8.3	--	--	8/9/24 9:14 AM	8.2	8/9/24 8:19 AM	9.5	--	--	8/9/24 7:38 AM	8.8
8/11/2024	8/14/24 10:32 AM	8.5	--	--	8/16/24 8:55 AM	8.2	8/16/24 7:55 AM	9.0	8/16/24 8:30 AM	8.8	8/16/24 7:30 AM	8.9
8/18/2024	8/21/24 11:25 AM	8.6	--	--	8/23/24 9:50 AM	8.2	8/23/24 8:11 AM	10.0	--	--	8/23/24 7:37 AM	9.0
9/1/2024	--	--	9/5/24 10:50 AM	7.9	--	--	--	--	--	--	--	--
9/8/2024	--	--	9/11/24 9:32 AM	7.5	--	--	--	--	--	--	--	--
9/15/2024	--	--	9/17/24 12:20 PM	7.7	--	--	--	--	--	--	--	--
	--	--	9/18/24 11:00 AM	7.7	--	--	--	--	--	--	--	--
9/22/2024	--	--	9/26/24 10:20 AM	7.5	--	--	--	--	--	--	--	--

Table A.18. Dissolved Oxygen (mg/L) Concentrations Observed at Priority 3 Sites in Orange County during the 2024 Dry Season

Week Beginning Date	Bolsa Chica Channel (P3-OC1)		Serrano Creek (P3-OC11)	
	Sampled Date	Dissolved Oxygen	Sampled Date	Dissolved Oxygen
7/21/2024	7/24/24 9:53 AM	8.9	7/24/24 8:52 AM	9
7/28/2024	7/31/24 9:51 AM	8.0	7/31/24 8:44 AM	11.1
8/4/2024	8/8/24 9:40 AM	9.6	8/8/24 8:30 AM	10.1
8/11/2024	8/15/24 9:48 AM	9.8	8/15/24 8:40 AM	10.2
8/18/2024	8/21/24 9:19 AM	7.2	8/21/24 8:10 AM	9.7

Table A.19. pH (standard units) Observed at Priority 1 Sites (P1-1, P1-2, P1-3) during the 2024 Dry Season

Week Beginning Date	Canyon Lake (P1-1)		Lake Elsinore (P1-2)		Lake Perris (P1-3)	
	Sampled Date	pH	Sampled Date	pH	Sampled Date	pH
5/12/2024	5/15/24 10:35 AM	9.1	5/15/24 9:50 AM	9.1	5/15/24 11:48 AM	8.7
5/19/2024	5/22/24 9:45 AM	9	5/22/24 8:55 AM	8.7	5/22/24 10:36 AM	8.8
5/26/2024	5/29/24 9:45 AM	8.9	5/29/24 9:10 AM	8.5	5/29/24 11:00 AM	8.9
6/2/2024	6/6/24 9:10 AM	9.2	6/6/24 8:29 AM	9.1	6/6/24 10:02 AM	9.3
6/9/2024	6/12/24 9:40 AM	9	6/12/24 9:07 AM	8.8	6/12/24 10:40 AM	9.3
6/16/2024	6/20/24 9:07 AM	9.1	6/20/24 8:28 AM	9	6/20/24 9:57 AM	9.2
6/23/2024	6/25/24 9:05 AM	9	6/26/24 8:21 AM	9	6/26/24 9:53 AM	9
6/30/2024	7/3/24 9:44 AM	9.1	7/3/24 9:00 AM	9.2	7/3/24 10:44 AM	8.9
7/7/2024	7/10/24 9:50 AM	9.2	7/10/24 9:04 AM	9.1	7/10/24 10:47 AM	8.9
7/14/2024	7/17/24 10:32 AM	8.9	7/17/24 9:41 AM	8.9	7/17/24 11:35 AM	8.8
7/21/2024	7/24/24 9:50 AM	9.2	7/24/24 9:10 AM	9.3	7/24/24 10:50 AM	8.9
7/28/2024	7/31/24 9:50 AM	9.1	7/31/24 8:55 AM	9	7/31/24 10:53 AM	8.8
8/4/2024	8/7/24 8:39 AM	9	8/7/24 8:03 AM	9.1	8/7/24 9:31 AM	8.6
8/11/2024	8/14/24 9:01 AM	8.9	8/14/24 8:24 AM	8.9	8/14/24 9:47 AM	8.5
8/18/2024	8/21/24 9:35 AM	9	8/21/24 8:55 AM	8.9	8/21/24 10:30 AM	8.7
8/25/2024	8/28/24 9:36 AM	8.9	8/28/24 8:53 AM	9	8/28/24 10:25 AM	8.3
9/1/2024	9/4/24 10:50 AM	9.2	9/4/24 10:10 AM	9.2	9/4/24 11:50 AM	8.7
9/8/2024	9/11/24 7:43 AM	7.6	9/11/24 7:05 AM	7.4	9/11/24 8:34 AM	7.7
9/15/2024	9/17/24 10:00 AM	7.7	9/17/24 9:15 AM	7.6	9/17/24 11:00 AM	7.5
9/22/2024	9/25/24 10:00 AM	8.6	9/25/24 9:15 AM	8.6	9/25/24 10:55 AM	8.3
10/20/2024	10/23/24 9:35 AM	7.8	10/23/24 8:56 AM	8.5	10/23/24 10:29 AM	8.6
10/27/2024	11/1/24 10:30 AM	7.3	11/1/24 9:39 AM	8.5	11/1/24 11:35 AM	8.1
11/3/2024	11/6/24 9:35 AM	7.4	11/6/24 8:50 AM	8.6	11/6/24 10:45 AM	8.1
11/10/2024	11/13/24 9:07 AM	7.2	11/13/24 8:30 AM	8.6	11/13/24 9:58 AM	8
11/17/2024	11/20/24 10:05 AM	7.3	11/20/24 9:20 AM	8.8	11/20/24 11:10 AM	8.4

Table A.20. pH (standard units) Observed at Priority 1 Sites (P1-4, P1-5, P1-6) during the 2024 Dry Season

Week Beginning Date	Big Bear Lake (P1-4)		Mill Creek Reach 2 (P1-5)		Lytle Creek (P1-6)	
	Sampled Date	pH	Sampled Date	pH	Sampled Date	pH
5/12/2024	5/14/24 9:55 AM	8.4	5/14/24 11:30 AM	7.8	5/14/24 8:10 AM	8
5/19/2024	5/21/24 9:58 AM	8.3	5/21/24 11:34 AM	7.9	5/21/24 7:51 AM	8
5/26/2024	5/28/24 9:30 AM	8.2	5/28/24 10:45 AM	8	5/28/24 7:45 AM	8.2
6/2/2024	6/4/24 9:28 AM	8.4	6/4/24 10:44 AM	8.1	6/4/24 7:31 AM	8.2
6/9/2024	6/11/24 10:13 AM	8.6	6/11/24 11:40 AM	8.1	6/11/24 7:38 AM	8.2
6/16/2024	6/18/24 9:18 AM	8.7	6/18/24 10:42 AM	8	6/18/24 7:18 AM	8.2
6/23/2024	6/25/24 9:06 AM	8.8	6/25/24 10:24 AM	8	6/25/24 7:17 AM	8.1
6/30/2024	7/2/24 9:56 AM	8.7	7/2/24 11:21 AM	8	7/2/24 7:57 AM	8.2
7/7/2024	7/9/24 10:00 AM	8.7	7/9/24 11:31 AM	7.9	7/9/24 7:50 AM	8.2
7/14/2024	7/16/24 9:50 AM	8.7	7/16/24 11:34 AM	8.9	7/16/24 7:50 AM	8.8
7/21/2024	7/23/24 9:40 AM	8.7	7/23/24 11:05 AM	7.7	7/23/24 7:30 AM	7.1
7/28/2024	7/30/24 9:15 AM	9.3	7/30/24 10:32 AM	9.5	7/30/24 7:30 AM	9.6
8/4/2024	8/6/24 9:19 AM	8.8	8/6/24 10:36 AM	8.2	8/6/24 7:27 AM	8.3
8/11/2024	8/13/24 10:39 AM	8.7	8/13/24 11:45 AM	7.9	8/15/24 2:10 PM	8.3
8/18/2024	8/20/24 10:40 AM	8.7	8/20/24 11:50 AM	8.2	8/20/24 7:30 AM	8.7
8/25/2024	8/27/24 9:40 AM	8.7	8/27/24 11:08 AM	8	8/27/24 7:25 AM	8.4
9/1/2024	9/3/24 9:50 AM	8.8	9/3/24 11:15 AM	8	9/3/24 7:50 AM	8.6
9/8/2024	--	--	--	--	9/10/24 6:38 AM	8.4
9/15/2024	9/19/24 9:45 AM	6.3	9/19/24 11:00 AM	6.2	9/19/24 7:20 AM	4.1
9/22/2024	9/24/24 9:35 AM	8.6	9/24/24 10:55 AM	7.9	9/24/24 7:35 AM	8.3
	9/27/24 8:22 AM	8.5	9/27/24 9:50 AM	7.7	--	--
10/20/2024	10/22/24 9:38 AM	9.1	10/22/24 10:49 AM	8.2	10/22/24 7:21 AM	8.3
10/27/2024	11/1/24 9:55 AM	9	11/1/24 11:20 AM	8.2	11/1/24 7:57 AM	8.1
11/3/2024	11/5/24 9:30 AM	9	11/5/24 1:00 AM	8.1	11/5/24 7:30 AM	8.3
11/10/2024	11/12/24 9:02 AM	9.1	11/12/24 10:15 AM	8.1	11/12/24 7:14 AM	8.3
11/17/2024	11/19/24 9:50 AM	8.7	11/19/24 11:00 AM	8.1	11/19/24 7:40 AM	8.4

Table A.21. pH (standard units) Observed at Priority 2 Sites (WW-C3, WW-C7, WW-M6) during the 2024 Dry Season

Week Beginning Date	Prado Park Lake Outlet (WW-C3)		Chino Creek @ Central Avenue (WW-C7)		Mill-Cucamonga Creek Below Wetlands (WW-M6)	
	Sampled Date	pH	Sampled Date	pH	Sampled Date	pH
5/12/2024	5/15/24 8:20 AM	8.5	5/15/24 7:30 AM	7.6	5/16/24 7:30 AM	7.7
5/19/2024	5/22/24 7:49 AM	8.5	5/22/24 7:10 AM	7.8	5/23/24 7:15 AM	7.7
5/26/2024	5/29/24 7:50 AM	8.7	5/29/24 7:15 AM	7.7	5/30/24 7:30 AM	8.5
6/2/2024	6/6/24 7:25 AM	8.9	6/6/24 6:55 AM	7.8	6/6/24 7:41 AM	8
6/9/2024	6/12/24 7:45 AM	9.3	6/12/24 7:10 AM	7.8	6/13/24 7:49 AM	7.7
6/16/2024	6/20/24 7:23 AM	8.5	6/20/24 6:52 AM	7.8	6/21/24 6:41 AM	8.7
6/23/2024	6/26/24 7:11 AM	9	6/26/24 6:42 AM	7.8	6/27/24 7:45 AM	7.7
6/30/2024	7/3/24 7:45 AM	8.7	7/3/24 7:05 AM	7.8	7/5/24 7:21 AM	8.1
7/7/2024	7/10/24 7:40 AM	9	7/10/24 6:58 AM	7.7	7/11/24 7:15 AM	8.4
7/14/2024	7/17/24 8:15 AM	9.5	7/17/24 7:30 AM	7.9	7/18/24 7:30 AM	8.3
7/21/2024	7/24/24 7:50 AM	9.6	7/24/24 7:00 AM	8.8	7/25/24 7:17 AM	8.1
7/28/2024	7/31/24 7:40 AM	9.6	7/31/24 7:02 AM	8.9	--	--
8/4/2024	8/7/24 7:58 AM	9	8/7/24 6:30 AM	7.9	8/8/24 6:50 AM	7.8
8/11/2024	8/14/24 7:16 AM	8.9	8/14/24 6:45 AM	7.9	8/15/24 7:01 AM	8.9
8/18/2024	8/22/24 6:50 AM	8.9	8/21/24 7:10 AM	7.9	8/22/24 7:40 AM	7.7
8/25/2024	8/28/24 7:37 AM	8.9	8/28/24 7:05 AM	8	8/29/24 7:18 AM	7.8
9/1/2024	9/4/24 7:45 AM	9.5	9/4/24 7:05 AM	8	9/4/24 8:30 AM	7.7
	--	--	--	--	9/5/24 7:20 AM	7.7
9/8/2024	9/10/24 8:45 AM	8.2	9/10/24 8:10 AM	7.6	9/10/24 9:25 AM	8.1
9/15/2024	9/17/24 8:00 AM	8.4	9/17/24 7:15 AM	7.6	9/18/24 7:25 AM	7.2
9/22/2024	9/25/24 7:55 AM	8.9	9/25/24 7:10 AM	7.7	9/26/24 7:15 AM	7.5
10/20/2024	10/23/24 7:42 AM	8.9	10/23/24 7:14 AM	7.8	10/24/24 7:31 AM	7.6
10/27/2024	11/1/24 8:48 AM	8.7	11/1/24 7:50 AM	7.4	11/1/24 8:00 AM	8
11/3/2024	11/6/24 7:35 AM	9.1	11/6/24 7:05 AM	7.6	11/7/24 7:15 AM	7.5
11/10/2024	11/13/24 7:24 AM	8.7	11/13/24 6:57 AM	7.7	11/14/24 7:27 AM	7.4
11/17/2024	11/20/24 8:00 AM	9.7	11/20/24 7:20 AM	7.6	11/21/24 7:30 AM	7.9

Table A.22. pH (standard units) Observed at Priority 2 Sites (WW-S1, WW-S4, WW-MISSION) during the 2024 Dry Season

Week Beginning Date	SAR @ MWD Crossing (WW-S1)		SAR @ Pedley Avenue (WW-S4)		SAR @ Mission (WW-MISSION)	
	Sampled Date	pH	Sampled Date	pH	Sampled Date	pH
5/12/2024	5/16/24 9:30 AM	8	5/16/24 8:35 AM	8	5/16/24 10:18 AM	8.2
5/19/2024	5/23/24 9:13 AM	8	5/23/24 8:30 AM	8.1	5/23/24 9:55 AM	8.2
5/26/2024	5/30/24 9:55 AM	8	5/30/24 9:00 AM	8.1	5/30/24 10:40 AM	8.2
6/2/2024	6/6/24 9:40 AM	8.1	6/6/24 8:55 AM	8.2	6/6/24 10:32 AM	8.3
6/9/2024	6/13/24 9:26 AM	8.1	6/13/24 8:30 AM	8.1	6/13/24 10:10 AM	8.3
6/16/2024	6/21/24 8:36 AM	8.1	6/21/24 7:59 AM	8.2	6/21/24 9:10 AM	8.3
6/23/2024	6/27/24 9:45 AM	8.1	6/27/24 8:50 AM	8.2	6/27/24 10:45 AM	8.4
6/30/2024	7/5/24 9:00 AM	8.1	7/5/24 8:19 AM	8.2	7/5/24 9:43 AM	8.3
7/7/2024	7/11/24 9:20 AM	8.2	7/11/24 8:20 AM	8.3	7/11/24 10:10 AM	8.4
7/14/2024	7/18/24 9:30 AM	8.7	7/18/24 8:35 AM	8.6	7/18/24 10:23 AM	8.5
7/21/2024	7/25/24 8:55 AM	8.5	7/25/24 8:10 AM	8.4	7/25/24 10:00 AM	8.8
7/28/2024	8/1/24 8:35 AM	8.3	8/1/24 7:45 AM	8.3	8/1/24 9:35 AM	8.5
8/4/2024	8/8/24 8:17 AM	8.2	8/8/24 7:37 AM	8.2	8/8/24 8:53 AM	8.4
8/11/2024	8/15/24 8:38 AM	8.2	8/15/24 7:58 AM	8.2	8/15/24 9:12 AM	8.4
8/18/2024	8/22/24 9:33 AM	8.3	8/22/24 8:52 AM	8.3	8/22/245 10:10 AM	8.5
8/25/2024	8/29/24 9:25 AM	8.1	8/29/24 8:51 AM	8.2	8/29/24 9:57 AM	8.3
9/1/2024	9/5/24 9:18 AM	8.2	9/5/24 8:45 AM	8.3	9/4/24 9:45 AM	8.4
9/8/2024	9/11/24 10:42 AM	9.3	9/10/24 10:20 AM	8	9/11/24 10:04 AM	9.1
9/15/2024	9/18/24 9:30 AM	7.7	9/18/24 8:30 AM	7.6	9/18/24 10:15 AM	7.5
9/22/2024	9/26/24 8:55 AM	8	9/26/24 8:10 AM	8	9/26/24 9:40 AM	8.2
10/20/2024	10/24/24 9:01 AM	8.1	10/24/24 8:20 AM	8.2	10/24/24 9:41 AM	8.3
10/27/2024	11/1/24 9:50 AM	8.2	11/1/24 9:10 AM	8.3	11/1/24 10:45 AM	8.4
11/3/2024	11/7/24 9:00 AM	8.1	11/7/24 8:10 AM	8.2	11/7/24 9:52 AM	8.3
11/10/2024	11/14/24 8:59 AM	8.2	11/14/24 8:18 AM	8.3	11/14/24 9:29 AM	8.3
11/17/2024	11/21/24 9:00 AM	8	11/21/24 8:30 AM	8.2	11/21/24 10:00 AM	8.3

Table A.23. pH (standard units) Observed at Priority 3 Sites in Riverside and San Bernardino Counties during the 2024 Dry Season

Week Beginning Date	Goldenstar Creek (P3-RC1)		Santa Ana River Reach 3 (P3-SBC1)		San Timoteo Creek Reach 3 (P3-RC3)		San Timoteo Creek Reach 1A (P3-SBC2		San Timoteo Creek Reach 2 (P3-SBC3)		Warm Creek (P3-SBC4)	
	Sampled Date	pH	Sampled Date	pH	Sampled Date	pH	Sampled Date	pH	Sampled Date	pH	Sampled Date	pH
7/21/2024	7/26/24 10:45 AM	8.3	--	--	7/26/24 9:20 AM	8.4	7/26/24 8:15 AM	8.8	--	--	7/26/24 7:30 AM	8.5
7/28/2024	8/2/24 11:40 AM	8.4	--	--	8/2/24 9:25 AM	8.6	8/2/24 8:05 AM	8.6	8/2/24 8:45 AM	8.8	8/2/24 7:30 AM	8.5
8/4/2024	8/7/24 10:50 AM	8.7	--	--	8/9/24 9:14 AM	8.4	8/9/24 8:19 AM	8.7	--	--	8/9/24 7:38 AM	8.5
8/11/2024	8/14/24 10:32 AM	8.5	--	--	8/16/24 8:55 AM	8.4	8/16/24 7:55 AM	8.3	8/16/24 8:30 AM	8.6	8/16/24 7:30 AM	8.3
8/18/2024	8/21/24 11:25 AM	8.6	--	--	8/23/24 9:50 AM	8.5	8/23/24 8:11 AM	8.6	--	--	8/23/24 7:37 AM	8.4
9/1/2024	--	--	9/5/24 10:50 AM	8	--	--	--	--	--	--	--	--
9/8/2024	--	--	9/11/24 9:32 AM	7.8	--	--	--	--	--	--	--	--
9/15/2024	--	--	9/17/24 12:20 PM	7.5	--	--	--	--	--	--	--	--
	--	--	9/18/24 11:00 AM	7.6	--	--	--	--	--	--	--	--
9/22/2024	--	--	9/26/24 10:20 AM	7.6	--	--	--	--	--	--	--	--

Table A.24. pH (standard units) Concentrations Observed at Priority 3 Sites in Orange County during the 2024 Dry Season

Week Beginning Date	Bolsa Chica Channel (P3-OC1)		Serrano Creek (P3-OC11)	
	Sampled Date	pH	Sampled Date	pH
7/21/2024	7/24/24 9:53 AM	7.9	7/24/24 8:52 AM	8.6
7/28/2024	7/31/24 9:51 AM	8	7/31/24 8:44 AM	8.8
8/4/2024	8/8/24 9:40 AM	7.9	8/8/24 8:30 AM	8.8
8/11/2024	8/15/24 9:48 AM	7.9	8/15/24 8:40 AM	8.7
8/18/2024	8/21/24 9:19 AM	7.7	8/21/24 8:10 AM	8.4

Table A.25. Turbidity (NTU) Observed at Priority 1 Sites (P1-1, P1-2, P1-3) during the 2024 Dry Season

Week Beginning Date	Canyon Lake (P1-1)		Lake Elsinore (P1-2)		Lake Perris (P1-3)	
	Sampled Date	Turbidity	Sampled Date	Turbidity	Sampled Date	Turbidity
5/12/2024	5/15/24 10:35 AM	1.1	5/15/24 9:50 AM	26.5	5/15/24 11:48 AM	0.6
5/19/2024	5/22/24 9:45 AM	1.9	5/22/24 8:55 AM	1.9	5/22/24 10:36 AM	9.8
5/26/2024	5/29/24 9:45 AM	0.6	5/29/24 9:10 AM	0.8	5/29/24 11:00 AM	7.3
6/2/2024	6/6/24 9:10 AM	1.3	6/6/24 8:29 AM	4.6	6/6/24 10:02 AM	9
6/9/2024	6/12/24 9:40 AM	1.2	6/12/24 9:07 AM	6.2	6/12/24 10:40 AM	8.7
6/16/2024	6/20/24 9:07 AM	1.4	6/20/24 8:28 AM	8.9	6/20/24 9:57 AM	6.6
6/23/2024	6/25/24 9:05 AM	1.3	6/26/24 8:21 AM	5.8	6/26/24 9:53 AM	1
6/30/2024	7/3/24 9:44 AM	0.7	7/3/24 9:00 AM	2.9	7/3/24 10:44 AM	0.7
7/7/2024	7/10/24 9:50 AM	1.2	7/10/24 9:04 AM	2.6	7/10/24 10:47 AM	1.5
7/14/2024	7/17/24 10:32 AM	1.9	7/17/24 9:41 AM	2.9	7/17/24 11:35 AM	8.3
7/21/2024	7/24/24 9:50 AM	1.1	7/24/24 9:10 AM	6.7	7/24/24 10:50 AM	2.3
7/28/2024	7/31/24 9:50 AM	1.4	7/31/24 8:55 AM	4.8	7/31/24 10:53 AM	5.3
8/4/2024	8/7/24 8:39 AM	0.4	8/7/24 8:03 AM	18.7	8/7/24 9:31 AM	1.9
8/11/2024	8/14/24 9:01 AM	0.4	8/14/24 8:24 AM	18.9	8/14/24 9:47 AM	0.8
8/18/2024	8/21/24 9:35 AM	0.7	8/21/24 8:55 AM	17.4	8/21/24 10:30 AM	2.1
8/25/2024	8/28/24 9:36 AM	0.8	8/28/24 8:53 AM	16	8/28/24 10:25 AM	0.5
9/1/2024	9/4/24 10:50 AM	1.2	9/4/24 10:10 AM	0.1	9/4/24 11:50 AM	0.6
9/8/2024	9/11/24 7:43 AM	1.3	9/11/24 7:05 AM	0.1	9/11/24 8:34 AM	0.8
9/15/2024	9/17/24 10:00 AM	0.2	9/17/24 9:15 AM	0.3	9/17/24 11:00 AM	0.6
9/22/2024	9/25/24 10:00 AM	0.9	9/25/24 9:15 AM	1.2	9/25/24 10:55 AM	1.4
10/20/2024	10/23/24 9:35 AM	0.7	10/23/24 8:56 AM	3.7	10/23/24 10:29 AM	1
10/27/2024	11/1/24 10:30 AM	0.1	11/1/24 9:39 AM	2.3	11/1/24 11:35 AM	0.1
11/3/2024	11/6/24 9:35 AM	2.4	11/6/24 8:50 AM	3	11/6/24 10:45 AM	5.5
11/10/2024	11/13/24 9:07 AM	2.3	11/13/24 8:30 AM	3.8	11/13/24 9:58 AM	3.5
11/17/2024	11/20/24 10:05 AM	3	11/20/24 9:20 AM	4.4	11/20/24 11:10 AM	1

Table A.26. Turbidity (NTU) Observed at Priority 1 Sites (P1-4, P1-5, P1-6) during the 2024 Dry Season

Week Beginning Date	Big Bear Lake (P1-4)		Mill Creek Reach 2 (P1-5)		Lytle Creek (P1-6)	
	Sampled Date	Turbidity	Sampled Date	Turbidity	Sampled Date	Turbidity
5/12/2024	5/14/24 9:55 AM	0.9	5/14/24 11:30 AM	1.3	5/14/24 8:10 AM	2.1
5/19/2024	5/21/24 9:58 AM	6.1	5/21/24 11:34 AM	1.6	5/21/24 7:51 AM	0.2
5/26/2024	5/28/24 9:30 AM	7.6	5/28/24 10:45 AM	0.8	5/28/24 7:45 AM	1.5
6/2/2024	6/4/24 9:28 AM	0.8	6/4/24 10:44 AM	1.5	6/4/24 7:31 AM	1
6/9/2024	6/11/24 10:13 AM	6.8	6/11/24 11:40 AM	0.7	6/11/24 7:38 AM	0.2
6/16/2024	6/18/24 9:18 AM	13.4	6/18/24 10:42 AM	13.1	6/18/24 7:18 AM	1.3
6/23/2024	6/25/24 9:06 AM	10.8	6/25/24 10:24 AM	1	6/25/24 7:17 AM	1
6/30/2024	7/2/24 9:56 AM	3.5	7/2/24 11:21 AM	0.2	7/2/24 7:57 AM	0.1
7/7/2024	7/9/24 10:00 AM	4.7	7/9/24 11:31 AM	0.4	7/9/24 7:50 AM	0.1
7/14/2024	7/16/24 9:50 AM	6.1	7/16/24 11:34 AM	0.2	7/16/24 7:50 AM	0.1
7/21/2024	7/23/24 9:40 AM	5.7	7/23/24 11:05 AM	0.5	7/23/24 7:30 AM	0.7
7/28/2024	7/30/24 9:15 AM	4.8	7/30/24 10:32 AM	0.1	7/30/24 7:30 AM	0.1
8/4/2024	8/6/24 9:19 AM	24.4	8/6/24 10:36 AM	0.1	8/6/24 7:27 AM	0.3
8/11/2024	8/13/24 10:39 AM	31.5	8/13/24 11:45 AM	1.5	8/15/24 2:10 PM	0.5
8/18/2024	8/20/24 10:40 AM	4.69	8/20/24 11:50 AM	0.3	8/20/24 7:30 AM	0.3
8/25/2024	8/27/24 9:40 AM	4	8/27/24 11:08 AM	0.3	8/27/24 7:25 AM	0.3
9/1/2024	9/3/24 9:50 AM	0.9	9/3/24 11:15 AM	0.1	9/3/24 7:50 AM	0.1
9/8/2024	--	--	--	--	9/10/24 6:38 AM	0.1
9/15/2024	9/19/24 9:45 AM	0.5	9/19/24 11:00 AM	0.1	9/19/24 7:20 AM	0.1
9/22/2024	9/24/24 9:35 AM	0.6	9/24/24 10:55 AM	0.1	9/24/24 7:35 AM	0.5
	9/27/24 8:22 AM	0.7	9/27/24 9:50 AM	0.2	--	--
10/20/2024	10/22/24 9:38 AM	2.8	10/22/24 10:49 AM	0.1	10/22/24 7:21 AM	0.2
10/27/2024	11/1/24 9:55 AM	2.4	11/1/24 11:20 AM	0.2	11/1/24 7:57 AM	0.6
11/3/2024	11/5/24 9:30 AM	4.1	11/5/24 1:00 AM	0.1	11/5/24 7:30 AM	0.1
11/10/2024	11/12/24 9:02 AM	2.2	11/12/24 9:02 AM	0.5	11/12/24 7:14 AM	0.2
11/17/2024	11/19/24 9:50 AM	1.7	11/19/24 11:00 AM	0.4	11/19/24 7:40 AM	0.3

Table A.27. Turbidity (NTU) Observed at Priority 2 Sites (WW-C3, WW-C7, WW-M6) during the 2024 Dry Season

Week Beginning Date	Prado Park Lake Outlet (WW-C3)		Chino Creek @ Central Avenue (WW-C7)		Mill-Cucamonga Creek Below Wetlands (WW-M6)	
	Sampled Date	Turbidity	Sampled Date	Turbidity	Sampled Date	Turbidity
5/12/2024	5/15/24 8:20 AM	5.5	5/15/24 7:30 AM	1.7	5/16/24 7:30 AM	0.3
5/19/2024	5/22/24 7:49 AM	8.8	5/22/24 7:10 AM	0.6	5/23/24 7:15 AM	2
5/26/2024	5/29/24 7:50 AM	8.6	5/29/24 7:15 AM	1	5/30/24 7:30 AM	0.2
6/2/2024	6/6/24 7:25 AM	9.3	6/6/24 6:55 AM	0.5	6/6/24 7:41 AM	0.2
6/9/2024	6/12/24 7:45 AM	9.1	6/12/24 7:10 AM	1.7	6/13/24 7:49 AM	3.6
6/16/2024	6/20/24 7:23 AM	4.9	6/20/24 6:52 AM	1.9	6/21/24 6:41 AM	2.4
6/23/2024	6/26/24 7:11 AM	8.4	6/26/24 6:42 AM	1.8	6/27/24 7:45 AM	6.3
6/30/2024	7/3/24 7:45 AM	3.9	7/3/24 7:05 AM	1.9	7/5/24 7:21 AM	3.7
7/7/2024	7/10/24 7:40 AM	4.6	7/10/24 6:58 AM	2.3	7/11/24 7:15 AM	2.5
7/14/2024	7/17/24 8:15 AM	8.3	7/17/24 7:30 AM	1.6	7/18/24 7:30 AM	2.9
7/21/2024	7/24/24 7:50 AM	6.2	7/24/24 7:00 AM	1.1	7/25/24 7:17 AM	2.7
7/28/2024	7/31/24 7:40 AM	7.3	7/31/24 7:02 AM	1.7	NA	NA
8/4/2024	8/7/24 7:58 AM	6.7	8/7/24 6:30 AM	2.5	8/8/24 6:50 AM	6.9
8/11/2024	8/14/24 7:16 AM	5.5	8/14/24 6:45 AM	0.6	8/15/24 7:01 AM	2.4
8/18/2024	8/22/24 6:50 AM	3.6	8/21/24 7:10 AM	1.1	8/22/24 7:40 AM	3.2
8/25/2024	8/28/24 7:37 AM	6.1	8/28/24 7:05 AM	4.2	8/29/24 7:18 AM	6.2
9/1/2024	9/4/24 7:45 AM	0.8	9/4/24 7:05 AM	1.7	9/4/24 8:30 AM	0.3
	--	--	--	--	9/5/24 7:20 AM	0.3
9/8/2024	9/10/24 8:45 AM	0.2	9/10/24 8:10 AM	0.7	9/10/24 9:25 AM	0.4
9/15/2024	9/17/24 8:00 AM	0.6	9/17/24 7:15 AM	1.5	9/18/24 7:25 AM	0.2
9/22/2024	9/25/24 7:55 AM	0.5	9/25/24 7:10 AM	0.5	9/26/24 7:15 AM	0.3
10/20/2024	10/23/24 7:42 AM	7.7	10/23/24 7:14 AM	1	10/24/24 7:31 AM	3.3
10/27/2024	11/1/24 8:48 AM	5.3	11/1/24 7:50 AM	2.9	11/1/24 8:00 AM	2.2
11/3/2024	11/6/24 7:35 AM	10.6	11/6/24 7:05 AM	3	11/7/24 7:15 AM	5
11/10/2024	11/13/24 7:24 AM	7.4	11/13/24 6:57 AM	3.4	11/14/24 7:27 AM	1.8
11/17/2024	11/20/24 8:00 AM	11.8	11/20/24 7:20 AM	3.2	11/21/24 7:30 AM	1.3

Table A.28. Turbidity (NTU) Observed at Priority 2 Sites (WW-S1, WW-S4, WW-MISSION) during the 2024 Dry Season

Week Beginning Date	SAR @ MWD Crossing (WW-S1)		SAR @ Pedley Avenue (WW-S4)		SAR @ Mission (WW-MISSION)	
	Sampled Date	Turbidity	Sampled Date	Turbidity	Sampled Date	Turbidity
5/12/2024	5/16/24 9:30 AM	19.4	5/16/24 8:35 AM	15.5	5/16/24 10:18 AM	49
5/19/2024	5/23/24 9:13 AM	11.7	5/23/24 8:30 AM	21.8	5/23/24 9:55 AM	28.8
5/26/2024	5/30/24 9:55 AM	4.5	5/30/24 9:00 AM	6.2	5/30/24 10:40 AM	4.4
6/2/2024	6/6/24 9:40 AM	0.1	6/6/24 8:55 AM	0.3	6/6/24 10:32 AM	0.5
6/9/2024	6/13/24 9:26 AM	2.6	6/13/24 8:30 AM	3.6	6/13/24 10:10 AM	2.4
6/16/2024	6/21/24 8:36 AM	2.7	6/21/24 7:59 AM	5.1	6/21/24 9:10 AM	3.3
6/23/2024	6/27/24 9:45 AM	3.7	6/27/24 8:50 AM	2.5	6/27/24 10:45 AM	2.4
6/30/2024	7/5/24 9:00 AM	3.5	7/5/24 8:19 AM	3	7/5/24 9:43 AM	7.7
7/7/2024	7/11/24 9:20 AM	4.4	7/11/24 8:20 AM	1.9	7/11/24 10:10 AM	4.6
7/14/2024	7/18/24 9:30 AM	2.9	7/18/24 8:35 AM	1.5	7/18/24 10:23 AM	3.3
7/21/2024	7/25/24 8:55 AM	3.2	7/25/24 8:10 AM	2.1	7/25/24 10:00 AM	3.4
7/28/2024	8/1/24 8:35 AM	3	8/1/24 7:45 AM	2.7	8/1/24 9:35 AM	6.2
8/4/2024	8/8/24 8:17 AM	0.8	8/8/24 7:37 AM	1.8	8/8/24 8:53 AM	6.2
8/11/2024	8/15/24 8:38 AM	1	8/15/24 7:58 AM	8.7	8/15/24 9:12 AM	7.7
8/18/2024	8/22/24 9:33 AM	1.2	8/22/24 8:52 AM	1	8/22/245 10:10 AM	1.9
8/25/2024	8/29/24 9:25 AM	8	8/29/24 8:51 AM	1.3	8/29/24 9:57 AM	3.6
9/1/2024	9/5/24 9:18 AM	0.2	9/5/24 8:45 AM	1.3	9/4/24 9:45 AM	0.4
9/8/2024	9/11/24 10:42 AM	0.4	9/10/24 10:20 AM	0.4	9/11/24 10:04 AM	0.2
9/15/2024	9/18/24 9:30 AM	1.7	9/18/24 8:30 AM	1.5	9/18/24 10:15 AM	0.3
9/22/2024	9/26/24 8:55 AM	0.9	9/26/24 8:10 AM	1.5	9/26/24 9:40 AM	0.6
10/20/2024	10/24/24 9:01 AM	0.8	10/24/24 8:20 AM	3.2	10/24/24 9:41 AM	5.8
10/27/2024	11/1/24 9:50 AM	0.4	11/1/24 9:10 AM	5	11/1/24 10:45 AM	7.2
11/3/2024	11/7/24 9:00 AM	2	11/7/24 8:10 AM	1.8	11/7/24 9:52 AM	3.7
11/10/2024	11/14/24 8:59 AM	2.8	11/14/24 8:18 AM	2.2	11/14/24 9:29 AM	4.1
11/17/2024	11/21/24 9:00 AM	6.6	11/21/24 8:30 AM	3.6	11/21/24 10:00 AM	11.8

Table A.28. Turbidity (NTU) Observed at Priority 3 Sites in Riverside and San Bernardino Counties during the 2024 Dry Season

Week Beginning Date	Goldenstar Creek (P3-RC1)		Santa Ana River Reach 3 (P3-SBC1)		San Timoteo Creek Reach 3 (P3-RC3)		San Timoteo Creek Reach 1A (P3-SBC2		San Timoteo Creek Reach 2 (P3-SBC3)		Warm Creek (P3-SBC4)	
	Sampled Date	Turb	Sampled Date	Turb	Sampled Date	Turb	Sampled Date	Turb	Sampled Date	Turb	Sampled Date	Turb
7/21/2024	7/26/24 10:45 AM	1	--	--	7/26/24 9:20 AM	22.9	7/26/24 8:15 AM	0.8	--	--	7/26/24 7:30 AM	1.2
7/28/2024	8/2/24 11:40 AM	1.1	--	--	8/2/24 9:25 AM	27.1	8/2/24 8:05 AM	13.4	8/2/24 8:45 AM	79.1	8/2/24 7:30 AM	3
8/4/2024	8/7/24 10:50 AM	0.1	--	--	8/9/24 9:14 AM	106.3	8/9/24 8:19 AM	2.6	--	--	8/9/24 7:38 AM	3.7
8/11/2024	8/14/24 10:32 AM	0.7	--	--	8/16/24 8:55 AM	31.6	8/16/24 7:55 AM	0.7	8/16/24 8:30 AM	129.6	8/16/24 7:30 AM	0.2
8/18/2024	8/21/24 11:25 AM	0.1	--	--	8/23/24 9:50 AM	44.7	8/23/24 8:11 AM	0.4	--	--	8/23/24 7:37 AM	3.1
9/1/2024	--	--	9/5/24 10:50 AM	0.9	--	--	--	--	--	--	--	--
9/8/2024	--	--	9/11/24 9:32 AM	0.8	--	--	--	--	--	--	--	--
9/15/2024	--	--	9/17/24 12:20 PM	0.7	--	--	--	--	--	--	--	--
	--	--	9/18/24 11:00 AM	0.7	--	--	--	--	--	--	--	--
9/22/2024	--	--	9/26/24 10:20 AM	0.1	--	--	--	--	--	--	--	--

Table A.29. Turbidity (NTU) Observed at Priority 3 Sites in Orange County during the 2024 Dry Season

Week Beginning Date	Bolsa Chica Channel (P3-OC1)		Serrano Creek (P3-OC11)	
	Sampled Date	Turbidity	Sampled Date	Turbidity
7/21/2024	7/24/24 9:53 AM	3.4	7/24/24 8:52 AM	3.1
7/28/2024	7/31/24 9:51 AM	3.2	7/31/24 8:44 AM	3.4
8/4/2024	8/8/24 9:40 AM	2.1	8/8/24 8:30 AM	2.7
8/11/2024	--	--	8/15/24 8:40 AM	5.1
8/18/2024	8/21/24 9:19 AM	2.8	8/21/24 8:10 AM	13.9

Table A.30. Water Temperature (°C) Concentrations Observed at Priority 1 Sites (P1-1, P1-2, P1-3) during the 2024 Dry Season

Week Beginning Date	Canyon Lake (P1-1)		Lake Elsinore (P1-2)		Lake Perris (P1-3)	
	Sampled Date	Temp	Sampled Date	Temp	Sampled Date	Temp
5/12/2024	5/15/24 10:35 AM	23	5/15/24 9:50 AM	21.6	5/15/24 11:48 AM	22.3
5/19/2024	5/22/24 9:45 AM	22.6	5/22/24 8:55 AM	22.6	5/22/24 10:36 AM	22.7
5/26/2024	5/29/24 9:45 AM	23.5	5/29/24 9:10 AM	23.1	5/29/24 11:00 AM	23.7
6/2/2024	6/6/24 9:10 AM	25.9	6/6/24 8:29 AM	25.3	6/6/24 10:02 AM	26
6/9/2024	6/12/24 9:40 AM	25.3	6/12/24 9:07 AM	25.5	6/12/24 10:40 AM	25.7
6/16/2024	6/20/24 9:07 AM	26.4	6/20/24 8:28 AM	25.4	6/20/24 9:57 AM	26.6
6/23/2024	6/25/24 9:05 AM	28	6/26/24 8:21 AM	27	6/26/24 9:53 AM	25.9
6/30/2024	7/3/24 9:44 AM	28.6	7/3/24 9:00 AM	28.3	7/3/24 10:44 AM	28.8
7/7/2024	7/10/24 9:50 AM	30.4	7/10/24 9:04 AM	29.1	7/10/24 10:47 AM	30.3
7/14/2024	7/17/24 10:32 AM	30	7/17/24 9:41 AM	28.3	7/17/24 11:35 AM	29.2
7/21/2024	7/24/24 9:50 AM	30.7	7/24/24 9:10 AM	29.3	7/24/24 10:50 AM	30
7/28/2024	7/31/24 9:50 AM	30.4	7/31/24 8:55 AM	28.8	7/31/24 10:53 AM	29.7
8/4/2024	8/7/24 8:39 AM	29.6	8/7/24 8:03 AM	28.9	8/7/24 9:31 AM	28.1
8/11/2024	8/14/24 9:01 AM	28.5	8/14/24 8:24 AM	27.9	8/14/24 9:47 AM	28.3
8/18/2024	8/21/24 9:35 AM	28	8/21/24 8:55 AM	27.7	8/21/24 10:30 AM	27.8
8/25/2024	8/28/24 9:36 AM	26.9	8/28/24 8:53 AM	27.1	8/28/24 10:25 AM	27.6
9/1/2024	9/4/24 10:50 AM	18.4	9/4/24 10:10 AM	17.9	9/4/24 11:50 AM	19.5
9/8/2024	9/11/24 7:43 AM	23.3	9/11/24 7:05 AM	26.7	9/11/24 8:34 AM	23.6
9/15/2024	9/17/24 10:00 AM	24.7	9/17/24 9:15 AM	24.6	9/17/24 11:00 AM	25.8
9/22/2024	9/25/24 10:00 AM	25.1	9/25/24 9:15 AM	24.8	9/25/24 10:55 AM	26.3
10/20/2024	10/23/24 9:35 AM	21.2	10/23/24 8:56 AM	20.6	10/23/24 10:29 AM	23.2
10/27/2024	11/1/24 10:30 AM	19.8	11/1/24 9:39 AM	19.6	11/1/24 11:35 AM	21.6
11/3/2024	11/6/24 9:35 AM	17.8	11/6/24 8:50 AM	17.7	11/6/24 10:45 AM	18.2
11/10/2024	11/13/24 9:07 AM	16.6	11/13/24 8:30 AM	16.1	11/13/24 9:58 AM	19.2
11/17/2024	11/20/24 10:05 AM	15.8	11/20/24 9:20 AM	15.2	11/20/24 11:10 AM	19

Table A.31. Water Temperature (°C) Concentrations Observed at Priority 1 Sites (P1-4, P1-5, P1-6) during the 2024 Dry Season

Week Beginning Date	Big Bear Lake (P1-4)		Mill Creek Reach 2 (P1-5)		Lytle Creek (P1-6)	
	Sampled Date	Temp	Sampled Date	Temp	Sampled Date	Temp
5/12/2024	5/14/24 9:55 AM	15.6	5/14/24 11:30 AM	11.6	5/14/24 8:10 AM	11.2
5/19/2024	5/21/24 9:58 AM	15.9	5/21/24 11:34 AM	10.8	5/21/24 7:51 AM	10.8
5/26/2024	5/28/24 9:30 AM	17	5/28/24 10:45 AM	10.7	5/28/24 7:45 AM	11
6/2/2024	6/4/24 9:28 AM	19.7	6/4/24 10:44 AM	12.4	6/4/24 7:31 AM	11.9
6/9/2024	6/11/24 10:13 AM	21.4	6/11/24 11:40 AM	13.6	6/11/24 7:38 AM	12
6/16/2024	6/18/24 9:18 AM	19.9	6/18/24 10:42 AM	12.3	6/18/24 7:18 AM	11.6
6/23/2024	6/25/24 9:06 AM	22.6	6/25/24 10:24 AM	14.5	6/25/24 7:17 AM	12.7
6/30/2024	7/2/24 9:56 AM	22.9	7/2/24 11:21 AM	14.9	7/2/24 7:57 AM	12.2
7/7/2024	7/9/24 10:00 AM	23.9	7/9/24 11:31 AM	15.3	7/9/24 7:50 AM	12.8
7/14/2024	7/16/24 9:50 AM	23.9	7/16/24 11:34 AM	15.9	7/16/24 7:50 AM	12.9
7/21/2024	7/23/24 9:40 AM	23.7	7/23/24 11:05 AM	16	7/23/24 7:30 AM	13.1
7/28/2024	7/30/24 9:15 AM	21.3	7/30/24 10:32 AM	12.9	7/30/24 7:30 AM	11.8
8/4/2024	8/6/24 9:19 AM	22.8	8/6/24 10:36 AM	14.9	8/6/24 7:27 AM	13
8/11/2024	8/13/24 10:39 AM	22.9	8/13/24 11:45 AM	15.7	8/15/24 2:10 PM	14.5
8/18/2024	8/20/24 10:40 AM	22.1	8/20/24 11:50 AM	15	8/20/24 7:30 AM	12.2
8/25/2024	8/27/24 9:40 AM	19.8	8/27/24 11:08 AM	13.5	8/27/24 7:25 AM	12.3
9/1/2024	9/3/24 9:50 AM	20.8	9/3/24 11:15 AM	14.6	9/3/24 7:50 AM	22.9
9/8/2024	--	--	--	--	9/10/24 6:38 AM	21.7
9/15/2024	9/19/24 9:45 AM	18.2	9/19/24 11:00 AM	14.7	9/19/24 7:20 AM	13.6
9/22/2024	9/24/24 9:35 AM	16	9/24/24 10:55 AM	13.1	9/24/24 7:35 AM	12.7
	9/27/24 8:22 AM	16.7	9/27/24 9:50 AM	11.3	--	--
10/20/2024	10/22/24 9:38 AM	13.8	10/22/24 10:49 AM	10.6	10/22/24 7:21 AM	11.7
10/27/2024	11/1/24 9:55 AM	11.1	11/1/24 11:20 AM	8.7	11/1/24 7:57 AM	10.9
11/3/2024	11/5/24 9:30 AM	9.3	11/5/24 1:00 AM	9.7	11/5/24 7:30 AM	11.2
11/10/2024	11/12/24 9:02 AM	6.7	11/12/24 10:15 AM	7.7	11/12/24 7:14 AM	10.8
11/17/2024	11/19/24 9:50 AM	7.3	11/19/24 11:00 AM	9.2	11/19/24 7:40 AM	12

Table A.32. Water Temperature (°C) Concentrations Observed at Priority 2 Sites (WW-C3, WW-C7, WW-M6) during the 2024 Dry Season

Week Beginning Date	Prado Park Lake Outlet (WW-C3)		Chino Creek @ Central Avenue (WW-C7)		Mill-Cucamonga Creek Below Wetlands (WW-M6)	
	Sampled Date	Temp	Sampled Date	Temp	Sampled Date	Temp
5/12/2024	5/15/24 8:20 AM	22.1	5/15/24 7:30 AM	19.4	5/16/24 7:30 AM	19.7
5/19/2024	5/22/24 7:49 AM	21.3	5/22/24 7:10 AM	17.7	5/23/24 7:15 AM	19.2
5/26/2024	5/29/24 7:50 AM	22.8	5/29/24 7:15 AM	20	5/30/24 7:30 AM	19.9
6/2/2024	6/6/24 7:25 AM	23.5	6/6/24 6:55 AM	22.3	6/6/24 7:41 AM	21.8
6/9/2024	6/12/24 7:45 AM	24.3	6/12/24 7:10 AM	29.7	6/13/24 7:49 AM	22
6/16/2024	6/20/24 7:23 AM	21.8	6/20/24 6:52 AM	20	6/21/24 6:41 AM	22.9
6/23/2024	6/26/24 7:11 AM	24.9	6/26/24 6:42 AM	21.5	6/27/24 7:45 AM	22.8
6/30/2024	7/3/24 7:45 AM	23.5	7/3/24 7:05 AM	21.3	7/5/24 7:21 AM	23.8
7/7/2024	7/10/24 7:40 AM	25.6	7/10/24 6:58 AM	22.6	7/11/24 7:15 AM	26.4
7/14/2024	7/17/24 8:15 AM	26.5	7/17/24 7:30 AM	21.7	7/18/24 7:30 AM	24.9
7/21/2024	7/24/24 7:50 AM	26.3	7/24/24 7:00 AM	23.2	7/25/24 7:17 AM	25.3
7/28/2024	7/31/24 7:40 AM	26.4	7/31/24 7:02 AM	18.6	--	--
8/4/2024	8/7/24 7:58 AM	25.2	8/7/24 6:30 AM	22.2	8/8/24 6:50 AM	23.3
8/11/2024	8/14/24 7:16 AM	24.3	8/14/24 6:45 AM	20.7	8/15/24 7:01 AM	24.6
8/18/2024	8/22/24 6:50 AM	23.6	8/21/24 7:10 AM	19.4	8/22/24 7:40 AM	21.2
8/25/2024	8/28/24 7:37 AM	23.5	8/28/24 7:05 AM	19.3	8/29/24 7:18 AM	20.8
9/1/2024	9/4/24 7:45 AM	15.7	9/4/24 7:05 AM	21.6	9/4/24 8:30 AM	22.4
	--	--	--	--	9/5/24 7:20 AM	22.6
9/8/2024	9/10/24 8:45 AM	26.4	9/10/24 8:10 AM	21.8	9/10/24 9:25 AM	23.3
9/15/2024	9/17/24 8:00 AM	23.9	9/17/24 7:15 AM	20.1	9/18/24 7:25 AM	19
9/22/2024	9/25/24 7:55 AM	23.1	9/25/24 7:10 AM	21.3	9/26/24 7:15 AM	18.6
10/20/2024	10/23/24 7:42 AM	19.6	10/23/24 7:14 AM	18.2	10/24/24 7:31 AM	15.6
10/27/2024	11/1/24 8:48 AM	18.9	11/1/24 7:50 AM	19.7	11/1/24 8:00 AM	16.1
11/3/2024	11/6/24 7:35 AM	16.8	11/6/24 7:05 AM	18.3	11/7/24 7:15 AM	14.1
11/10/2024	11/13/24 7:24 AM	15.9	11/13/24 6:57 AM	17.9	11/14/24 7:27 AM	11.2
11/17/2024	11/20/24 8:00 AM	14.2	11/20/24 7:20 AM	18.3	11/21/24 7:30 AM	14.4

Table A.33. Water Temperature (°C) Concentrations Observed at Priority 2 Sites (WW-S1, WW-S4, WW-MISSION) during the 2024 Dry Season

Week Beginning Date	SAR @ MWD Crossing (WW-S1)		SAR @ Pedley Avenue (WW-S4)		SAR @ Mission (WW-MISSION)	
	Sampled Date	Temp	Sampled Date	Temp	Sampled Date	Temp
5/12/2024	5/16/24 9:30 AM	18.6	5/16/24 8:35 AM	20	5/16/24 10:18 AM	19.4
5/19/2024	5/23/24 9:13 AM	18.9	5/23/24 8:30 AM	20	5/23/24 9:55 AM	19.9
5/26/2024	5/30/24 9:55 AM	20.3	5/30/24 9:00 AM	20	5/30/24 10:40 AM	24.1
6/2/2024	6/6/24 9:40 AM	21.3	6/6/24 8:55 AM	22	6/6/24 10:32 AM	27.1
6/9/2024	6/13/24 9:26 AM	20.3	6/13/24 8:30 AM	21.6	6/13/24 10:10 AM	21.1
6/16/2024	6/21/24 8:36 AM	19.5	6/21/24 7:59 AM	20.5	6/21/24 9:10 AM	22.8
6/23/2024	6/27/24 9:45 AM	22.4	6/27/24 8:50 AM	22.6	6/27/24 10:45 AM	29
6/30/2024	7/5/24 9:00 AM	21.5	7/5/24 8:19 AM	22.7	7/5/24 9:43 AM	26.1
7/7/2024	7/11/24 9:20 AM	22.6	7/11/24 8:20 AM	23.3	7/11/24 10:10 AM	27.7
7/14/2024	7/18/24 9:30 AM	22.7	7/18/24 8:35 AM	24.2	7/18/24 10:23 AM	28.2
7/21/2024	7/25/24 8:55 AM	21.8	7/25/24 8:10 AM	23.8	7/25/24 10:00 AM	27.5
7/28/2024	8/1/24 8:35 AM	19.6	8/1/24 7:45 AM	21.9	8/1/24 9:35 AM	23.4
8/4/2024	8/8/24 8:17 AM	20.8	8/8/24 7:37 AM	23.2	8/8/24 8:53 AM	24
8/11/2024	8/15/24 8:38 AM	19.6	8/15/24 7:58 AM	22.1	8/15/24 9:12 AM	23.2
8/18/2024	8/22/24 9:33 AM	21.4	8/22/24 8:52 AM	22.4	8/22/245 10:10 AM	25.7
8/25/2024	8/29/24 9:25 AM	19.5	8/29/24 8:51 AM	22.2	8/29/24 9:57 AM	23
9/1/2024	9/5/24 9:18 AM	22.2	9/5/24 8:45 AM	24.2	9/4/24 9:45 AM	25.2
9/8/2024	9/11/24 10:42 AM	21.6	9/10/24 10:20 AM	25.2	9/11/24 10:04 AM	23.2
9/15/2024	9/18/24 9:30 AM	18.8	9/18/24 8:30 AM	19.4	9/18/24 10:15 AM	21.7
9/22/2024	9/26/24 8:55 AM	18.2	9/26/24 8:10 AM	19.9	9/26/24 9:40 AM	20.6
10/20/2024	10/24/24 9:01 AM	16	10/24/24 8:20 AM	18.8	10/24/24 9:41 AM	19.1
10/27/2024	11/1/24 9:50 AM	15.4	11/1/24 9:10 AM	16.5	11/1/24 10:45 AM	18.5
11/3/2024	11/7/24 9:00 AM	15.1	11/7/24 8:10 AM	14.7	11/7/24 9:52 AM	16.7
11/10/2024	11/14/24 8:59 AM	13.7	11/14/24 8:18 AM	15	11/14/24 9:29 AM	16.1
11/17/2024	11/21/24 9:00 AM	13.4	11/21/24 8:30 AM	14.5	11/21/24 10:00 AM	16.4

Table A.34. Water Temperature (°C) Concentrations Observed at Priority 3 Sites in Riverside and San Bernardino Counties during the 2024 Dry Season

	Goldenstar Creek (P3-RC1)		Santa Ana River Reach 3 (P3-SBC1)		San Timoteo Creek Reach 3 (P3-RC3)		San Timoteo Creek Reach 1A (P3-SBC2		San Timoteo Creek Reach 2 (P3-SBC3)		Warm Creek (P3-SBC4)	
Week Beginning Date	Sampled Date	Temp	Sampled Date	Temp	Sampled Date	Temp	Sampled Date	Temp	Sampled Date	Temp	Sampled Date	Temp
7/21/2024	7/26/24 10:45 AM	21.8	--	--	7/26/24 9:20 AM	26.4	7/26/24 8:15 AM	24.5	--	--	7/26/24 7:30 AM	23.3
7/28/2024	8/2/24 11:40 AM	22.8	--	--	8/2/24 9:25 AM	24.3	8/2/24 8:05 AM	23.5	8/2/24 8:45 AM	25.6	8/2/24 7:30 AM	23.1
8/4/2024	8/7/24 10:50 AM	20.8	--	--	8/9/24 9:14 AM	23	8/9/24 8:19 AM	23.2	--	--	8/9/24 7:38 AM	21.4
8/11/2024	8/14/24 10:32 AM	19.5	--	--	8/16/24 8:55 AM	23	8/16/24 7:55 AM	20.7	8/16/24 8:30 AM	21.1	8/16/24 7:30 AM	20.5
8/18/2024	8/21/24 11:25 AM	18.9	--	--	8/23/24 9:50 AM	23.8	8/23/24 8:11 AM	19.7	--	--	8/23/24 7:37 AM	19
9/1/2024	--	--	9/5/24 10:50 AM	28.1	--	--	--	--	--	--	--	--
9/8/2024	--	--	9/11/24 9:32 AM	23.8	--	--	--	--	--	--	--	--
9/15/2024	--	--	9/17/24 12:20 PM	26.9	--	--	--	--	--	--	--	--
	--	--	9/18/24 11:00 AM	25.5	--	--	--	--	--	--	--	--
9/22/2024	--	--	9/26/24 10:20 AM	26.2	--	--	--	--	--	--	--	--

Table A.34. Water Temperature (°C) Concentrations Observed at Priority 3 Sites in Orange County during the 2024 Dry Season

Week Beginning Date	Bolsa Chica Channel (P3-OC1)		Serrano Creek (P3-OC11)	
	Sampled Date	Temp	Sampled Date	Temp
7/21/2024	7/24/24 9:53 AM	25.8	7/24/24 8:52 AM	24.3
7/28/2024	7/31/24 9:51 AM	22.1	7/31/24 8:44 AM	21.1
8/4/2024	8/8/24 9:40 AM	23.9	8/8/24 8:30 AM	21.7
8/11/2024	8/15/24 9:48 AM	24.5	8/15/24 8:40 AM	21.8
8/18/2024	8/21/24 9:19 AM	24.5	8/21/24 8:10 AM	21.6

Table A.35. Conductivity (µS/cm) Observed at Priority 1 Sites (P1-1, P1-2, P1-3) during the 2024 Dry Season

Week Beginning Date	Canyon Lake (P1-1)		Lake Elsinore (P1-2)		Lake Perris (P1-3)	
	Sampled Date	Cond	Sampled Date	Cond	Sampled Date	Cond
5/12/2024	5/15/24 10:35 AM	602.7	5/15/24 9:50 AM	2439.3	5/15/24 11:48 AM	496.2
5/19/2024	5/22/24 9:45 AM	627.3	5/22/24 8:55 AM	2509.7	5/22/24 10:36 AM	510
5/26/2024	5/29/24 9:45 AM	640	5/29/24 9:10 AM	2548	5/29/24 11:00 AM	512
6/2/2024	6/6/24 9:10 AM	649	6/6/24 8:29 AM	2560.7	6/6/24 10:02 AM	513
6/9/2024	6/12/24 9:40 AM	1223	6/12/24 9:07 AM	4788	6/12/24 10:40 AM	946.3
6/16/2024	6/20/24 9:07 AM	671.7	6/20/24 8:28 AM	2597.3	6/20/24 9:57 AM	518
6/23/2024	6/25/24 9:05 AM	685.7	6/26/24 8:21 AM	2658.7	6/26/24 9:53 AM	527
6/30/2024	7/3/24 9:44 AM	701	7/3/24 9:00 AM	2654.7	7/3/24 10:44 AM	529.7
7/7/2024	7/10/24 9:50 AM	1153.3	7/10/24 9:04 AM	4350.3	7/10/24 10:47 AM	864.7
7/14/2024	7/17/24 10:32 AM	663.7	7/17/24 9:41 AM	2510	7/17/24 11:35 AM	497.7
7/21/2024	7/24/24 9:50 AM	709.3	7/24/24 9:10 AM	2668	7/24/24 10:50 AM	532.7
7/28/2024	7/31/24 9:50 AM	687.3	7/31/24 8:55 AM	2590	7/31/24 10:53 AM	515.3
8/4/2024	8/7/24 8:39 AM	737	8/7/24 8:03 AM	2677.3	8/7/24 9:31 AM	529
8/11/2024	8/14/24 9:01 AM	727	8/14/24 8:24 AM	2619	8/14/24 9:47 AM	514
8/18/2024	8/21/24 9:35 AM	758.3	8/21/24 8:55 AM	2691.7	8/21/24 10:30 AM	529.3
8/25/2024	8/28/24 9:36 AM	765	8/28/24 8:53 AM	2720.3	8/28/24 10:25 AM	530.3
9/1/2024	9/4/24 10:50 AM	780	9/4/24 10:10 AM	2741.7	9/4/24 11:50 AM	530
9/8/2024	9/11/24 7:43 AM	785.3	9/11/24 7:05 AM	2743.7	9/11/24 8:34 AM	526
9/15/2024	9/17/24 10:00 AM	788	9/17/24 9:15 AM	2746	9/17/24 11:00 AM	522.7
9/22/2024	9/25/24 10:00 AM	795.3	9/25/24 9:15 AM	2743.7	9/25/24 10:55 AM	517
10/20/2024	10/23/24 9:35 AM	822.3	10/23/24 8:56 AM	2771.7	10/23/24 10:29 AM	504.3
10/27/2024	11/1/24 10:30:00 AM	801	11/1/24 9:39:00 AM	2721.7	11/1/24 11:35:00 AM	491
11/3/2024	11/6/24 9:35 AM	823.3	11/6/24 8:50 AM	2801.3	11/6/24 10:45 AM	506.3
11/10/2024	11/13/24 9:07 AM	817.7	11/13/24 8:30 AM	2806	11/13/24 9:58 AM	502
11/17/2024	11/20/24 10:05 AM	815.7	11/20/24 9:20 AM	2769.7	11/20/24 11:10 AM	496

Table A.36. Conductivity (µS/cm) Observed at Priority 1 Sites (P1-4, P1-5, P1-6) during the 2024 Dry Season

Week Beginning Date	Big Bear Lake (P1-4)		Mill Creek Reach 2 (P1-5)		Lytle Creek (P1-6)	
	Sampled Date	Cond	Sampled Date	Cond	Sampled Date	Cond
5/12/2024	5/14/24 9:55 AM	351.8	5/14/24 11:30 AM	165.2	5/14/24 8:10 AM	229.8
5/19/2024	5/21/24 9:58 AM	359	5/21/24 11:34 AM	163.1	5/21/24 7:51 AM	235.4
5/26/2024	5/28/24 9:30 AM	365.4	5/28/24 10:45 AM	163.5	5/28/24 7:45 AM	237.8
6/2/2024	6/4/24 9:28 AM	375.3	6/4/24 10:44 AM	167.2	6/4/24 7:31 AM	242.8
6/9/2024	6/11/24 10:13 AM	682.7	6/11/24 11:40 AM	311.1	6/11/24 7:38 AM	447.4
6/16/2024	6/18/24 9:18 AM	368.3	6/18/24 10:42 AM	169.8	6/18/24 7:18 AM	242.9
6/23/2024	6/25/24 9:06 AM	375.9	6/25/24 10:24 AM	173.7	6/25/24 7:17 AM	247.8
6/30/2024	7/2/24 9:56 AM	377.3	7/2/24 11:21 AM	175.4	7/2/24 7:57 AM	247.5
7/7/2024	7/9/24 10:00 AM	621	7/9/24 11:31 AM	286.9	7/9/24 7:50 AM	403.6
7/14/2024	7/16/24 9:50 AM	348.2	7/16/24 11:34 AM	166.1	7/16/24 7:50 AM	233.4
7/21/2024	7/23/24 9:40 AM	371.4	7/23/24 11:05 AM	171.3	7/23/24 7:30 AM	247.4
7/28/2024	7/30/24 9:15 AM	364.6	7/30/24 10:32 AM	170.3	7/30/24 7:30 AM	242.2
8/4/2024	8/6/24 9:19 AM	373.2	8/6/24 10:36 AM	176.3	8/6/24 7:27 AM	248.8
8/11/2024	8/13/24 10:39 AM	329.2	8/13/24 11:45 AM	170.8	8/15/24 2:10 PM	498.9
8/18/2024	8/20/24 10:40 AM	371.2	8/20/24 11:50 AM	176.5	8/20/24 7:30 AM	249.2
8/25/2024	8/27/24 9:40 AM	376.8	8/27/24 11:08 AM	176	8/27/24 7:25 AM	250
9/1/2024	9/3/24 9:50 AM	381.7	9/3/24 11:15 AM	177.1	9/3/24 7:50 AM	251.6
9/8/2024	--	--	--	--	9/10/24 6:38 AM	240.5
9/15/2024	9/19/24 9:45 AM	384.9	9/19/24 11:00 AM	177.2	9/19/24 7:20 AM	254.8
9/22/2024	9/24/24 9:35 AM	382.2	9/24/24 10:55 AM	175.1	9/24/24 7:35 AM	250.3
	9/27/24 8:22 AM	382.1	9/27/24 9:50 AM	175.2	--	--
10/20/2024	10/22/24 9:38 AM	396.9	10/22/24 10:49 AM	174.8	10/22/24 7:21 AM	252.9
10/27/2024	11/1/24 9:55:00 AM	380.6	11/1/24 11:20:00 AM	171.2	11/1/24 7:57:00 AM	250.3
11/3/2024	11/5/24 9:30 AM	388.1	11/5/24 1:00 AM	173.5	11/5/24 7:30 AM	254
11/10/2024	11/12/24 9:02 AM	203.4	11/12/24 10:15 AM	173.7	11/12/24 7:14 AM	253.9
11/17/2024	11/19/24 9:50 AM	393.8	11/19/24 11:00 AM	174.5	11/19/24 7:40 AM	254.9

Table A.37. Conductivity (µS/cm) Observed at Priority 2 Sites (WW-C3, WW-C7, WW-M6) during the 2024 Dry Season

Week Beginning Date	Prado Park Lake Outlet (WW-C3)		Chino Creek @ Central Avenue (WW-C7)		Mill-Cucamonga Creek Below Wetlands (WW-M6)	
	Sampled Date	Cond	Sampled Date	Cond	Sampled Date	Cond
5/12/2024	5/15/24 8:20 AM	1146.7	5/15/24 7:30 AM	1259	5/16/24 7:30 AM	947.3
5/19/2024	5/22/24 7:49 AM	1260.7	5/22/24 7:10 AM	1283	5/23/24 7:15 AM	895.3
5/26/2024	5/29/24 7:50 AM	1034	5/29/24 7:15 AM	1224.7	5/30/24 7:30 AM	994.7
6/2/2024	6/6/24 7:25 AM	1204.3	6/6/24 6:55 AM	1048.7	6/6/24 7:41 AM	969.3
6/9/2024	6/12/24 7:45 AM	1888.3	6/12/24 7:10 AM	2378.3	6/13/24 7:49 AM	1523.7
6/16/2024	6/20/24 7:23 AM	1687	6/20/24 6:52 AM	1252.3	6/21/24 6:41 AM	916
6/23/2024	6/26/24 7:11 AM	1337.7	6/26/24 6:42 AM	991	6/27/24 7:45 AM	947.7
6/30/2024	7/3/24 7:45 AM	1502.7	7/3/24 7:05 AM	1324.7	7/5/24 7:21 AM	843.3
7/7/2024	7/10/24 7:40 AM	2186.7	7/10/24 6:58 AM	2158	7/11/24 7:15 AM	1392
7/14/2024	7/17/24 8:15 AM	1135	7/17/24 7:30 AM	1113.7	7/18/24 7:30 AM	751
7/21/2024	7/24/24 7:50 AM	1272.7	7/24/24 7:00 AM	1228.3	7/25/24 7:17 AM	763
7/28/2024	7/31/24 7:40 AM	1406	7/31/24 7:02 AM	1455.3	--	--
8/4/2024	8/7/24 7:58 AM	1320	8/7/24 6:30 AM	1382.3	8/8/24 6:50 AM	1007
8/11/2024	8/14/24 7:16 AM	1326.3	8/14/24 6:45 AM	1299	8/15/24 7:01 AM	595
8/18/2024	8/22/24 6:50 AM	1336.3	8/21/24 7:10 AM	1338.3	8/22/24 7:40 AM	1152
8/25/2024	8/28/24 7:37 AM	1312.7	8/28/24 7:05 AM	1161.3	8/29/24 7:18 AM	960
9/1/2024	9/4/24 7:45 AM	1088	9/4/24 7:05 AM	872.3	9/4/24 8:30 AM	1167
	--	--	--	--	9/5/24 7:20 AM	1089
9/8/2024	9/10/24 8:45 AM	1196.3	9/10/24 8:10 AM	1324.3	9/10/24 9:25 AM	1077.7
9/15/2024	9/17/24 8:00 AM	1077.3	9/17/24 7:15 AM	1071.3	9/18/24 7:25 AM	853.3
9/22/2024	9/25/24 7:55 AM	1236.3	9/25/24 7:10 AM	1116.3	9/26/24 7:15 AM	1130.7
10/20/2024	10/23/24 7:42 AM	1232	10/23/24 7:14 AM	1085.7	10/24/24 7:31 AM	1149
10/27/2024	11/1/24 8:48:00 AM	1197	11/1/24 7:50:00 AM	935.7	11/1/24 8:00:00 AM	883
11/3/2024	11/6/24 7:35 AM	1099.3	11/6/24 7:05 AM	975.3	11/7/24 7:15 AM	1102.3
11/10/2024	11/13/24 7:24 AM	1373.7	11/13/24 6:57 AM	947.7	11/14/24 7:27 AM	1017
11/17/2024	11/20/24 8:00 AM	988.3	11/20/24 7:20 AM	906.3	11/21/24 7:30 AM	922.3

Table A.38. Conductivity (µS/cm) Observed at Priority 2 Sites (WW-S1, WW-S4, WW-MISSION) during the 2024 Dry Season

Week Beginning Date	SAR @ MWD Crossing (WW-S1)		SAR @ Pedley Avenue (WW-S4)		SAR @ Mission (WW-MISSION)	
	Sampled Date	Cond	Sampled Date	Cond	Sampled Date	Cond
5/12/2024	5/16/24 9:30 AM	931.3	5/16/24 8:35 AM	942	5/16/24 10:18 AM	697
5/19/2024	5/23/24 9:13 AM	958.3	5/23/24 8:30 AM	924.3	5/23/24 9:55 AM	707.7
5/26/2024	5/30/24 9:55 AM	1009.7	5/30/24 9:00 AM	1019.7	5/30/24 10:40 AM	844
6/2/2024	6/6/24 9:40 AM	1074	6/6/24 8:55 AM	1043.3	6/6/24 10:32 AM	880.7
6/9/2024	6/13/24 9:26 AM	1769.7	6/13/24 8:30 AM	1932.3	6/13/24 10:10 AM	1550
6/16/2024	6/21/24 8:36 AM	1105	6/21/24 7:59 AM	1055	6/21/24 9:10 AM	844
6/23/2024	6/27/24 9:45 AM	1115.3	6/27/24 8:50 AM	1081	6/27/24 10:45 AM	876
6/30/2024	7/5/24 9:00 AM	1153	7/5/24 8:19 AM	1069	7/5/24 9:43 AM	870
7/7/2024	7/11/24 9:20 AM	1877	7/11/24 8:20 AM	1744	7/11/24 10:10 AM	1421
7/14/2024	7/18/24 9:30 AM	1076	7/18/24 8:35 AM	1004	7/18/24 10:23 AM	827.3
7/21/2024	7/25/24 8:55 AM	1164.3	7/25/24 8:10 AM	1057.7	7/25/24 10:00 AM	875
7/28/2024	8/1/24 8:35 AM	1129.3	8/1/24 7:45 AM	1058.3	8/1/24 9:35 AM	864
8/4/2024	8/8/24 8:17 AM	1128	8/8/24 7:37 AM	1066	8/8/24 8:53 AM	874
8/11/2024	8/15/24 8:38 AM	1108	8/15/24 7:58 AM	1018	8/15/24 9:12 AM	848.7
8/18/2024	8/22/24 9:33 AM	1147.3	8/22/24 8:52 AM	1056.3	8/22/245 10:10 AM	883.7
8/25/2024	8/29/24 9:25 AM	1148	8/29/24 8:51 AM	1061.7	8/29/24 9:57 AM	855.3
9/1/2024	9/5/24 9:18 AM	1087	9/5/24 8:45 AM	1040.7	9/4/24 9:45 AM	870.3
9/8/2024	9/11/24 10:42 AM	1014.3	9/10/24 10:20 AM	993.3	9/11/24 10:04 AM	860.7
9/15/2024	9/18/24 9:30 AM	1084	9/18/24 8:30 AM	1030.7	9/18/24 10:15 AM	873.7
9/22/2024	9/26/24 8:55 AM	1080.7	9/26/24 8:10 AM	1011.3	9/26/24 9:40 AM	865.7
10/20/2024	10/24/24 9:01 AM	1077.3	10/24/24 8:20 AM	1021.7	10/24/24 9:41 AM	866
10/27/2024	11/1/24 9:50:00 AM	1030.7	11/1/24 9:10:00 AM	980.7	11/1/24 10:45:00 AM	837.3
11/3/2024	11/7/24 9:00 AM	1065.3	11/7/24 8:10 AM	1034	11/7/24 9:52 AM	872.7
11/10/2024	11/14/24 8:59 AM	1068	11/14/24 8:18 AM	1024.3	11/14/24 9:29 AM	868
11/17/2024	11/21/24 9:00 AM	1042	11/21/24 8:30 AM	1006	11/21/24 10:00 AM	861.7

Table A.38. Conductivity (µS/cm) Observed at Priority 3 Sites in Riverside and San Bernardino Counties during the 2024 Dry Season

Week Beginning Date	Goldenstar Creek (P3-RC1)		Santa Ana River Reach 3 (P3-SBC1)		San Timoteo Creek Reach 3 (P3-RC3)		San Timoteo Creek Reach 1A (P3-SBC2)		San Timoteo Creek Reach 2 (P3-SBC3)		Warm Creek (P3-SBC4)	
	Sampled Date	Cond	Sampled Date	Cond	Sampled Date	Cond	Sampled Date	Cond	Sampled Date	Cond	Sampled Date	Cond
7/21/2024	7/26/24 10:45 AM	2031.7	--	--	7/26/24 9:20 AM	517.3	7/26/24 8:15 AM	479.4	--	--	7/26/24 7:30 AM	639.3
7/28/2024	8/2/24 11:40 AM	2135.3	--	--	8/2/24 9:25 AM	573.3	8/2/24 8:05 AM	395.1	8/2/24 8:45 AM	713.3	8/2/24 7:30 AM	500.9
8/4/2024	8/7/24 10:50 AM	2138.3	--	--	8/9/24 9:14 AM	518.3	8/9/24 8:19 AM	513.7	--	--	8/9/24 7:38 AM	496.9
8/11/2024	8/14/24 10:32 AM	2071.3	--	--	8/16/24 8:55 AM	507.3	8/16/24 7:55 AM	383	8/16/24 8:30 AM	656.3	8/16/24 7:30 AM	769.2
8/18/2024	8/21/24 11:25 AM	2122.3	--	--	8/23/24 9:50 AM	514	8/23/24 8:11 AM	494.8	--	--	8/23/24 7:37 AM	474.3
9/1/2024	--	--	9/5/24 10:50 AM	864.7	--	--	--	--	--	--	--	--
	--	--	9/11/24 9:32 AM	863	--	--	--	--	--	--	--	--
9/15/2024	--	--	9/17/24 12:20 PM	869.3	--	--	--	--	--	--	--	--
	--	--	9/18/24 11:00 AM	867	--	--	--	--	--	--	--	--
9/22/2024	--	--	9/26/24 10:20 AM	866	--	--	--	--	--	--	--	--

Table A.39. Conductivity (µS/cm) Observed at Priority 3 Sites in Orange County during the 2024 Dry Season

Week Beginning Date	Bolsa Chica Channel (P3-OC1)		Serrano Creek (P3-OC11)	
	Sampled Date	Cond	Sampled Date	Cond
7/21/2024	7/24/24 9:53 AM	2889	7/24/24 8:52 AM	1320
7/28/2024	7/31/24 9:51 AM	2793	7/31/24 8:44 AM	1666
8/4/2024	8/8/24 9:40 AM	2852	8/8/24 8:30 AM	1521
8/11/2024	8/15/24 9:48 AM	2912	8/15/24 8:40 AM	1553
8/18/2024	8/21/24 9:19 AM	1561	8/21/24 8:10 AM	1479

Table A.40. Flow (cfs) Observed at Priority 1 Sites (P1-5, P1-6) during the 2024 Dry Season

Week Beginning Date	Mill Creek Reach 2 (P1-5)		Lytle Creek (P1-6)	
	Sampled Date	Flow	Sampled Date	Flow
5/12/2024	5/14/24 11:30 AM	94	5/14/24 8:10 AM	68.1
5/19/2024	5/21/24 11:34 AM	88.4	5/21/24 7:51 AM	2.6
5/26/2024	5/28/24 10:45 AM	NA[1]	5/28/24 7:45 AM	NA[1]
6/2/2024	6/4/24 10:44 AM	65.9	6/4/24 7:31 AM	68
6/9/2024	6/11/24 11:40 AM	66.7	6/11/24 7:38 AM	70.4
6/16/2024	6/18/24 10:42 AM	46.4	6/18/24 7:18 AM	72.5
6/23/2024	6/25/24 10:24 AM	37.6	6/25/24 7:17 AM	41.2
6/30/2024	7/2/24 11:21 AM	74.6	7/2/24 7:57 AM	41.5
7/7/2024	7/9/24 11:31 AM	39.9	7/9/24 7:50 AM	16.2
7/14/2024	7/16/24 11:34 AM	86.3	7/16/24 7:50 AM	54.1
7/21/2024	7/23/24 11:05 AM	56	7/23/24 7:30 AM	41.1
7/28/2024	7/30/24 10:32 AM	33	7/30/24 7:30 AM	33
8/4/2024	8/6/24 10:36 AM	21.8	8/6/24 7:27 AM	22.8
8/11/2024	8/13/24 11:45 AM	13.6	8/15/24 2:10 PM	39.7
8/18/2024	8/20/24 11:50 AM	14.8	8/20/24 7:30 AM	19.2
8/25/2024	8/27/24 11:08 AM	33.6	8/27/24 7:25 AM	20
9/1/2024	9/3/24 11:15 AM	42.9	9/3/24 7:50 AM	38.7
9/8/2024	--	--	9/10/24 6:38 AM	12.7
9/15/2024	9/19/24 11:00 AM	65	9/19/24 7:20 AM	46
9/22/2024	9/24/24 10:55 AM	21.5	9/24/24 7:35 AM	21.5
	9/27/24 8:22 AM	21.9	--	--
10/20/2024	10/22/24 10:49 AM	15.2	10/22/24 7:21 AM	25.6
10/27/2024	11/1/24 11:20:00 AM	15.2	11/1/24 7:57:00 AM	14.3
11/3/2024	11/5/24 1:00 AM	9.1	11/5/24 7:30 AM	12.7
11/10/2024	11/12/24 10:15 AM	30.4	11/12/24 7:14 AM	44.1
11/17/2024	11/19/24 11:00 AM	11.6	11/19/24 7:40 AM	66.2

[1] - Water flowing too fast, unsafe to sample.

Table A.41. Flow (cfs) Observed at Priority 2 Sites (WW-C3, WW-C7, WW-M6) during the 2024 Dry Season

Week Beginning Date	Prado Park Lake Outlet (WW-C3)		Chino Creek @ Central Avenue (WW-C7)		Mill-Cucamonga Creek Below Wetlands (WW-M6)	
	Sampled Date	Flow	Sampled Date	Flow	Sampled Date	Flow
5/12/2024	5/15/24 8:20 AM	4.8	5/15/24 7:30 AM	21.8	5/16/24 7:30 AM	10.5
5/19/2024	5/22/24 7:49 AM	6.2	5/22/24 7:10 AM	26.1	5/23/24 7:15 AM	20.4
5/26/2024	5/29/24 7:50 AM	7.7	5/29/24 7:15 AM	NA[1]	5/30/24 7:30 AM	17.2
6/2/2024	6/6/24 7:25 AM	7.9	6/6/24 6:55 AM	63.4	6/6/24 7:41 AM	13.6
6/9/2024	6/12/24 7:45 AM	5.6	6/12/24 7:10 AM	35.2	6/13/24 7:49 AM	13.4
6/16/2024	6/20/24 7:23 AM	1.8	6/20/24 6:52 AM	21	6/21/24 6:41 AM	36.9
6/23/2024	6/26/24 7:11 AM	2.9	6/26/24 6:42 AM	29.9	6/27/24 7:45 AM	11.1
6/30/2024	7/3/24 7:45 AM	0.9	7/3/24 7:05 AM	5.6	7/5/24 7:21 AM	17.5
7/7/2024	7/10/24 7:40 AM	1.9	7/10/24 6:58 AM	12.3	7/11/24 7:15 AM	14.2
7/14/2024	7/17/24 8:15 AM	18.4	7/17/24 7:30 AM	11.5	7/18/24 7:30 AM	20.8
7/21/2024	7/24/24 7:50 AM	2.4	7/24/24 7:00 AM	19.4	7/25/24 7:17 AM	5.7
7/28/2024	7/31/24 7:40 AM	3.8	7/31/24 7:02 AM	6.9	--	--
8/4/2024	8/7/24 7:58 AM	2	8/7/24 6:30 AM	8.9	8/8/24 6:50 AM	14.1
8/11/2024	8/14/24 7:16 AM	2.2	8/14/24 6:45 AM	7.3	8/15/24 7:01 AM	17.4
8/18/2024	8/22/24 6:50 AM	1.6	8/21/24 7:10 AM	7.7	8/22/24 7:40 AM	10.2
8/25/2024	8/28/24 7:37 AM	1.5	8/28/24 7:05 AM	7.1	8/29/24 7:18 AM	22.2
9/1/2024	9/4/24 7:45 AM	2.6	9/4/24 7:05 AM	14.5	9/4/24 8:30 AM	9.6
	--	--	--	--	9/5/24 7:20 AM	9.2
9/8/2024	9/10/24 8:45 AM	1.9	9/10/24 8:10 AM	4.5	9/10/24 9:25 AM	5.3
9/15/2024	9/17/24 8:00 AM	5.1	9/17/24 7:15 AM	7.5	9/18/24 7:25 AM	43.4
9/22/2024	9/25/24 7:55 AM	2.7	9/25/24 7:10 AM	11.1	9/26/24 7:15 AM	6.8
10/20/2024	10/23/24 7:42 AM	3.5	10/23/24 7:14 AM	15.6	10/24/24 7:31 AM	5.3
10/27/2024	11/1/24 8:48:00 AM	4.9	11/1/24 7:50:00 AM	17.4	11/1/24 8:00:00 AM	8.5
11/3/2024	11/6/24 7:35 AM	4.5	11/6/24 7:05 AM	16	11/7/24 7:15 AM	8.3
11/10/2024	11/13/24 7:24 AM	4.9	11/13/24 6:57 AM	66.8	11/14/24 7:27 AM	5.7
11/17/2024	11/20/24 8:00 AM	3.3	11/20/24 7:20 AM	33.2	11/21/24 7:30 AM	25.4

[1] - Slow flow, but water is too deep, unsafe to sample.

Table A.42. Flow (cfs) Observed at Priority 2 Sites (WW-S1, WW-S4, WW-MISSION) during the 2024 Dry Season

Week Beginning Date	SAR @ MWD Crossing (WW-S1)		SAR @ Pedley Avenue (WW-S4)		SAR @ Mission (WW-MISSION)	
	Sampled Date	Flow	Sampled Date	Flow	Sampled Date	Flow
5/12/2024	5/16/24 9:30 AM	77	5/16/24 8:35 AM	77.4	5/16/24 10:18 AM	58.9
5/19/2024	5/23/24 9:13 AM	67.2	5/23/24 8:30 AM	NA[1]	5/23/24 9:55 AM	43.3
5/26/2024	5/30/24 9:55 AM	26.1	5/30/24 9:00 AM	125.8	5/30/24 10:40 AM	25.2
6/2/2024	6/6/24 9:40 AM	43.4	6/6/24 8:55 AM	109	6/6/24 10:32 AM	79.8
6/9/2024	6/13/24 9:26 AM	15.3	6/13/24 8:30 AM	87.9	6/13/24 10:10 AM	26.5
6/16/2024	6/21/24 8:36 AM	35.5	6/21/24 7:59 AM	57.9	6/21/24 9:10 AM	5.5
6/23/2024	6/27/24 9:45 AM	36.4	6/27/24 8:50 AM	122.9	6/27/24 10:45 AM	14.7
6/30/2024	7/5/24 9:00 AM	32.6	7/5/24 8:19 AM	136	7/5/24 9:43 AM	39.4
7/7/2024	7/11/24 9:20 AM	33.4	7/11/24 8:20 AM	167.6	7/11/24 10:10 AM	21.4
7/14/2024	7/18/24 9:30 AM	73.4	7/18/24 8:35 AM	342.5	7/18/24 10:23 AM	63.1
7/21/2024	7/25/24 8:55 AM	41	7/25/24 8:10 AM	87.4	7/25/24 10:00 AM	3.8
7/28/2024	8/1/24 8:35 AM	44.1	8/1/24 7:45 AM	193.2	8/1/24 9:35 AM	19.4
8/4/2024	8/8/24 8:17 AM	13.4	8/8/24 7:37 AM	34.1	8/8/24 8:53 AM	7.2
8/11/2024	8/15/24 8:38 AM	33.4	8/15/24 7:58 AM	35.2	8/15/24 9:12 AM	17
8/18/2024	8/22/24 9:33 AM	24.2	8/22/24 8:52 AM	23.4	8/22/245 10:10 AM	10.8
8/25/2024	8/29/24 9:25 AM	51.5	8/29/24 8:51 AM	46.9	8/29/24 9:57 AM	11.9
9/1/2024	9/5/24 9:18 AM	23.5	9/5/24 8:45 AM	78.7	9/4/24 9:45 AM	5.3
9/8/2024	9/11/24 10:42 AM	33.9	9/10/24 10:20 AM	98.2	9/11/24 10:04 AM	13.5
9/15/2024	9/18/24 9:30 AM	7.3	9/18/24 8:30 AM	58.2	9/18/24 10:15 AM	19.9
9/22/2024	9/26/24 8:55 AM	27.3	9/26/24 8:10 AM	74.4	9/26/24 9:40 AM	4.8
10/20/2024	10/24/24 9:01 AM	11.9	10/24/24 8:20 AM	46.4	10/24/24 9:41 AM	18.7
10/27/2024	11/1/24 9:50:00 AM	22.3	11/1/24 9:10:00 AM	8.5	11/1/24 10:45:00 AM	13.2
11/3/2024	11/7/24 9:00 AM	12.4	11/7/24 8:10 AM	33.8	11/7/24 9:52 AM	3.5
11/10/2024	11/14/24 8:59 AM	41.8	11/14/24 8:18 AM	45.7	11/14/24 9:29 AM	9.4
11/17/2024	11/21/24 9:00 AM	15.9	11/21/24 8:30 AM	50.2	11/21/24 10:00 AM	14.1

[1] - Water is too deep, unsafe to sample.

Table A.43. Flow (cfs) Observed at Priority 3 Sites in Riverside and San Bernardino Counties during the 2024 Dry Season

Week Beginning Date	Goldenstar Creek (P3-RC1)		San Timoteo Creek Reach 3 (P3-RC3)		Santa Ana River Reach 3 (P3-SBC1)		San Timoteo Creek Reach 1A (P3-SBC2)		San Timoteo Creek Reach 2 (P3-SBC3)		Warm Creek (P3-SBC4)	
	Sampled Date	Flow	Sampled Date	Flow	Sampled Date	Flow	Sampled Date	Flow	Sampled Date	Flow	Sampled Date	Flow
7/21/2024	7/26/24 10:45 AM	4.5	7/26/24 9:20 AM	7.6	--	--	7/26/24 8:15 AM	0.1	--	--	7/26/24 7:30 AM	1
7/28/2024	8/2/24 11:40 AM	1.4	8/2/24 9:25 AM	8.9	--	--	8/2/24 8:05 AM	0.6	8/2/24 8:45 AM	0.7	8/2/24 7:30 AM	0.8
8/4/2024	8/7/24 10:50 AM	1.8	8/9/24 9:14 AM	39.4	--	--	8/9/24 8:19 AM	0.4	--	--	8/9/24 7:38 AM	1.8
8/11/2024	8/14/24 10:32 AM	2.9	8/16/24 8:55 AM	31.8	--	--	8/16/24 7:55 AM	0.6	8/16/24 8:30 AM	0.1	8/16/24 7:30 AM	1.3
8/18/2024	8/21/24 11:25 AM	1.1	8/23/24 9:50 AM	15.8	--	--	8/23/24 8:11 AM	0.2	--	--	8/23/24 7:37 AM	0.04
9/1/2024	--	--	--	--	9/5/24 10:50 AM	20.2	--	--	--	--	--	--
	--	--	--	--	9/11/24 9:32 AM	4.2	--	--	--	--	--	--
9/15/2024	--	--	--	--	9/17/24 12:20 PM	13.1	--	--	--	--	--	--
	--	--	--	--	9/18/24 11:00 AM	11.1	--	--	--	--	--	--
9/22/2024	--	--	--	--	9/26/24 10:20 AM	11.7	--	--	--	--	--	--

Table A.44. Flow (cfs) Observed at Priority 3 Sites in Orange County during the 2024 Dry Season

Week Beginning Date	Bolsa Chica Channel (P3-OC1)		Serrano Creek (P3-OC11)	
	Sampled Date	Flow	Sampled Date	Flow
7/21/2024	7/24/24 9:53 AM	1.26	7/24/24 8:52 AM	0.51
7/28/2024	7/31/24 9:51 AM	1.84	7/31/24 8:44 AM	0.72
8/4/2024	8/8/24 9:40 AM	1.3	8/8/24 8:30 AM	0.26
8/11/2024	8/15/24 9:48 AM	1.16	8/15/24 8:40 AM	0.34
8/18/2024	8/21/24 9:19 AM	5.52	8/21/24 8:10 AM	0.35

Table A.45. Water Quality Data from Priority 2 Sites during the 2024-2025 Storm Event

Sample Date	*E. coli* (MPN/100 mL)	TSS (mg/L)	Cond (µS/cm)	DO (mg/L)	pH	Temp (°C)	Turbidity (NTU)	Flow (cfs)
Prado Park Lake Outlet (WW-C3)								
3/11/2025	63	21	1121	11.4	8.6	16.3	10.2	9.4
3/12/2025	85	22	1108	10.4	8.4	16	9.5	5.5
3/13/2025	3300	130	580	10	7.9	13.1	204	15.8
3/14/2025	73	25	945	10.3	8.6	14.9	12	5.1
Chino Creek @ Central Avenue (WW-C7)								
3/11/2025	140	2	943	8.5	7.7	17.4	0.2	64.8
3/12/2025	140	2	934	8	7.6	17.9	0.1	35.5
3/13/2025	5500	43	78.8	10.6	7.2	12.7	29.4	1104
3/14/2025	700	4	820	9.3	7.2	14.8	2.8	21.6
Mill-Cucamonga Creek Below Wetlands (WW-M6)								
3/11/2025	41	4	858	8.2	7.6	17.1	1.5	44.4
3/12/2025	160	5	839	8.2	7.5	17.1	1.4	35.2
3/13/2025	3900	88	82.2	10.5	7.7	12	52.9	740
3/14/2025	1400	9	588	9.3	7.7	14.1	7.3	51.2
SAR @ MWD Crossing (WW-S1)								
3/11/2025	98	550	602	9.4	7.9	14.4	247	74.8
3/12/2025	490	400	567	9.4	7.8	14.6	194	82.2
3/13/2025	12000	2200	111	10.3	7.8	11.3	493	1246
3/14/2025	930	950	400	10.3	7.7	11	438	79
SAR @ Pedley Avenue (WW-S4)								
3/11/2025	440	460	705	9.2	8	15.4	222	130.3
3/12/2025	1000	430	620	9.1	7.8	15.6	180	165
3/13/2025	8700	1800	176	10.1	7.6	12.3	494	1821
3/14/2025	2600	960	413	10.1	7.8	11.5	458	146
SAR @ Mission (WW-MISSION)								
3/11/2025	190	500	477	9.6	8	14.9	250	98.5
3/12/2025	470	360	471	9.5	7.9	15.5	205	110
3/13/2025	11000	11000	124	10.5	7.5	11.1	2154	604
3/14/2025	1400	1000	338	10.6	7.8	10.7	456	281

Table A.46. 2024 Daily Mean Flow (cfs), Chino Creek at Schaeffer Avenue, as Measured by the USGS gage 11073360

Date	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1	1.8 A	391 A	3.0 A	4.5 A	1.2 A	1.1 A	0.7 A	1.0 A	1.3 A	0.8 A	0.4 A	0.1 A
2	2.0 A	55.1 A	67.1 A	4.4 A	1.1 A	1.3 A	0.7 A	0.9 A	0.8 A	0.7 A	0.5 A	0.1 A
3	58.2 A	58.8 A	3.5 A	4.5 A	1.1 A	1.1 A	0.7 A	1.0 A	0.8 A	0.7 A	0.4 A	0.2 P
4	1.6 A	515 A	3.1 A	3.5 A	1.0 A	1.0 A	0.7 A	0.9 A	0.8 A	0.7 A	0.3 A	0.3 P
5	1.3 A	1190 A	2.8 A	12.5 A	27.5 A	0.9 A	0.7 A	1.0 A	0.7 A	0.6 A	0.3 A	0.2 P
6	1.7 A	419 A	81.1 A	2.8 A	1.7 A	0.9 A	0.7 A	1.1 A	0.7 A	0.5 A	0.3 A	0.3 P
7	11.1 A	123 A	41.8 A	2.7 A	1.4 A	0.9 A	0.7 A	1.2 A	0.7 A	0.6 A	0.3 A	0.3 P
8	1.0 A	74.7 A	3.8 A	2.7 A	1.6 A	0.9 A	0.7 A	1.2 A	0.7 A	0.6 A	0.3 A	0.2 P
9	0.7 A	6.2 A	3.2 A	2.6 A	3.1 A	0.9 A	0.7 A	1.2 A	0.8 A	0.5 A	0.3 A	0.8 P
10	0.8 A	3.6 A	2.9 A	2.7 A	2.6 A	0.9 A	0.7 A	1.3 A	0.7 A	0.6 A	0.3 A	0.8 P
11	0.8 A	3.2 A	2.9 A	2.7 A	2.7 A	1.6 A	0.7 A	1.0 A	0.7 A	0.5 A	0.3 A	0.1 P
12	0.7 A	2.7 A	3.0 A	2.3 A	3.9 A	0.7 A	1.0 A	1.1 A	0.8 A	0.4 A	0.3 A	0.2 P
13	0.7 A	2.4 A	2.9 A	7.8 A	3.3 A	0.8 A	0.6 A	1.0 A	1.0 A	0.9 A	0.3 A	0.2 P
14	0.8 A	2.4 A	2.6 A	56.5 A	3.3 A	0.8 A	0.7 A	0.9 A	0.8 A	0.9 A	0.3 A	0.2 P
15	0.8 A	2.2 A	2.8 A	3.0 A	1.8 A	0.7 A	0.8 A	0.8 A	0.7 A	1.4 A	4.8 A	0.2 P
16	0.7 A	2.2 A	2.7 A	1.8 A	1.5 A	1.0 A	1.9 A	0.9 A	0.9 A	0.4 A	0.3 A	0.2 P
17	0.8 A	2.1 A	2.5 A	1.9 A	1.3 A	1.1 A	0.7 A	0.9 A	0.8 A	0.4 A	0.3 A	0.2 P
18	0.8 A	2.0 A	2.6 A	1.7 A	1.3 A	0.8 A	0.7 A	1.5 A	0.7 A	0.3 A	0.2 A	0.2 P
19	0.7 A	63.5 A	2.6 A	1.9 A	1.2 A	0.8 A	0.7 A	1.1 A	0.9 A	0.3 A	0.2 A	0.2 P
20	23.8 A	484 A	2.5 A	1.5 A	1.3 A	0.9 A	0.8 A	0.8 A	0.8 A	0.3 A	0.2 A	0.2 P
21	10.6 A	181 A	2.4 A	1.6 A	1.2 A	0.9 A	0.8 A	0.7 A	0.8 A	0.3 A	0.2 A	0.2 P
22	241 A	5.0 A	2.4 A	2.3 A	1.2 A	0.9 A	0.9 A	0.8 A	0.7 A	0.3 A	0.3 A	0.9 P
23	3.0 A	3.8 A	7.0 A	1.3 A	1.1 A	0.9 A	0.8 A	0.8 A	0.9 A	0.3 A	0.2 A	0.8 P
24	1.6 A	3.4 A	47.1 A	1.4 A	1.1 A	0.9 A	0.8 A	0.8 A	0.8 A	0.4 A	0.2 A	0.2 P
25	1.6 A	3.2 A	2.6 A	1.4 A	1.1 A	1.0 A	0.9 A	0.7 A	0.8 A	0.5 A	0.2 A	0.2 P
26	1.3 A	4.8 A	2.2 A	1.4 A	1.2 A	0.7 A	1.0 A	0.8 A	0.9 A	0.4 A	0.2 A	0.3 P
27	1.6 A	5.6 A	2.4 A	1.4 A	1.3 A	0.7 A	0.9 A	0.9 A	0.9 A	0.3 A	0.2 A	0.2 P
28	1.6 A	3.0 A	2.1 A	1.2 A	1.2 A	0.8 A	0.9 A	0.8 A	0.9 A	2.7 A	0.2 A	0.3 P
29	2.1 A		2.1 A	1.6 A	1.2 A	0.8 A	0.9 A	0.9 A	0.9 A	0.7 A	0.1 A	0.2 P
30	0.8 A		348 A	1.3 A	1.1 A	0.7 A	0.9 A	1.2 A	0.8 A	0.4 A	0.1 A	0.2 P
31	0.7 A		41.1 A		1.2 A		1.0 A	0.9 A		0.4 A		0.2 P
COUNT	31	28	31	30	31	30	31	31	30	31	30	31
MAX	241.0	1190.0	348.0	56.5	27.5	1.6	1.9	1.5	1.3	2.7	4.8	0.9
MIN	0.7	2.0	2.1	1.2	1.0	0.7	0.6	0.7	0.7	0.3	0.1	0.1

Key: [A] Approved for publication -- Processing and review completed; [P] Data are considered "Provisional data subject to revision"

Table A.47. 2024 Daily Mean Flow (cfs), Cucamonga Creek near Mira Loma, as Measured by the USGS gage 11073495

Date	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1	39.3[A]	368[A]	111[A]	51.9[A]	9.48[A]	28.1[A]	4.93[A]	4.42[A]	8.04[A]	3.61[A]	12.7[P]	28.8[P]
2	46.2[A]	37.7[A]	693[A]	41.2[A]	13.2[A]	24.4[A]	4.22[A]	14.4[A]	4.78[A]	3.69[A]	18.1[P]	28.0[P]
3	120[A]	21.7[A]	212[A]	37.1[A]	17.2[A]	30.7[A]	13.2[A]	17.2[A]	5.53[A]	4.43[A]	22.7[P]	24.9[P]
4	30.3[A]	429[A]	121[A]	25.8[A]	19.9[A]	22.0[A]	44.4[A]	13.1[A]	6.76[A]	7.69[A]	22.5[P]	27.5[P]
5	22.8[A]	3640[A]	69.8[A]	33.2[A]	121[A]	17.8[A]	51.7[A]	6.31[A]	7.62[A]	15.0[A]	22.6[P]	20.0[P]
6	23.5[A]	1780[A]	222[A]	36.7[A]	22.8[A]	17.7[A]	26.3[A]	4.95[A]	10.9[A]	14.9[A]	4.72[P]	11.8[P]
7	32.1[A]	528[A]	768[A]	33.4[A]	19.7[A]	25.2[A]	40.0[A]	8.51[A]	18.0[A]	12.9[A]	11.0[P]	6.28[P]
8	23.3[A]	160[A]	83.8[A]	27.2[A]	18.4[A]	26.8[A]	20.8[A]	7.23[A]	21.7[A]	15.2[A]	28.3[P]	12.0[P]
9	22.5[A]	88.2[A]	51.6[A]	34.3[A]	13.3[A]	31.5[A]	31.2[A]	11.4[A]	33.1[A]	16.2[A]	10.1[P]	11.1[P]
10	20.4[A]	177[A]	58.3[A]	33.7[A]	14.1[A]	28.5[A]	50.4[A]	31.4[A]	24.4[A]	6.33[A]	14.9[P]	4.88[P]
11	19.5[A]	152[A]	72.3[A]	17.9[A]	14.1[A]	22.5[A]	48.7[A]	53.3[A]	16.4[A]	4.46[A]	19.7[P]	3.32[P]
12	18.7[A]	102[A]	68.2[A]	34.3[A]	19.1[A]	21.3[A]	114[A]	58.0[A]	4.45[A]	6.61[A]	20.4[P]	40.7[P]
13	21.3[A]	127[A]	72.1[A]	48.6[A]	16.1[A]	22.7[A]	89.4[A]	82.9[A]	3.26[A]	25.9[A]	50.7[P]	4.19[P]
14	20.1[A]	70.9[A]	94.0[A]	171[A]	16.7[A]	12.8[A]	97.3[A]	36.4[A]	4.20[A]	31.6[A]	70.7[P]	3.56[P]
15	16.0[A]	14.8[A]	84.7[A]	29.4[A]	14.7[A]	10.9[A]	18.6[A]	26.4[A]	5.80[A]	11.9[P]	151[P]	5.05[P]
16	14.9[A]	15.9[A]	76.8[A]	31.0[A]	23.3[A]	19.6[A]	57.1[A]	24.4[A]	6.52[A]	9.97[P]	57.5[P]	21.7[P]
17	17.9[A]	17.1[A]	86.3[A]	34.9[A]	23.1[A]	26.8[A]	65.5[A]	36.9[A]	10.7[A]	14.1[P]	87.6[P]	18.0[P]
18	20.4[A]	19.5[A]	91.8[A]	31.3[A]	22.6[A]	19.2[A]	41.3[A]	49.0[A]	45.0[A]	12.4[P]	96.7[P]	15.9[P]
19	20.4[A]	148[A]	80.1[A]	25.7[A]	31.9[A]	15.9[A]	21.8[A]	20.8[A]	5.75[A]	8.52[P]	93.7[P]	16.0[P]
20	63.3[A]	1370[A]	81.4[A]	32.8[A]	29.3[A]	21.0[A]	22.2[A]	12.3[A]	3.18[A]	13.6[P]	62.2[P]	11.8[P]
21	115[A]	549[A]	76.1[A]	31.9[A]	27.2[A]	15.4[A]	19.9[A]	15.6[A]	4.27[A]	10.6[P]	31.7[P]	5.00[P]
22	440[A]	121[A]	71.9[A]	31.0[A]	30.8[A]	20.9[A]	14.7[A]	16.9[A]	6.18[A]	4.82[P]	23.6[P]	4.51[P]
23	64.2[A]	93.9[A]	85.4[A]	26.1[A]	23.4[A]	16.1[A]	7.62[A]	17.0[A]	6.14[A]	5.97[P]	25.6[P]	6.40[P]
24	14.6[A]	74.6[A]	93.5[A]	14.1[A]	27.9[A]	5.12[A]	11.5[A]	22.5[A]	8.93[A]	5.90[P]	27.8[P]	9.89[P]
25	19.1[A]	75.3[A]	82.7[A]	19.2[A]	21.6[A]	7.40[A]	6.10[A]	27.2[A]	4.70[A]	4.07[P]	31.2[P]	12.8[P]
26	13.3[A]	88.6[A]	86.4[A]	18.5[A]	24.9[A]	37.9[A]	5.65[A]	13.1[A]	3.60[A]	4.83[P]	29.8[P]	24.9[P]
27	13.9[A]	89.5[A]	94.7[A]	20.0[A]	22.3[A]	2.39[A]	9.03[A]	14.7[A]	3.87[A]	9.39[P]	28.9[P]	57.3[P]
28	14.6[A]	83.7[A]	99.5[A]	21.2[A]	25.2[A]	1.63[A]	8.09[A]	18.7[A]	2.59[A]	31.7[P]	29.9[P]	39.6[P]
29	16.4[A]	94.2[A]	110[A]	26.0[A]	21.5[A]	5.61[A]	2.99[A]	33.1[A]	4.38[A]	17.0[P]	27.3[P]	38.4[P]
30	19.6[A]		701[A]	12.6[A]	24.7[A]	14.1[A]	1.99[A]	3.33[A]	3.58[A]	15.8[P]	23.8[P]	17.2[P]
31	20.3[A]		143[A]		27.5[A]		3.79[A]	4.77[A]		16.0[P]		18.5[P]
COUNT	31	29	31	30	31	30	31	31	30	31	30	31
MAX	440	3640	768	171	121	37.9	114	82.9	45	31.7	151	57.3
MIN	13.3	14.8	51.6	12.6	9.48	1.63	1.99	3.33	2.59	3.61	4.72	3.32

Key: [A] Approved for publication -- Processing and review completed; [P] Data are considered "Provisional data subject to revision"

Table A.48. 2024 Daily Mean Flow (cfs), Santa Ana River at MWD Crossing, as Measured by the USGS gage 11066460

Date	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1	53.9[A]	529[A]	28.6[A]	252[A]	127[A]	51.4[A]	32.1[A]	26.8[A]	25.2[A]	29.5[A]	33.8[A]	45.2[A]
2	51.6[A]	286[A]	303[A]	196[A]	118[A]	52.9[A]	32.2[A]	26.4[A]	27.2[A]	28.9[A]	32.7[A]	47.1[A]
3	139[A]	212[A]	310[A]	197[A]	113[A]	52[A]	31.5[A]	26.9[A]	28.3[A]	28.3[A]	32.1[A]	46.3[A]
4	80.4[A]	199[A]	171[A]	190[A]	99.2[A]	49.4[A]	30.2[A]	26.8[A]	26.5[A]	28.5[A]	30.2[A]	45.7[A]
5	58.4[A]	6510[A]	166[A]	222[A]	134[A]	45.1[A]	29.6[A]	27[A]	28.3[A]	28.3[A]	31.9[A]	45.7[A]
6	55[A]	3650[A]	203[A]	231[A]	97.7[A]	43.9[A]	29.8[A]	25.6[A]	27.5[A]	28.4[A]	30.6[A]	44.9[A]
7	122[A]	582[A]	327[A]	225[A]	79.9[A]	42.3[A]	29.3[A]	26[A]	26.6[A]	27.7[A]	29.5[A]	43.5[A]
8	64.2[A]	534[A]	200[A]	221[A]	84.7[A]	40.4[A]	28.8[A]	26.4[A]	91.6[A]	28.1[A]	29.7[A]	43[A]
9	55.2[A]	125[A]	146[A]	209[A]	86[A]	39.1[A]	28.8[A]	27.5[A]	44.5[A]	28.5[A]	29.3[A]	44.5[A]
10	55.4[A]	65.8[A]	128[A]	202[A]	79[A]	36.9[A]	29[A]	27.5[A]	32.3[A]	29.5[A]	29.9[A]	44.5[A]
11	54.5[A]	57.4[A]	121[A]	184[A]	73.9[A]	35.5[A]	28.7[A]	26.4[A]	29.1[A]	30.1[A]	31.7[A]	44[A]
12	53[A]	69.5[A]	115[A]	191[A]	69.6[A]	35.7[A]	28.9[A]	28.5[A]	28.6[A]	30.1[A]	31.4[A]	44.7[A]
13	53.4[A]	73.9[A]	109[A]	188[A]	67.8[A]	36.2[A]	29[A]	26.9[A]	28.8[A]	30[A]	30.1[A]	44.3[A]
14	55.5[A]	71.3[A]	97.5[A]	215[A]	64.4[A]	38[A]	29.2[A]	27.1[A]	30.8[A]	30[A]	30.4[A]	44.1[A]
15	56.2[A]	40.7[A]	113[A]	246[A]	63.9[A]	37.3[A]	30.4[A]	24[A]	31[A]	30.3[A]	33.2[A]	43[A]
16	56.1[A]	35[A]	102[A]	164[A]	67.1[A]	38.7[A]	29.5[A]	24.8[A]	30.5[A]	31.5[A]	37.4[A]	42.8[P]
17	52.9[A]	32.2[A]	94.3[A]	145[A]	69.4[A]	39.3[A]	29.1[A]	23.3[A]	29.7[A]	31.4[A]	33.4[A]	45.6[P]
18	54.2[A]	31[A]	87.5[A]	133[A]	66.8[A]	39.3[A]	29.7[A]	23.9[A]	28.9[A]	31.2[A]	31[A]	43.5[P]
19	55.2[A]	32.3[A]	80.7[A]	130[A]	63.4[A]	38.9[A]	28.4[A]	24.4[A]	29.6[A]	29.7[A]	29.7[A]	42.8[P]
20	120[A]	2790[A]	68[A]	133[A]	61.8[A]	40.5[A]	29.1[A]	24.9[A]	30.7[A]	30.1[A]	28.5[A]	42.1[P]
21	291[A]	555[A]	65.6[A]	118[A]	72.3[A]	40.6[A]	27.8[A]	24[A]	35.3[A]	29.3[A]	27.7[A]	40.9[P]
22	653[A]	76.9[A]	66[A]	118[A]	70.5[A]	40.4[A]	27.7[A]	24.3[A]	31.9[A]	29.6[A]	28.6[A]	40.5[P]
23	366[A]	38.7[A]	74.1[A]	149[A]	59.3[A]	39.6[A]	27[A]	25.5[A]	31.1[A]	29.6[A]	30.3[A]	39.2[P]
24	218[A]	30.3[A]	81.7[A]	146[A]	57.3[A]	37.8[A]	26.2[A]	24.4[A]	30.8[A]	30.4[A]	34[A]	38.8[P]
25	196[A]	26[A]	89.3[A]	151[A]	54.4[A]	35.9[A]	27.6[A]	26[A]	30.4[A]	30.6[A]	35[A]	39.2[P]
26	183[A]	27.2[A]	69.8[A]	174[A]	52.1[A]	35.5[A]	27[A]	24.8[A]	30.5[A]	30.5[A]	36.7[A]	38.1[P]
27	177[A]	40.9[A]	69.5[A]	180[A]	48.8[A]	35.6[A]	27.3[A]	25.8[A]	29.8[A]	31.4[A]	39.3[A]	38.1[P]
28	173[A]	32.3[A]	67.8[A]	172[A]	47.4[A]	34.1[A]	26[A]	25.6[A]	29.6[A]	31.8[A]	41.2[A]	38.3[P]
29	172[A]	28.9[A]	68.3[A]	166[A]	45[A]	34.4[A]	26.5[A]	24.9[A]	29.3[A]	48.6[A]	42.5[A]	37.3[P]
30	169[A]		877[A]	160[A]	47[A]	33.5[A]	27.1[A]	25.2[A]	30.8[A]	38.3[A]	43.2[A]	36[P]
31	171[A]		456[A]		51.3[A]		26.5[A]	25.2[A]		35.4[A]		35[P]
COUNT	31	29	31	30	31	30	31	31	30	31	30	31
MAX	653	6510	877	252	134	52.9	32.2	28.5	91.6	48.6	43.2	47.1
MIN	51.6	26	28.6	118	45	33.5	26	23.3	25.2	27.7	27.7	35

Key: [A] Approved for publication -- Processing and review completed; [P] Data are considered "Provisional data subject to revision"

Appendix B QA/QC Summary

Introduction

This section provides the Quality Assurance/Quality Control (QA/QC) evaluation for samples and data collected during the period covered by this report, which includes the 2024 dry weather monitoring and 2024-2025 storm monitoring. The basis for this evaluation is the approved QAPP.[14]

Field measurements were made for the following constituents: conductivity, dissolved oxygen, pH, turbidity, water temperature, and flow. Field data were checked to ensure that all required data were gathered and recorded. This check included a data review to ensure correct units of measurements were reported and that reported values were within expected ranges.

Laboratory analyses were conducted for three constituents: *E. coli*, *Enterococcus*, and TSS. Data validation included a check to ensure that samples were delivered to laboratories within required holding times and that all sample handling and custody protocols were followed. Field/equipment blank and duplicate results were evaluated against various reporting requirements and data were checked to ensure correct units of measurement were reported.

The following sections summarize the results of the QA/QC evaluation for the period covered by this report.

Field Measured Parameters Completeness

Table B.1 shows number of dry weather field measurements collected during 2024. Completeness is summarized as follows:

- As four Priority 1 sites are in lakes and two Priority 4 sites are in the tidal zone, there are 210 planned flow measurements (140 fewer than other field parameters).

Table B.1. Dry Weather Field Parameter Completeness Summary

Parameter	Planned[1]	Collected	% Complete
Conductivity	350	338	97%
Dissolved Oxygen	350	338	97%
Flow[2]	210	195	93%
pH	350	338	97%
Temperature	350	338	97%
Turbidity	350	338	97%

[1] Planned represents the number of samples planned based on SAR RBMP Monitoring Plan and does not include special investigations that arise based on results of the routine monitoring program.

[2] Flow is not measured at lake sites and sites located in tidal waters. Flow was not taken during unsafe conditions or when site was dry.

[14] https://sawpa.org/wp-content/uploads/2022/06/FINAL-2022-Revised-SAR-QAPP-w-Apps-6-6-2022.pdf

Accuracy and Precision

Field staff used a Horiba multi-parameter probe (or equivalent) to collect in situ field measurements for conductivity, dissolved oxygen, pH, and water temperature at all sample locations during each sample event. Turbidity and flow were measured with a Hach Turbidity meter and Marsh-McBirney Flo-Mate meter with top-setting rod, respectively. Field staff calibrated each of the water quality meters prior to each sample event. **Table B.2** summarizes the accuracy and repeatability associated with the use of each meter. All field measurement accuracy expectations met the requirements as listed in the QAPP.

Table B.2. Summary of Accuracy and Repeatability Expectations for Field Measurement Meters

Water Quality Constituent	Accuracy	Repeatability
Dissolved Oxygen	± 0.2 mg/L	± 0.1 mg/L
pH	± 0.1 units	± 0.05 units
Conductivity	± 1%	± 0.05%
Water Temperature	± 0.3 □C	±0.1 □C
Turbidity	± 2%	± 1%
Flow	± 2%	N/A

Laboratory Constituents

Table B.3 describes the number of grab water samples planned versus actual samples collected. During the 2024 dry weather season, 25 weeks of sampling at six Priority 1 sites and six Priority 2 sites were planned from the week of May 12, 2024, through the week of November 17, 2024. During the same period, 5 weeks of sampling at seven Priority 3 sites, and one week of sampling at five Priority 4 sites are also planned. This results in 342 dry weather samples. This Annual Report also includes results from monitoring of wet weather storm events at the six Priority 2 sites. This results in 24 wet weather samples (6 sites/event and 4 samples per site) for a total of 365 samples during the entire monitoring period covered in this 2024-2025 Annual Report.

Holding time requirements for TSS (7 days), *E. coli* (6 hours), and *Enterococcus* (6 hours) were met for all samples collected during the 2024-2025 sampling year.

Table B.3. Summary of Grab Sample Collection Activity for Dry and Wet Weather Sample Events and Regularly Sampled Sites

Sample ID	Sample Location	Planned	Collected	Not Collected
P1-1	Canyon Lake at Holiday Harbor	25	25	0
P1-2	Lake Elsinore	25	25	0
P1-3	Lake Perris	25	25	0
P1-4	Big Bear Lake at Swim Beach	25	25	0
P1-5	Mill Creek Reach 2	25	25	0
P1-6	Lytle Creek (Middle Fork)	25	25	0
WW-M6	Mil-Cucamonga Creek below Wetlands	29	29	0

Sample ID	Sample Location	Planned	Collected	Not Collected
WW-C7	Chino Creek at Central Avenue	29	29	0
WW-C3	Prado Park Lake	29	29	0
WW-S1	Santa Ana River Reach 3 at MWD Crossing	29	29	0
WW-S4	Santa Ana River Reach 3 at Pedley Avenue	29	29	0
MISSION[1]	Santa Ana River at Mission Avenue	25	29	0
P3-OC1	Bolsa Chica Channel	5	5	0
P3-OC2[2]	Borrego Creek	5	0	5
P3-RC1	Goldenstar Creek	5	5	0
P3-RC3	San Timoteo Creek Reach 3	5	5	0
P3-SBC1	Santa Ana River Reach 4	5	5	0
P3-SBC2	San Timoteo Creek Reach 1A	5	5	0
P3-SBC3[3]	San Timoteo Creek Reach 2	5	2	3
P3-SBC4	Warm Creek	5	5	0
P3-OC11	Serrano Creek	5	5	0
P4-RC2	Temescal Creek at Lincoln Avenue	1	1	0
P4-OC1	Santa Ana-Delhi Channel Upstream of Irvine Avenue	1	1	0
P4-OC2	Santa Ana-Delhi Channel in Tidal Prism	1	1	0
P4-OC3	Greenville-Banning Channel in Tidal Prism	1	1	0
P4-SBC1	Cucamonga Creek at Hellman Avenue	1	1	0
	Total	**370**	**366**	**8**

[1] Additional samples were collected at Priority 2 site MISSION during the wet weather storm event
[2] Orange County did not collect any samples at Priority 3 site OC2 due to the site being dry every visit.
[3] San Bernardino did not collect all five samples at Priority 3 site SBC3 due to that site being dry when visited.

Field/Equipment Blanks

The QAPP calls for a field/equipment blank to be collected at a 5% frequency program wide. Field/equipment blanks were collected at one to two sites for 20 weeks of the RBMP program, resulting in the 5% frequency required. Per the QAPP, the reporting target limits for TSS and bacterial indicators were 2.0 mg/L and 10 MPN/100 mL, respectively. These method sensitivity guidelines were met. All field/equipment blank results were below detectable counts (< 10 MPN/100 mL) for *E. coli* and TSS (< 2.0 mg/L).

Field Duplicates

Field staff collected at least one field duplicate during 21 pre-scheduled weeks of the program for a total of 22 TSS field duplicates and 22 indicator bacteria field duplicates. As a result, the frequency of field duplicate collection was 5 percent, which matches the required frequency.

Each duplicate sample was analyzed for the same parameters as its paired field sample. Results of the field duplicate analyses can be used to assess adherence to field sampling collection protocols and laboratory precision. **Table B.4** summarizes the field duplicate analysis results for TSS. Eight duplicate pairs exceeded the QAPP's relative percent difference (RPD) goal of ± 25 percent. The eight pairs with RPD exceeding ± 25 percent are due to low TSS

values; maximum TSS concentration in those pairs is 17 mg/L and the maximum difference in the three pairs is 8 mg/L. Dividing by the low TSS values artificially results in high RPD values.

To determine the precision of the duplicate analysis for each bacterial indicator the following method was used:[15]

- Calculate the logarithm of each sample and associated duplicate ("laboratory pair").
- Determine the range for each laboratory pair (R_{log}).
- Calculate the mean of the ranges (Mean R_{log}).
- Calculate the precision criterion, where the precision criteria = 3.27 * Mean R_{log}.
- Compare R_{log} for each duplicate pair with the calculated precision criterion for the data set to determine if R_{log} is less than the precision criterion.

Table B.4. Results of Field Duplicate Analysis for TSS

Week Beginning Date	Site ID	Duplicate Result (mg/L)	Sample Result (mg/L)	RPD (%)
6/16/2024	P1-6	0.8	0.7	13%
6/30/2024	WW-MISSION	4	12	100%
7/7/2024	WW-S4	5	5	0%
7/14/2024	P1-5	< 0.5	1	67%
7/21/2024	P1-3	17	9	62%
7/28/2024	WW-S1	7	6	15%
8/4/2024	P3-SBC2	3	2	40%
8/11/2024	P1-3	5	4	22%
	P3-RC1	3	2	40%
8/18/2024	WW-C7	3	3	0%
	WW-S4	7	4	55%
8/25/2024	P1-4	8	8	0%
9/1/2024	WW-M6	7	8	13%
9/8/2024	WW-MISSION	12	9	29%
9/15/2024	P1-1	4	4	0%
9/22/2024	P3-SBC1	3	3	0%
10/20/2024	WW-S1	4	4	0%
10/27/2024	WW-C7	10	9	11%
11/3/2024	P1-5	0.7	0.5	33%
11/10/2024	P1-3	6	6	0%
11/17/2024	WW-C3	32	25	25%
3/9/2025	WW-C3	21	21	0%

Note: Values with a "<" qualifier reflect results that are below detection limits. For calculation purposes, the value was represented by the detection limit.

Tables B.5 summarizes the field duplicate analysis results for *E. coli*, respectively. One sample exceeded precision criterion.

[15] Standard Methods, Section 9020B, 18th, 19th, or 20th Editions.

Table B.5. Results of Field Duplicate Analysis for *E. coli*

Week Beginning Date	Site ID	Duplicate Result (MPN/100 mL)	Sample Result (MPN/100 mL)	Log of Duplicate Result (L_1)	Log of Sample Result (L_2)	Range of Logs (L_1-L_2) or (R_{log})
6/16/2024	P1-6	2	4.1	0.30	0.61	0.31
6/23/2024	WW-MISSION	170	190	2.23	2.28	0.05
7/7/2024	WW-S4	20	16	1.30	1.20	0.10
7/14/2024	P1-5	11	12	1.04	1.08	0.04
7/21/2024	P1-3	8.6	5.2	0.93	0.72	0.22
7/28/2024	WW-S1	230	290	2.36	2.46	0.10
8/4/2024	P3-SBC2	2400	2900	3.38	3.46	0.08
8/11/2024	P1-3	2	3.1	0.30	0.49	0.19
	P3-RC1	380	660	2.58	2.82	0.24
8/18/2024	WW-C7	210	260	2.32	2.41	0.09
	WW-S4	22	170	1.34	2.23	0.89
8/25/2024	P1-4	3.1	4.1	0.49	0.61	0.12
9/1/2024	WW-M6	210	150	2.32	2.18	0.15
9/8/2024	WW-MISSION	4600	5800	3.66	3.76	0.10
9/15/2024	P1-1	10	8.6	1.00	0.93	0.07
9/22/2024	P3-SBC1	41	74	1.61	1.87	0.26
10/20/2024	WW-S1	280	240	2.45	2.38	0.07
10/27/2024	WW-C7	220	250	2.34	2.40	0.06
11/3/2024	P1-5	6.3	9.8	0.80	0.99	0.19
11/10/2024	P1-3	41	36	1.61	1.56	0.06
11/17/2024	WW-C3	20	52	1.30	1.72	0.41
3/9/2025	WW-C3	20	63	1.30	1.80	0.50
					Sum of R_{log}	4.28
					Mean R_{log}	0.20
					Precision Criterion (3.27*Mean R_{log})	0.64