

**Santa Margarita River Watershed Management Area
2019-2020 Water Quality Improvement Plan
Annual Report
January 2021**

**APPENDIX 5
Adaptive Management/Modifications**

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APPENDIX 5 ADAPTIVE MANAGEMENT/MODIFICATIONS

This appendix presents the potential triggers for adaptation of the [Water Quality Improvement Plan \(WQIP\)](#) and the results of the adaptive management process for the Santa Margarita River (SMR) Watershed Management Area (WMA) following the completion of the 2019-2020 monitoring year.

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

Multiple triggers may warrant adaptive management or changes to monitoring and assessment program activities. As described in Permit Provision B.5, potential triggers include exceedances of water quality standards in receiving waters, exceedances of action levels for outfall discharges, special study results, new regulatory actions, San Diego Regional Water Quality Control Board (San Diego Water Board) recommendations, public participation, and program effectiveness assessments. Adaptive management updates to the Copermittees' programs are typically evaluated and reported either annually or at the end of the Permit term. The adaptive management process is used in conjunction with water quality and programmatic data to evaluate whether modifications to numeric goals, schedules, and/or strategies are necessary to achieve compliance with the interim and final compliance numeric goals.

The WQIP is in the early stages of implementation; the 2019-2020 monitoring year was the first full year under the accepted WQIP. Consequently, programmatic and monitoring data are limited for conducting assessments that could lead to adaptive management. Adaptive management actions proposed in this WQIP Annual Report are primarily driven by recent directives from the San Diego Water Board. The San Diego Water Board conducted reviews of the 2017-2018 and 2018-2019 WQIP Annual Reports for the San Diego Region, and provided Copermittees with the results of these reviews and deadlines for addressing the items. The itemized comments were provided in a July 19, 2019 letter for the 2017-2018 report and in a September 10, 2020 letter for the 2018-2019 report. Requested items requiring a response by January 31, 2021 (i.e., with this Annual Report) are listed in **Section 5.1.2.1**. Several requests in these letters also require specific adaptive management-related actions. Each potential trigger is more fully considered in **Section 5.1** as part of the adaptive management approach. Detailed responses to these requests are provided in **Section 5.1.2.1**.

Responses to items in the San Diego Water Board's **2017-2018 and 2018-2019 WQIP Annual Report review letters** due in January 2021 are provided in **Section 5.1.2.1**.

5.1 DRIVERS FOR ADAPTIVE MANAGEMENT

Drivers for adaptive management of WQIP elements and results of the adaptive management evaluation for the 2019-2020 monitoring year are discussed in the following sections. In addition, Copermittees have identified where administrative changes are needed to clarify jurisdictional strategies or methods as they have been implemented. Changes made with this 2019-2020 WQIP Annual Report are documented as markup in the Copermittees' strategy tables in **Appendix 2**.

5.1.1 Permit-required Monitoring Results

Results from monitoring conducted in accordance with Permit Provisions D.1 (receiving water) and D.2 (municipal separate storm sewer system [MS4] outfalls) may trigger updates to the WQIP, potentially prompting additions or changes to the strategies that are implemented. Monitoring results are evaluated in two ways:

- (1) comparison of receiving water monitoring data to receiving water limitations, and assessment of potential impacts from MS4 discharges to any persistent exceedances, and
- (2) comparison of dry and wet weather MS4 outfall discharge data to non-stormwater action levels (NALs) and stormwater action levels (SALs).

5.1.1.1 Receiving Water Limitations

A comprehensive evaluation of potential MS4 outfall contributions to receiving water conditions was conducted during WQIP development in order to identify the highest priority water quality conditions (HPWQCs) and priority water quality conditions (PWQCs) for the WMA, as required by Permit Provision B.2.b. The WQIP was accepted in November 2018, and the collection of long-term receiving water monitoring data under the MAP is now underway, with a portion completed during the 2019-2020 monitoring year. The required assessments will be conducted once the complete set of long-term receiving water data have been collected at all of the long-term monitoring stations under the WQIP MAP.

5.1.1.2 Exceedances of NALs and/or SALs

The primary focus of this assessment is on exceedances of NALs or SALs in MS4 outfall discharges during dry and wet weather, respectively. As stated in Permit Provisions C.1 and C.2, NALs and SALs are incorporated into the WQIP to:

- (1) support the development and prioritization of water quality improvement strategies,
- (2) assess the effectiveness of the water quality improvement strategies, and
- (3) support the detection and elimination of non-stormwater and illicit discharges to the MS4 (NALs only).

Appendix 4 includes the detailed results of the dry and wet weather MS4 outfall discharge monitoring programs and compares the data to applicable NALs or SALs. A summary of exceedances of NALs at the 12 sampled highest priority outfalls and SALs at the six sampled outfalls is presented in **Table A5-1**. Exceedances of NALs in **Table A5-1** are associated with one or both samples collected during the monitoring year. Several additional outfalls were visited not sampled (VNS) due to lack of measurable flow. Monitored outfalls are shown in **Appendix 4** in **Figures A4-11** (dry weather) and **A4-15** (wet weather). Repeated exceedances for constituents that are not currently addressed by the WQIP may indicate that these constituents warrant further consideration. During the 2019-2020 monitoring year, the NALs most often exceeded in the SMR WMA (i.e., nutrients and bacteria) were consistent with those identified by the WQIP as PWQCs and HPWQCs. Exceedances of SALs were observed only for nutrients at HST01. These data are consistent with constituents identified by the WQIP as priority water quality conditions.

Because NAL and SAL exceedances were consistent with constituents already addressed by the WQIP, program adaptations based on NAL and SAL exceedances are not warranted at this time.

Table A5-1. Exceedances of NALs and SALs during the 2019-2020 Monitoring Year in the Santa Margarita River WMA

Constituent	Outfalls with NAL Exceedances	Outfalls with SAL Exceedances ^{2,3}
Turbidity ^{1,2}	2 of 12	0 of 6
pH ¹	2 of 12	N/A
Nitrate as N ²	N/A	1 of 6 (HST01)
Nitrate + Nitrite (total) ²	N/A	1 of 6 (HST01)
Total Nitrogen ^{1,2}	11 of 12	1 of 6 (HST01)
Total Phosphorus ¹²	12 of 12	1 of 6 (HST01)
Fecal Coliform ¹	9 of 12	N/A
<i>Enterococcus</i> ¹	12 of 12	N/A
Cadmium ^{1,2}	0 of 12	0 of 6
Copper ^{1,2}	0 of 12	0 of 6
Chromium III ¹	0 of 12	N/A
Chromium VI ¹	0 of 12	N/A
Lead ^{1,2}	0 of 12	0 of 6
Nickel ¹	0 of 12	N/A
Silver ¹	0 of 12	N/A
Zinc ^{1,2}	0 of 12	0 of 6
Dissolved Oxygen ¹	1 of 12	N/A
MBAS ¹	0 of 12	N/A
Iron ¹	4 of 12	N/A
Manganese ¹	10 of 12	N/A

N/A – not applicable; no NAL or SAL in Provision C.

MBAS = methylene blue active substances (MBAS).

1. Applicable to non-stormwater discharges from the MS4 to inland surface waters (Permit Table C-4).

2. Applicable for discharges of stormwater from MS4 outfalls to receiving waters (Permit Table C-5).

3. Exceeds final effluent limitations (Rainbow Creek Nutrient TMDL).

4. One lab value and one field value.

5.1.1.3 Special Studies Results

As part of the MAP, the Copermittees are engaged in special studies related to eutrophication and nutrient loading, the HPWQCs for the watershed. Results supplement the nutrient data collected under Provisions D.1 (receiving water) and D.2 (MS4 outfalls) and can provide additional information about the spatial distribution, processes, and sources of nutrients and non-stormwater flow in the watershed.

Several special studies were conducted in the SMR WMA during the 2019-2020 monitoring year (see **Section 3.3** of the WQIP Annual Report and **Appendix 4** and its **Attachment 4I**) and continued work under several special studies is planned for 2020-2021. As relevant data, conclusions, and lessons learned become available from these studies, the numeric goals, strategies, schedules, and the MAP can be evaluated in terms of special study results to help drive adaptive management.

5.1.2 Regulatory Considerations

The purpose of this section is to summarize changes in regulatory requirements. For the 2019-2020 reporting year, this includes the recommendations from the San Diego Water Board summarized in **Section 5.1.2.1** and regulatory actions in **Section 5.1.2.2**.

5.1.2.1 San Diego Water Board Recommendations

In cases where the San Diego Water Board makes recommendations for modifications to the WQIP or Jurisdictional Runoff Management Programs (JRMP), these recommendations must be considered as part of the adaptive management process. The San Diego Water Board conducted reviews of the 2017-2018 and 2018-2019 WQIP Annual Reports for the Santa Margarita River WMA. They issued letters to the Copermittees dated July 19, 2019 and September 10, 2020, respectively, providing the results of the reviews and requests with deadlines for addressing the items in the letters. A summary of responses for items to be addressed by January 31, 2021 (i.e., in this WQIP Annual Report) is provided in **Table A5-2**, with details provided in the sections that follow. All letters issued in the San Diego Region included the same Attachment 1: Adaptive Management General Topics. However, the numbered topics need to be addressed only where applicable for the respective WMAs. If a particular topic is not applicable for a particular WMA, then the respective Copermittees need to "describe a technical rationale as to why the topic is not applicable," and do not need to address the topic further unless it becomes applicable for future reports. **Table A5-2** includes responses for each Attachment 1 item. **Attachment 5A** includes a memo with technical rationales for topics that are not applicable at this time as well as supporting information for the applicable topics. The 2021 WQIP Update is provided as **Attachment 5B**, and the 2017-2018 and 2018-2019 Annual Report Review letters are provided as **Attachment 5C**.

Table A5-2. Responses to San Diego Water Board 2017-2018 and 2018-2019 WQIP Annual Report Reviews

Location in Letter	Requested Item	AR Sections Where Addressed	Copermittee Response
2017-2018 WQIP Annual Report Review Letter Received July 24, 2019			
Items due by January 31, 2020			
Item 2.b.2, Page 3	The Western Riverside Copermittees are to submit the Final HMP Effectiveness Assessment and HMP Data.		Previously Completed
Item 3, Page 4	Provide a WQIP Annual Report for the 2018-2019 reporting period.		Previously Completed
Item 6.a, Page 4	Rainbow Creek TMDL Monitoring Trends: The County of San Diego is required to submit program changes with the January 31, 2020 JRMP annual report to address the identified program inspection and enforcement deficiencies for agricultural facilities in coordination with the San Water Board staff implementing the Agricultural Orders.	<ul style="list-style-type: none"> • 2018-2019 WQIP Annual Report • Appendix 2 	<p>A summary of Agriculture, Weights, and Measures (AWM) program changes (i.e., enhanced strategies) to help achieve water quality improvement goals in the Rainbow Creek Watershed, was provided with the 2018-2019 WQIP Annual Report.</p> <p>The update to the County of San Diego's JRMP is summarized in Section 7.4 in Appendix 2 to this WQIP Annual Report.</p>
Item 6.b, Page 5 & Attachment 1, Item 9.b, Page 10	Conduct a completeness check of the required monitoring.		Previously completed and will be conducted annually (see response for Attachment 1 Item 9.b)
Item 6.c, Page 5 & Attachment 1, Item 11.b, Page 11	Adaptively manage programs based on outfall exceedances in accordance with Item 11.b of Attachment 1: CT-SMG07: Nutrients (TN) CT-SMG18: FIB and Nutrients (TN)		Previously Completed
Items due by January 31, 2021			
Item 5, Page 4	The revised due date for the WQIP Update to incorporate the final I/O numeric targets, strategies, monitoring and assessment activities, schedules and reporting is now on or before January 31, 2021.	<ul style="list-style-type: none"> • 2021 WQIP Update - Attachment 5B 	The Copermittees updated the WQIP to incorporate the final Investigative Order numeric targets, strategies, monitoring and assessment activities, schedules, and reporting. The updates are provided in Attachment 5B .

Table A5-2. Responses to San Diego Water Board 2017-2018 and 2018-2019 WQIP Annual Report Reviews

Location in Letter	Requested Item	AR Sections Where Addressed	Copermittee Response
Attachment 1 – Adaptive Management General Topics – Due by January 31, 2021			
Attachment 1 Page 7	The updated JRMP strategies are required to be included in the JRMP Annual Report submitted concurrently with each applicable WQIP Annual Report on or before January 31, 2021.	<ul style="list-style-type: none"> Appendix 2 	JRMP strategies and JRMP Annual Reports are provided in Appendix 2 for each Copermittee. JRMP Updates may be provided as an attachment to the JRMP Annual Report and/or links to online JRMP documents are provided.
Item 1, Page 7	Homeless Encampments: Identification of potential geographic focus areas for coordination with local and regional programs or strategies to address discharges from encampments. Summaries of efforts, map of geographic prioritized areas, and a description of coordination with other agencies and programs.	<ul style="list-style-type: none"> 2017-2018 Annual Report Review Letter Responses - Attachment 5A 	This topic is largely not applicable to the SMR WMA at this time as the WQIP includes several strategies to address homeless encampments and identifies encampments as a controllable non-point source potentially impacting receiving water quality. However, Copermittees summarized efforts to address discharges from encampments in Section 2.1 of Attachment 5A.
Item 2, Page 7	Identification of Controllable and Uncontrollable Sources	<ul style="list-style-type: none"> 2017-2018 Annual Report Review Letter Responses - Attachment 5A 	This topic is not applicable to the SMR WMA at this time, as the topic is addressed in the WQIP. The technical rationale is provided in Section 2.2 of Attachment 5A.
Item 3, Page 8	Agricultural Orders Update and Assessment	<ul style="list-style-type: none"> 2017-2018 Annual Report Review Letter Responses - Attachment 5A 	This topic is not applicable to the SMR WMA at this time, as the topic is addressed in the WQIP. The technical rationale is provided in Section 2.3 of Attachment 5A.
Item 4, Page 8	Coordination of WQIP HPWQCs, PWQCs, and Strategies with WMA Ecological Reserve Goals and Projects	<ul style="list-style-type: none"> 2021 WQIP Update - Attachment 5B 	The Copermittees have developed an inventory of Ecological Reserves in the WMA and summarized reserve and project goals in Attachment 5B Section A6-1. An assessment of the compatibility of jurisdictional and WMA strategies with Ecological Reserve goals is also provided in Section A6-1.
Item 5, Page 8	Storm Drain Biofilms Source of Bacteria	<ul style="list-style-type: none"> 2017-2018 Annual Report Review Letter Responses - Attachment 5A 	This topic is not applicable at this time, as there is no bacteria TMDL or identified concerns regarding storm drain biofilms in the SMR WMA. Technical rationale as to why the topic is not applicable to the WMA is provided in Section 2.4 of Attachment 5A.

Table A5-2. Responses to San Diego Water Board 2017-2018 and 2018-2019 WQIP Annual Report Reviews

Location in Letter	Requested Item	AR Sections Where Addressed	Copermittee Response
Item 6, Page 8	Update of 303(d) Listings Since the acceptance of WQIPs, the 303(d) listings have been updated. The San Diego Water Board is requiring that Copermittees' update the 303(d) summaries to the most current OAL approved 303(d) list as of January 31, 2021.	<ul style="list-style-type: none"> • 2017-2018 Annual Report Review Letter Responses - Attachment 5A; and • 2021 WQIP Update - Attachment 5B 	The Copermittees updated the WQIP 303(d) summary and conducted an assessment of any potential changes to PWQCs or HPWQCs based on the revised list. Based on the assessment, no changes to PWQCs or HPWQCs are proposed at this time. The updated summary table is included in the WQIP Update as Table 2-6 in Attachment 5B and the assessment is provided in Section 3.1 of Attachment 5A .
Item 7, Page 9	Over-Irrigation Audit Findings	<ul style="list-style-type: none"> • 2017-2018 Annual Report Review Letter Responses - Attachment 5A 	The Copermittees have reviewed their respective audit notices and evaluated their JRMPs. A summary of program modifications and updates was provided in the 2018-2019 Annual Report. Additional program modifications and updates were evaluated in FY 19-20. A summary of remaining program modifications and updates and the rationale of why the non-structural BMP load reduction assessment is not applicable are presented in Section 3.2 of Attachment 5A .
Item 8, Page 9	Persistent Flow in MS4 Outfalls - Groundwater or Water Agency Maintenance Source Identification	<ul style="list-style-type: none"> • 2017-2018 Annual Report Review Letter Responses - Attachment 5A; and • 2021 WQIP Update - Attachment 5B 	Copermittees incorporated a summary of the Order WQ 2014-0194 DWQ (General Order) enrollee discharges, ongoing source identification activities, and the Permitted Flow Assessment strategy into Section 3.3 of Attachment 5A . The Permitted Flow Assessment strategy was updated in Section 4.2.3.2 and added to Table 4-16 in Attachment 5B .

Table A5-2. Responses to San Diego Water Board 2017-2018 and 2018-2019 WQIP Annual Report Reviews

Location in Letter	Requested Item	AR Sections Where Addressed	Copermittee Response
Item 9.a, Page 9	<p>Use of C Value Either provide a corrected pollutant load calculation or propose a method or process to correct the calculations. Based on the revised calculations, the WQIP Copermittees are required to revise the WMA or JRMP strategies as applicable to address the WQIP numeric goals and schedules.</p>	<ul style="list-style-type: none"> • 2017-2018 Annual Report Review Letter Responses - Attachment 5A; and • 2021 WQIP Update - Attachment 5B 	<p>Through the Regional Monitoring Workgroup, the Copermittees met with the San Diego Water Board to present the existing approach and constraints of the Permit and monitoring requirements that led to the methods in use. Copermittees and the San Diego Water Board are in agreement that the assessments should be revised or replaced, which will require time and continued coordination. Current WMA and Copermittee strategies in the WQIP do not utilize the C value to calculate non-structural pollutant load reduction. The Copermittees developed revisions to WQIP text to clarify the C Value is under revision in Attachment 5B Section 5.5.2.2 and a brief discussion that the revised calculation will not result in a change in reprioritization of projects or actions is provided in Section 3.4 of Attachment 5A. In an email dated August 19, 2020 the San Diego Water Board granted regulatory relief from performing some of the Permit-required assessments until after the planned reissuance of the Permit based on the Copermittees' on-going efforts to address this San Diego Water Board request. Details are provided in Appendix 4 Section 4.2.</p>
Item 9.b, Page 10	<p>Conduct a completeness check of the required monitoring.</p>	<ul style="list-style-type: none"> • Sec 5.1.2.1.1 	<p>A monitoring completeness check was conducted; sampling completeness requirements were achieved for each program component. In addition, QA/QC summary reports provided by monitoring element in attachments to Appendix 4 provide further detail on monitoring completeness. A monitoring completeness check was conducted. This item was addressed in Appendix 5 Table A5-3 of the 2018-2019 Annual Report and will continue to be addressed annually. A detailed response is provided in Section 5.1.2.1.1.</p>
Item 9.c, Page 10	<p>Fecal Indicator Bacteria A discussion of these new standards in the monitoring programs in the WMA is required. The discussion shall identify whether or not the Copermittees will add the new FIB standard and to which monitoring stations.</p>	<ul style="list-style-type: none"> • 2021 WQIP Update - Attachment 5B 	<p>Both <i>E. coli</i> and <i>Enterococci</i> are monitored as part of the WQIP Monitoring and Assessment Program, thus no modifications to the monitoring plan are required as both indicators will be analyzed. The Copermittees updated WQIP Table 2-5 to include <i>Enterococci</i> as a REC-1 and REC-2 beneficial use indicator and inserted a discussion of the new standards into the Santa Margarita River Monitoring Plan (WQIP Appendix 5A Section 2) in Attachment 5B.</p>

Table A5-2. Responses to San Diego Water Board 2017-2018 and 2018-2019 WQIP Annual Report Reviews

Location in Letter	Requested Item	AR Sections Where Addressed	Copermittee Response
Item 9.d, Page 10	Appropriate use of Surfer Health Study Results Update the evaluations that cite the SHS results to assure the differences in study design is accurately accounted for in the WQIP Annual Reports.	<ul style="list-style-type: none"> 2017-2018 Annual Report Review Letter Responses - Attachment 5A 	This topic is not applicable to the SMR WMA at this time. The SMR Surfer Health Study results are not cited in monitoring reports or the WQIP. Technical rationale as to why the topic is not applicable to the WMA is provided in Section 2.5 of Attachment 5A.
Item 10, Page 10	Coordination with Water and Sewer Agency Planning and Projects	<ul style="list-style-type: none"> 2021 WQIP Update - Attachment 5B 	Copermittees developed a summary of sewer and water agency projects and strategies. Addressed in the 2021 WQIP Update - see Sections 4.2.1.3.2, 4.2.2.3.2, Appendix 3B Table 1, and Appendix 6 Section 2 within the WQIP Update (Attachment 5B). A figure illustrating the service areas and water districts within the WMA is provided as Figure 4-12 in Attachment 5B.
Item 11.a, Page 10	Tabulate and report structural BMP information in a shape file format showing all structural BMPs, including wetland restoration projects and dry- weather diversions. The information for each structural BMP should include at least GPS location; size of BMP; drainage area to BMP; type of BMP; installation year; and target pollutant(s) to be treated.	Previously Completed	
Item 11.b, Page 11	Provide the criteria for determining high-priority outfalls for monitoring in dry and wet weather. Include clarification as to whether, and how, the results summarized in the Five- year Assessment of Random and Targeted MS4 Outfall Discharge Data Collected under NPDES Permit Order No. R9-2007-0001 in San Diego County Watersheds (Weston Solutions, 2015b) were used to prioritize outfall monitoring in each WMA.	Previously Completed. The County of San Diego has made some updates to the process and the revised outfall prioritization process is provided in Section 5.2.4.1.	

Table A5-2. Responses to San Diego Water Board 2017-2018 and 2018-2019 WQIP Annual Report Reviews

Location in Letter	Requested Item	AR Sections Where Addressed	Copermittee Response
Item 11.c, Page 11	Provide electronic copies of all monitoring results as a separate submittal turned in concurrently with the WQIP Annual Report. For each WMA, provide a copy of the analytical results for all outfalls and receiving waters in the same Excel format as submitted to CEDEN.	<ul style="list-style-type: none"> Appendix 4, Sec 4.8 	This request was addressed as a separate submittal concurrent with the January 31, 2020 WQIP Annual Report as well as a report attachment. For the January 31, 2021, submittal the San Diego Water Board has indicated that CEDEN data can be provided as attachments to the WQIP Annual Report submittal.
2018-2019 WQIP Annual Report Review Letter Received September 10, 2020			
Item 4, Page 3	The County of San Diego reported completion of 1.7 acres of artificial turf. In addition, the County of San Diego reports that it is in progress to reduce dry weather flow 25 percent from baseline. The baseline flow will be reported in the WQIP Annual Report submitted January 31, 2021.	<ul style="list-style-type: none"> Appendix 4, Sec 4.5.4.4 	The County has determined that the candidate site (MS4-SMG-063) originally identified to establish a baseline flow was not feasible because the outfall drains to Rainbow Creek and is subject to other regulatory requirements under the Rainbow Creek TMDL. The County has identified at least one outfall (MS4-SMG-093) that has the potential to discharge to the SMR during dry weather and can be used to assess progress toward dry weather flow reductions. This outfall will be monitored during the 2020-2021 monitoring year to establish a baseline flow rate. The final dry weather goal is to eliminate anthropogenic dry weather flows from MS4 outfalls (by 100%) by the end of Fiscal Year (FY) 2038, and the first interim goal is to reduce dry weather flows from MS4 outfalls by 25% by the end of FY 2023 from the baseline year.

Table A5-2. Responses to San Diego Water Board 2017-2018 and 2018-2019 WQIP Annual Report Reviews

Location in Letter	Requested Item	AR Sections Where Addressed	Copermittee Response
Item 6.a, Page 4	The San Diego Water Board finds that the 2018-2019 WQIP Annual Report is deficient in its assessment of the WMA without discussion of the upper watershed area. This deficiency must be corrected with the WQIP Annual Report due January 31, 2021.	<ul style="list-style-type: none"> • Section 2, Section 3 • Appendix 2, Appendix 4 	<p>Strategies identified in the SMR WQIP are being implemented in the Upper SMR Subwatershed as applicable per the JRMPs for the Counties of Riverside and San Diego to address any pollutants from the developed areas. Strategy implementation status is presented in Section 2 and Appendix 2 of this Annual Report.</p> <p>No goals have yet been established for the Upper Subwatershed because a HPWQC has not been assigned due to insufficient data. Therefore, progress to goals is only reported for the Middle and Lower Subwatersheds. The Copermittees have established a long-term receiving water station in the Upper SMR Subwatershed to collect data for evaluating this portion of the watershed, although no major MS4 outfalls have been identified there. The monitoring section of the Annual Report includes reporting on the efforts made by Copermittees to collect water quality data in the Upper SMR Subwatershed.</p>
Item 6.b, Page 4	The SMR IO specifically includes the County of San Diego as a discharger responsible for reducing pollutant loading to the SMR Estuary. The data and information relevant to the County of San Diego must be included in the January 31, 2021, WQIP Annual Report.	<ul style="list-style-type: none"> • Section 2 	The Riverside County Copermittees and the County of San Diego are all responsible parties for meeting the goals related to the SMR Estuary TMDL Alternative. The WQIP has different sets of goals for these two groups, so progress to goals is also discussed separately for these two groups. Some re-organization of the progress to goals tables and section have been implemented in order to more clearly demonstrate responsibilities. While there are two sets of progress to goals discussions, the actions taken by the Riverside County Copermittees and the County of San Diego are both designed to meet the SMR Estuary TMDL Alternative objectives, as set forth in Investigative Order No. R9-2019-0007.
Item 6.c, Page 5	The County of San Diego Public Education and Outreach information specific to the WMA must be included in the January 31, 2021, WQIP Annual Report.	<ul style="list-style-type: none"> • Section 2 • Appendix 2 	The County's strategy highlights presented in Section 2 of the Annual Report provide WMA-specific information where possible. The County continues to look for opportunities to collect and report information on a WMA basis. The remaining strategy information can be found in Appendix 2 .

Table A5-2. Responses to San Diego Water Board 2017-2018 and 2018-2019 WQIP Annual Report Reviews

Location in Letter	Requested Item	AR Sections Where Addressed	Copermittee Response
Item 6.d, Page 5	A discussion of how the results of the County of San Diego Non-Stormwater Flow Source Study are specific to the WMA must be included in the January 31, 2021, WQIP Annual Report.	<ul style="list-style-type: none"> Appendix 4, Attachment 4I 	The 2018-2019 study was continued during 2019-2020 with the objective to determine flow sources of monitored MS4 outfall dry weather flows at some outfalls within the SMR WMA. Specifically, the 2019-2020 study included HST01 in the SMR WMA and the report can be found in Appendix 4, Attachment 4I .

5.1.2.1.1 Conduct a completeness check of the required monitoring

The monitoring completeness check regarding sample collection was conducted. Monitoring location numbers and frequencies were achieved for each program component, as shown in **Table A5-3**.

Table A5-3. Monitoring Program Percent Completeness for Sample Collection

Program		Total Samples Predicted/Required Visits	Total Visits or Samples Collected	Percent Required	Percent Completeness ⁷
Receiving Water Monitoring	Dry	3	3	90%	100%
	QA ⁴	1	2	90%	200%
	Wet	9 ⁶	11 ⁶	90%	100%
	QA ⁴	2	2	90%	100%
Regional Monitoring - Bioassessment	Samples	4	4	90%	100%
	QA	1	2	90%	200%
Rainbow Creek TMDL	Flow Observations	132	132	100%	100%
	Samples ¹	97	97	90%	100%
Rainbow Creek MS4 ²	MS4 Outfall Inspections	252	252	100%	100%
	Samples ¹	47	47	90%	100%
Rainbow Creek Program ⁵	Field Blanks	6	6	90%	100%
	Field Duplicates	12	12	90%	100%
Field Screening (FS) and MS4 Outfall Monitoring	FS - City of Murrieta	52	71	100%	>100%
	FS - City of Temecula	191	204	100%	>100%
	FS - City of Wildomar	21	25	100%	>100%
	FS - County of Riverside	13	25	100%	>100%
	FS - District	144	174	100%	>100%
	FS - County of San Diego	23	28	100%	>100%
	Wet Weather Samples	6	6	90%	100%
	Wet Data QA ⁴	2	2	90%	100%
	HPPF Samples ^{1,3}	22	22	90%	100%
	Dry Data QA ⁴	*	1	90%	*

¹ Samples are collected when flow is present. Samples required are based on number of visits when flow is present.

² Rainbow Creek MS4 monitoring is not required by the Permit but provides data for MS4 compliance pathways.

³ 60 visits to 30 sites were completed and 22 visits were sampled. 18 sites visited by Riverside County were not sampled because they were ponded, had trickle flow insufficient for sampling, or were dry. Samples were not taken during ponded or dry conditions pursuant to Permit Provision D.2.(b)(2)(e)

⁴ QA sample accounts for one duplicate and one field blank. QA requirements are generally developed programmatically.

⁵ The Rainbow Creek TMDL and MS4 samples are combined for QA purposes. The monitoring requirement stated in the QAPP is 1/24 samples for field blanks and 1/12 samples for field duplicates.

⁶ Five storm mobilizations were made to Wilson Creek LTRW station. No samples were collected due to lack of flow.

⁷ Completeness based upon required monitoring frequencies and includes visited not sampled (VNS) results. This assessment does not consider results of QA/QC data process. QA/QC reports are provided in attachments to Appendix 4.

*QA requirements are determined and met programmatically by the County of San Diego. QA samples were collected in other WMAs to meet overall County of San Diego dry weather monitoring program field QA/QC targets.

5.1.2.2 New Regulatory Actions

When new regulations or policies are adopted that impact watershed planning and implementation processes, modifications to the WQIP numeric goals, strategies, schedules, and/or MAP may be warranted, and, in some cases, required. For example, an update to the WQIP must be initiated no later than six months following approval of a TMDL Basin Plan Amendment by the Office of Administrative Law and the United States Environmental Protection Agency (USEPA). The trigger applies to TMDLs containing waste load allocations assigned to Copermittees within the watershed during the term of the Order (see Provision F.2.c.(2)). Other examples of regulatory drivers that may trigger modifications to the WQIP include new state policies or plans (e.g., trash, toxicity, biological objectives, bacteria standards updates) and changes resulting from modifications to existing Permit requirements (e.g., as a result of revising a TMDL).

Recent regulatory drivers include the July 19, 2019 and September 10, 2020 San Diego Water Board letters, Rainbow Creek Nutrient TMDL letter, program audit letters, and approval of the Statewide [Bacteria Provisions](#).¹ Adaptive management is also required as the Copermittees address Investigative Order No. R9-2019-0007² ([IO](#)) and the Bacteria Provisions and Trash Amendments are incorporated into the Permit.

5.1.3 Program Effectiveness Assessments/Progress Toward Numeric Goals

Strategies developed within the WQIP have been incorporated into Copermittees' monitoring programs through implementation of their JRMPs, e.g., enhanced field screening and illegal discharge detection and elimination (IDDE) investigations. Each Copermittee is implementing programs that are focused on addressing eutrophication and nutrient loading in the watershed. As strategy implementation progresses, periodic refinements to the programs may provide additional focus on the specific water quality issues identified in the WQIP.

At this time, the Copermittees have been implementing their jurisdictional strategies under the WQIP, accepted in November 2018, for less than two years. The Copermittees did not have goals due to be achieved this year but are implementing strategies to reduce eutrophication impacts and nutrient loading in the Middle SMR Subwatershed (Pathway 6), the Lower SMR Subwatershed (Pathway 1), and in Rainbow Creek (Pathway 1). Since the Copermittees have only been implementing the accepted WQIP since November 2018, continued and further implementation of strategies and collection of additional monitoring and programmatic data is necessary for an evaluation that leads to meaningful adaptive management. Assessment of progress to goals thus far demonstrates that the Copermittees are implementing measures to be on track to meet goals. The Copermittees will continue to implement their strategies and demonstrate progress toward achieving the goals set forth in the WQIP.

¹ Revised Proposed Final Part 3 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California – Bacteria Provisions and a Water Quality Standards Variance Policy (Bacteria Provisions) (State Water Board, 2018).

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

**5.2 ADAPTIVE MANAGEMENT - CHANGES TO WATER QUALITY
IMPROVEMENT PLAN ELEMENTS**

The potential triggers that may result in adaptive management of the WQIP's numeric goals, strategies, schedules, and/or MAP are outlined in **Section 5.1**.

5.2.1 History of Adaptive Management

A summary of WQIP adaptations that have been identified since WQIP implementation began, which will be updated annually, is presented in **Table A5-4**. Details are provided in the 2018-2019 WQIP Annual Report. Potential updates based on the 2019-2020 monitoring year are discussed in **Sections 5.2.2 to 0**.

Table A5-4. History of WQIP Adaptations

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

5.2.2 Adaptive Management of Priority Water Quality Condition

In general, priority and highest priority water quality conditions and numeric goals are established based on longer periods of record compared to a monitoring year. Their assessment would most appropriately be conducted following the collection of sufficient data to make scientifically-based decisions.

In response to a request from the San Diego Water Board, the Copermittees updated the WQIP 303(d) summary and conducted an assessment of potential changes to PWQCs or HPWQCs based on the 2014 and 2016 303(d) List (State Water Board, 2017). No changes to PWQCs or HPWQCs are proposed at this time. The updated summary table is included in the WQIP Update as **Table 2-6** in **Attachment 5B** and the assessment is provided in the **Section 3.1 of Attachment 5A**.

5.2.3 Adaptive Management of Goals, Strategies, and Schedules

On an annual schedule, modifications may be made to goals, strategies, and implementation schedules. An evaluation of current goals, strategies, and schedules is required by the Permit as part of this Annual Report to ensure effective implementation and assessment as the WQIP progresses.

The information that may be used to modify these elements of the WQIP through adaptive management is summarized in **Table A5-5**. Less than two years of monitoring data have been collected in accordance with the MAP. In general, sufficient information is not yet available to drive meaningful adaptive management of the water quality strategies and schedules. Minor administrative changes, including clarifications, correction of typos and errors, and edits to WQIP strategies, are proposed. These modifications are identified as markup to the Copermittees' tables in **Appendix 2**, and the rationale for each change is also provided in the tables.

Table A5-5. Information Used to Modify Goals, Strategies, and Schedules

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

The WQIP update (**Appendix 5, Attachment 5B**) includes proposed updates to goals and explains the rationale for the changes.

5.2.4 Adaptive Management of the MAP

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

- Modifications to other elements of the WQIP, including priority water quality conditions, numeric goals and schedules, and/or strategies and schedules.
- Identification of data gap through the required assessments under Provision D.4.
- Results of special studies.
- Requests/requirements from the San Diego Water Board.

Of these triggers, modifications to the MAP will be needed based on new requests from the San Diego Water Board (**Section 5.1.2.1**), including comments provided in the 2017-2018 and 2018-2019 WQIP Annual Report review letters, and comments received during the 2018-2019 monitoring year in the Rainbow Creek Nutrient TMDL letter.

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

Changes to highest priority outfalls for analytical monitoring are planned for the 2020-2021 monitoring year based on review of 2019-2020 monitoring results and application of their outfall prioritization processes by the Copermittees. The County of San Diego has made slight modifications to its criteria for determining high priority outfalls in dry and wet weather, and the updated process is provided in **Section 5.2.4.1** below.

5.2.4.1 County of San Diego Criteria for Determining High-Priority Outfalls in Dry and Wet Weather

5.2.4.1.1 Determining High-Priority Outfalls in Dry Weather

Provision D.2.b.(2)(a) requires each Copermittee to prioritize Non-Storm Water Persistent Flow MS4 Outfalls. According to the provision, Copermittees *must identify and prioritize the MS4 outfalls with persistent flows based on the highest priority water quality conditions identified in the Water Quality Improvement Plan and any additional criteria developed by the Copermittee, which may include historical data and data from sources other than what the Copermittee collects.*

To prioritize major MS4 outfalls with persistent non-storm water flows in the County of San Diego jurisdiction, the Science and Monitoring team has used the following procedures:

All major MS4 outfalls in the County jurisdiction are inspected at least twice per monitoring year for non-stormwater flows per Permit Provision D.2.b.(1). If flowing or standing water is present, instantaneous discharge rate or ponded volume, correspondingly, is measured and recorded. All data are recorded in a database and reviewed annually to determine which outfalls have persistent and intermittent non-stormwater flows. Outfalls with the highest average dry weather flow rates are then selected for more focused study where continuous flow monitoring is conducted to further understand flow patterns and to help identify potential sources. At select locations, samples are collected to test for human-specific markers as part of focused Microbial Source Tracking (MST) investigations. Also, at locations identified as highest priority outfalls with persistent non-stormwater flows (HPPF outfalls) water quality samples are collected twice every monitoring year to test for constituents as required per Provision D.2.b.(2)(e).

Using the abovementioned data and historical data, if/when they are available, outfalls within each WMA are ranked from 1 to 10 (with 1 being the highest priority). The prioritization process is based on the criteria outlined in **Table A5-6** below. The first five major outfalls in the ranking order are then classified as HPPF outfalls in their corresponding WMAs. An up-to-date spreadsheet containing the ranked outfalls and rationales for the rankings is stored and maintained on the Science and Monitoring SharePoint site. The rankings and spreadsheet are reviewed and updated annually.

Table A5-6. County of San Diego Criteria for Prioritizing MS4 Outfalls

No.	Criterion	Primary Decision	Notes
1.	Is the outfall currently classified as having “persistent” or “transient” flow?	Do not include dry outfalls	
2.	Does the flow from the outfall reach receiving water during dry weather?	Do not include outfalls with dry weather flows that do not reach receiving water	
3.	Is the outfall currently listed as Highest Priority Persistently Flowing (HPPF) in WQIP based on the pollutants that may cause or contribute to the highest water quality WQIP priorities?	Consider if the flow and/or pollutant loads have been addressed as outlined in Provision D.2.b(2)(b)(ii)-(iii) ³ . If not, Include in the first 5. If yes, remove from HPPF list in lieu of next highest-ranking major outfall.	
4.	How many exceedances of pollutants that may cause or contribute to impairments in water bodies on the 303(d) List are identified?	Higher number of exceedances = higher rank	
5.	Number of NAL exceedances	Higher number of exceedances = higher rank	
6.	Pollutants identified as a threat to human health or the environment	Exceedances = higher rank	
7.	For SDR, SLR, and SDG WMAs, did the outfall test positive for human markers in the latest MST study (potential threat to human health)?	Include in the first 5	
8.	How high is the average and latest measured discharge rate at the outfall?	Higher discharge rates get higher ranks	When no other factors are available

³ Per MS4 Permit D.2.b(2)(b)(ii) *Each of the highest priority non-storm water persistent flow MS4 outfall monitoring stations identified pursuant to Provision D.2.b(2)(b)(i) must be monitored under dry weather conditions at least semi-annually until one of the following occurs: [a] The non-storm water discharges have been effectively eliminated (i.e. no flowing, pooled, or ponded water) for three consecutive dry weather monitoring events; or [b] The source(s) of the persistent flows has been identified as a category of non-storm water discharges that does not require an NPDES permit and does not have to be addressed as an illicit discharge because it was not identified as a source of pollutants (i.e. constituents in non-storm water discharge do not exceed NALs), and the persistent flow can be re-prioritized to a lower priority; or [c] The constituents in the persistent flow non-storm water discharge do not exceed NALs, and the persistent flow can be re-prioritized to a lower priority; or [d] The source(s) of the persistent flows has been identified as a nonstorm water discharge authorized by a separate NPDES permit.*

(iii) Where the criteria under Provision D.2.b(2)(b)(ii) are not met, but the threat to water quality has been reduced by the Copermitttee, the highest priority persistent flow MS4 outfall monitoring stations may be reprioritized accordingly for continued dry weather MS4 outfall discharge field screening monitoring required pursuant to Provision D.2.b(1).

Table A5-6. County of San Diego Criteria for Prioritizing MS4 Outfalls

No.	Criterion	Primary Decision	Notes
9.	How viable would it be to address potential source(s) of flow at the outfall? Anthropogenic sources such as irrigation overflows, pool discharges, etc. are addressable through programmatic action; natural sources such as groundwater infiltration, etc. will require further study.	Potential anthropogenic sources get higher ranks	Address first those outfalls with flows primarily from over-irrigation in commercial and residential land use areas
10.	How much information do we have about potential sources of flows and associated pollutants?	Outfalls with more information available will get a bit higher priority as they are more addressable right now.	Example: many outfalls in SDR and SLR that have had sources investigated and delineated for action as part of the 2015 MST study
11.	Is the outfall monitored for continuous flow?	Include in the first 10	Data available to track progress
12.	Does the outfall potentially conduct a blue line?	This will tend to lower the ranking	Source(s), being “natural” such as resurfacing ground water may be difficult to address through programmatic action

5.2.4.1.2 *Determining High-Priority Outfalls in Wet Weather*

Per MS4 Permit Provision D.2.c.(1), the Copermitttees may adjust the wet weather MS4 outfall discharge monitoring locations in the Watershed Management Area, as needed, to identify pollutants in storm water discharges from MS4s, to guide pollutant source identification efforts, and to determine compliance with the WQBELs associated with the applicable TMDLs in Attachment E to this Order in accordance with the highest priority water quality conditions identified in the Water Quality Improvement Plan, provided the number of stations is at least equivalent to the number of stations required under Provision D.2.a.(3)(a). Additional outfall monitoring locations, above the minimum per jurisdiction, may be required to demonstrate compliance with the WQBELs associated with the applicable TMDLs in Attachment E.

Based on this guidance, wet weather storm drain outfall discharge monitoring stations are selected from the inventories developed pursuant to Provision D.2.a.(3).(a).(1) as follows: a least five wet weather storm drain outfall discharge monitoring stations per WMA (at least one per jurisdiction) that is representative of stormwater discharges from areas consisting primarily of residential, commercial, industrial, and typical mixed-use land uses present within the Permit Management Area.

In selecting the locations for wet weather storm drain outfall discharge monitoring, the County must consider factors such as accessibility, security, traffic risk, and the ability to accurately measure flow. Attempts are also made to identify single land uses as that would be ideal in calculations of wet weather loads from the MS4 to receiving waters. However, the sample pool (i.e., the inventory of available major outfall locations) is limited to major MS4 outfalls that are representative of the County jurisdiction in each WMA. For example, it may be relatively easy to find uniform drainage area for the residential land use in a given WMA but not for industrial or open space land uses. For these, intermingled land use drainages only are available. The constraining factors in this selection process are further illustrated in **Figure A5-1** below.

The County of San Diego may adjust the wet weather storm drain outfall discharge monitoring locations, as needed, to identify pollutants in stormwater discharges from storm drains, to guide pollutant source identification efforts, and to determine compliance with the WQBELs associated with applicable TMDLs in accordance with the highest priority water quality conditions identified in the WQIPs.

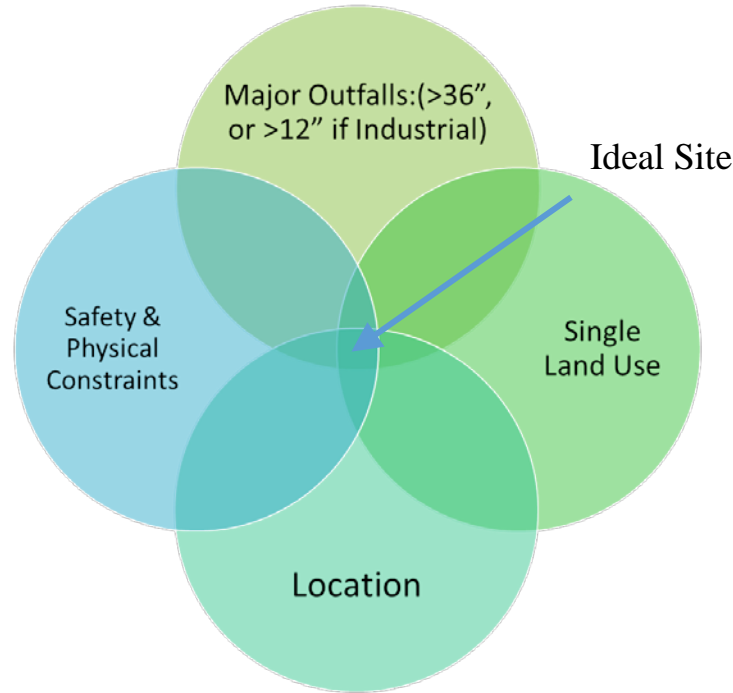


Figure A5-1. Diagram Illustrating Wet Weather MS4 Outfall Site Selection Criteria and Constraints

5.3 WATER QUALITY IMPROVEMENT PLAN UPDATE

In the July 19, 2019 report review letter, the San Diego Water Board required the submittal of a certified updated WQIP that incorporates the final IO numeric targets, strategies, monitoring and assessment activities, schedules and reporting. The WQIP update includes proposed updates to goals and explains the rationale for the changes. The updates were presented to the Consultation Committee on October 22, 2020. These updates were subject to a 30-day public review period from November 5 to December 7, 2020 to satisfy the public participation requirements of Permit Provision F.2.c. They will be deemed acceptable for inclusion in the WQIP 90 days after the submission of the updates with this Annual Report on January 31, 2021, unless directed in writing by the San Diego Water Board Executive Officer. The WQIP update is provided in **Attachment 5B**.