STATE WATER RESOURCES CONTROL BOARD

RESPONSES TO PUBLIC COMMENTS ON

AMENDMENT TO THE WATER QUALITY CONTROL PLAN FOR THE SAN DIEGO REGION TO INCORPORATE BIOLOGICAL OBJECTIVES

Final

July 15, 2024

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

State of California
Gavin Newsom, Governor

California Environmental Protection Agency
Yana Garcia, Secretary for Environmental Protection

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1) Introduction

Overview

The California Regional Water Quality Control Board, San Diego Region (San Diego Water Board) adopted Resolution No. R9-2020-0234 (Resolution) on December 8, 2020, amending the Water Quality Control Plan for the San Diego Basin (Basin Plan) to include narrative guidance for developing water quality objectives for biological conditions, to establish a biological water quality objective for perennial and intermittent streams using the California Stream Condition Index (CSCI), based on the narrative guidance, and to establish an implementation program for biological water quality objectives (Basin Plan amendment or Amendment).

In its Resolution, the San Diego Water Board identified a water quality objective for biological condition as a critical component for restoring and maintaining the biological integrity of the San Diego Region's waters. In 2015, the San Diego Water Board adopted Resolution No. R9-2015-0043 identifying the project to develop and incorporate biological water quality objectives into the Basin Plan to protect and restore beneficial uses associated with aquatic and aquatic dependent wildlife in perennial and seasonal streams as its highest priority project as a result of the 2014 triennial review and directed staff to focus resources on it. The San Diego Water Board's adoption of the Basin Plan amendment to establish a biological objective[1] was the culmination of this years-long process.

The San Diego Water Board noted in its Resolution the biological integrity goal of the 1972 federal Clean Water Act and identified the use of biological objectives as a necessary foundational shift to better assess beneficial use attainment. Existing water quality objectives are overwhelmingly based on measurements of the chemical integrity of waters. The San Diego Water Board found existing water quality objectives to be insufficient to fully assess, protect, and restore the biological integrity of waters for aquatic and aquatic-dependent wildlife uses in the San Diego Region (Resolution Finding No. 7); that biological integrity can be determined through biological assessments (Resolution Finding No. 8), and that biological objectives are critical for restoring and protecting the biological integrity of the region's waters (Resolution Finding No. 9). Thus, the San Diego Water Board identifies a shift to evaluation of the biological condition of waterbodies as necessary for the San Diego Water Board, other regulatory and regulated agencies, and the community at-large, to implement a more informed, balanced, and holistic approach when identifying priority areas for protection and restoration of San Diego Region streams.

[1] The San Diego Water Board Basin Plan Amendment documents uses the term "Stream Biological Objective." In this document the term "biological objective" is used.

The San Diego Water Board intended adoption of this approach to better integrate ecosystem beneficial uses with other core beneficial uses related to human health for drinking water, recreation, and fish and shellfish consumption and also found this approach ultimately will save time and resources for both the San Diego Water Board and dischargers by focusing on specific stressors impacting aquatic life compared to continued management based on pollutant-by-pollutant chemical integrity. The approach would focus on the most important solutions, by identifying pollutant thresholds that should be updated, and by providing better and more efficient protection of streams that are in good condition.

Following circulation of the initial Basin Plan amendment in February 2019, the San Diego Water Board made revisions to address stakeholder concerns, especially relating to the scope of the biological objective's applicability and its implementation. Changes included reducing the scope of streams to which the biological objective will apply, postponing implementation of the biological objective in various permits to no sooner than five or in some cases ten years from the effective date of the Amendment and adding clarification for how compliance with the biological objective will be evaluated in municipal storm water permit implementation (not as immediate noncompliance but as part of receiving water limitations).

The San Diego Water Board heard and addressed technical and legal comments orally at the public hearing and in written response to comments documents dated October 2020 and November 2020, both of which are available on the San Diego Water Board's website.[2] In response to a San Diego Water board member concern expressed during the hearing that the regulated community should have a regular opportunity to inform the Board of any impediments they may encounter in implementation of the Amendment, the San Diego Water Board's Resolution includes direction to the Board's Executive Officer to annually solicit and provide a report to the Board on the status of implementation efforts.

On July 19, 2021, the State Water Resources Control Board (State Water Board) issued a notice of opportunity to comment on its consideration to approve the Amendment the San Diego Water Board adopted by Resolution No. R9-2020-0234. The initial public comment deadline of August 23, 2021, was extended to September 22, 2021, in response to public requests.

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[2] https://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/bio_objectives/

The State Water Board received timely written comment letters from ten entities and individuals:

1. California Association of Sanitation Agencies, Central Valley Clean Water Association and Southern California Alliance of Publicly Owned Treatment Works (POTWs)
2. State of California Water Commission
3. State of California Department of Fish and Wildlife, South Coast Region
4. Coalition of Non-Governmental Organizations
5. California Stormwater Quality Association
6. County of Orange Municipal Separate Storm Sewer System (MS4) Copermittees
7. State of California Department of Fish and Wildlife, Office of Spill Prevention and Response
8. Riverside County Flood Control and Water Conservation District
9. County of San Diego MS4 Copermittees
10. John Odermatt (two emails)

Of the comments objecting to aspects of the San Diego Water Board's Amendment, the majority are similar in scope to those submitted to and addressed by the San Diego Water Board prior to its action. These comments by regulated entities or their representative groups, can generally be grouped into the following four categories, addressed below in General Responses: (1) concerns with the appropriateness of and support for applying the biological objective to "modified streams"[3] (2) recommendations that the State Water Board delay acting on the Amendment pending the outcome of the State Water Board's statewide biological integrity efforts; (3) concerns with adequacy of the peer review public participation processes during development of the Amendment; and (4) concerns about the procedures and format of the San Diego Water Board November 18, 2020, public hearing for the Amendment.

[3] The term "modified streams" is not defined or used in the Basin Plan amendment but is extensively used by commenters and appears throughout the record for the Basin Plan Amendment. The term "modified streams" is generally intended to mean those streams that have been anthropogenically modified in some form but are not "hardened streambed segments", which is defined in the San Diego Water Board's Basin Plan amendment as those "stream segments in which the entire stream channel substrate has been artificially lined with concrete or other impervious materials from toe of bank to toe of bank." Hardened streambed segments are defined in the biological objective and are excluded from its applicability. The term "modified stream" has generally been used to describe streams whose course has been straightened or altered, have had one or both banks anthropogenically modified in some form (e.g. rip-rap, grading), and/or streams that periodically have maintenance activities performed (e.g. sediment removal). San Diego Water Board staff referred to such streams as "otherwise modified streams" in the November 2020 Response to Comments. In these responses to comments, below, "modified streams" refers to anthropogenically modified streams exclusive of hardened streambed segments.

GENERAL RESPONSES

1. Application of the Biological Objective to Modified Streams

Regulated dischargers and representative groups opposed to the Amendment's application of the biological objective to modified streams state that all or most modified streams, like hardened streambed segments, should be excluded from the objective because, generally, (1) there is inadequate support in the record to justify applying the biological objective to modified streams, (2) the San Diego Water Board's consideration of factors in Water Code section 13241 and evaluation of Water Code section 13242 was insufficient, and (3) the San Diego Water Board did not adequately consider the practical ability to attain the biological objective in modified streams or consider its reasonable achievability.

The Amendment's revisions to Chapter 4 of the Basin Plan includes narrative guidance for the development of numeric water quality objectives for biological conditions (see Section 3 of the Final Staff Report) and, using that narrative guidance, the Amendment to Chapter 3 of the Basin Plan includes a numeric water quality objective (the biological objective) for perennial and seasonal streams with WARM or COLD beneficial uses (see Section 3.2 of the Final Staff Report). Using the California Stream Condition Index (CSCI) to measure biological condition of streams, the biological objective applies to perennial and seasonal streams, including streams with modifying features, with some exceptions delineated in Chapter 3 of the Amendment (see below Table).

Table from Chapter 3 of Amendment: Inland Surface Waters with COLD or Warm Beneficial Use to Which the Stream Biological Objective Does Not Apply

Exclusion	Definition
Non-Stream Waterbodies	Reservoirs, lakes, ponds, vernal pools, and other lentic waterbodies.
Non-wadeable Stream Segments	Stream segments in which depths exceed one (1) meter for at least one half (75 meters) of the entire length of a 150 meter bioassessment sampling reach measured during baseflow conditions.
Ephemeral Stream Segments	Stream segments that exhibit only ephemeral flow, which is flow that occurs only during or immediately following rainfall events. Ephemeral stream segments do not include stream segments that exhibit four or more consecutive weeks of continuous flow during the period February 1 and October 31 in any year within the previous 10 years.

Hardened Streambed Segments	Stream segments in which the entire stream channel substrate has been artificially lined with concrete or other impervious materials from toe of bank to toe of bank.

First, as detailed below, the record for the Amendment details evidence supporting the biological objective's application to all inland freshwater streams, which includes modified streams with certain exclusions External peer review of the scientific basis of the proposed biological objective, performed at the San Diego Water Board's request, confirmed that the CSCI is scientifically sound and that the biological objective accurately represents the biological integrity of all freshwater streams in the San Diego Region, regardless as to whether they have modified features. The record shows the CSCI accurately assesses biological condition in streams regardless of the amount of anthropogenic modification and evidence supports applying the objective to *all* perennial and seasonal streams in the region (see Section 4.4 of the Staff Report, section 1.3.2 and 1.9 of the SED, also Scientific Peer Review responses from Dr. David Lytle, Dr. Patrick Edwards, and Dr. Wendy Monk regarding Conclusion 1). However, as specified in the Staff Report (Section 4.5.2), October 2020 Response to Comments (pages 4-7, Response 1), November 2020 Response to Comments (pages 6-7), and affirmed by San Diego Water Board staff during their presentation and in response to oral comments at the hearing, since anthropogenically hardening a stream channel bottom precludes the development of a diverse benthic macroinvertebrate community needed to meet the biological objective and the San Diego Water Board lacks permitting authority to require restoration of stream channel bottoms, the Amendment excludes hardened streambed segments from the objective.

The San Diego Water Board considered comments requesting that all types of modified streams be excluded but did not agree that the rationale for excluding hardened streambed segments applies to other modified streams given the scientific peer review, staff and public oral comments and other evidence supporting applying the biological objective for modified streams. The San Diego Water Board found there to be "insufficient data to evaluate the mitigation measures and timeframe necessary to achieve a numeric biological objective for fully-hardened streambed segments. The San Diego Water Board may consider establishing a numeric biological objective for fully-hardened streambeds when additional data and information becomes available." (Resolution R9-2020-0234, Finding 12). In contrast, for modified streams other than hardened streambed segments, it is expected that the objective can be attained through the control of discharges as it is a hardened streambed that has been shown to preclude attainment of an intact benthic macroinvertebrate community. The San Diego Water Board has the permitting authority to require that discharges in modified streams without a hardened streambed be controlled to meet the objective.

Should a non-pollutant condition of pollution be the cause of the objective not being attained in the modified stream, then the Regional Board would look to the Impaired Waters Policy for guidance for addressing the impairment (e.g., section I.C.2, which reads in part, "...when non-pollutant pollution is the cause of the impairment, the Regional Boards may skip the step of calculating the Loading Capacity and proceed immediately to designing corrective action using existing regulatory tools."). Additionally, as described in the program of implementation, the objective shall not be translated into or applied as an effluent limitation unless a clear causal relationship has been established linking the discharge and nonattainment of the objective.

Second, multiple commenters state that the San Diego Water Board's consideration of Water Code section 13241 factors, particularly in subdivisions (c) and (d), was generally insufficient to support the decision to apply the biological objective to modified streams. Commenters state that the San Diego Water Board did not demonstrate that the biological objective can reasonably be achieved in modified streams and assert Water Code section 13241(c) requires the San Diego Water Board to determine that all types of modified streams (such as straightened streams and streams with one or both armored banks) are already achieving the objective in order to demonstrate the reasonableness or feasibility of achieving the objective in modified streams. Some commenters newly request that modified streams be further sub-categorized by various types and degrees of anthropogenic modification and that the objective apply only to those subcategories shown to already be achieving or capable of achieving the objective.

Water Code section 13241 requires a regional water board to "establish such water quality objectives in water quality control plans as in its judgment will ensure the reasonable protection of beneficial uses and the prevention of nuisance." In establishing a water quality objective, a regional water board must consider the following factors, among others:

- "Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect quality in the area" (CWC § 13241(c)); and

- "Economic considerations" (CWC § 13241(d).).

The San Diego Water Board's Staff Report sufficiently supports its consideration of all the Water Code section 13241 factors (see section 4.5.2.) necessary to establish the biological objective. While the San Diego Water Board is required to consider "water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area," section 13241 does not require an affirmative showing that the objective is already being achieved in modified streams, or demonstrate the objective is achievable. Likewise, Water Code section 13241 does not require the Water Board to demonstrate, as some commenters state, that the use is an "existing" beneficial use before establishing a water quality objective to protect the use.

The San Diego Water Board considered the factors as required by Water Code section 13241 in the SED (Section 1.9.1) and Staff Report (Section 4.5.2.), and also in responses to comments, prior to adopting the biological objective. The SED (section 1.9.1) discusses Water Code section 13241(c) ("water quality conditions that could reasonably be achieved through the coordinated control of all factors affecting water quality"), stating:

> "The San Diego Water Board's use of the CSCI to conduct waterbody assessment for section 305(b) and section 303(d) of the Clean Water Act (Integrated Report) has also confirmed the Stream Biological Objective can be achieved in streams influenced by regulated discharges of waste. The San Diego Water Board 2014 Integrated Report identified 26 streams as supporting aquatic life beneficial uses based on CSCI results (San Diego Water Board 2016). While many of these streams met State reference screening criteria (Ode et al. 2016), multiple streams were located in areas with various discharges regulated under San Diego Water Board programs (e.g. Fry Creek, Upper San Diego River, Pine Valley Creek). The San Diego Water Board draft 2018 Clean Water Act 305(b) report identifies an additional 24 streams that would meet the Stream Biological Objective (San Diego Water Board 2019). Many of these streams are also located in areas subject to regulated discharges of waste, including commercial agricultural operations, storm water, onsite wastewater treatment systems, and discharges of dredge and fill (e.g. Sandia, Bell Canyon, Kit Carson, and Cottonwood Creeks)."

And while Water Code section 13241 does not require a demonstration of achievability, the record shows that the objective is capable of being achieved in modified streams. The SED identifies examples of streams throughout the region and southern California that receive a variety of regulated discharges and already attain the biological objective. The San Diego Water Board considered multiple examples of such streams achieving the objective as compared to hardened streambed segments (see SED (Section 1.9.1) and Staff Report (Section 4.5.2.), and also in October 2020 and November 2020 responses to comments, and in the staff presentation at the November 2020 Board hearing).

Additionally, Section 4.5.2 of the Staff Report states:

> "While use of the CSCI threshold for the Stream Biological Objective does not apply to hardened streambed segments, it does apply to all other perennial and seasonal streams not otherwise excluded, including partially-modified stream segments that do not meet the definition of hardened streambed segments, as such streams do have timeframes associated with restoration through the control of discharged pollutants. Prior studies in southern California have found that a CSCI threshold of 0.79 is attainable in stream segments that exhibit some form of reach-scale modification, such as artificial bank armoring (Stein et al. 2013, SMC 2017, Figure 14, Figure 15). Such studies identify factors applicable in efforts to achieve the Biological Stream Objective in segments that have some level of

> local modification (e.g. hardened banks). Furthermore, properly bioengineered bank controls have been found to have a positive effect on benthic macroinvertebrate communities compared to other methods in urban streams (Sudduth and Meyer 2006)."

The San Diego Water Board's Responses to Comments also reflect the required consideration of the Water Code section 13241 factors. The November 2020 Response to Comments included the following response to comments explaining the appropriateness of applying the proposed objective to modified streams:

> "Such otherwise modified streams are included in the proposed objective because, in contrast to hardened streambed segments, otherwise modified streams do have timeframes within the existing regulatory permit framework that can be applied through specific permitting actions to address pollutants and flows that are precluding attainment of the Stream Biological Objective. Using the CSCI to restore biological integrity was supported by Scientific Peer Review as a scientifically sound approach. The draft Staff Report identifies prior research in areas with low anthropogenic flow and pollutant impacts, but where the streams are otherwise modified, that had CSCI scores that meet the proposed Stream Biological Objective. This was done to illustrate the appropriateness of this approach and some language has been added to clarify this intent."

Commenters also stated the San Diego Water Board's evaluation of economic considerations associated with adoption of the biological objective was insufficient (CWC § 13241(d)) and stated they would be required to remove stream bank armoring and to compensate adjacent property owners for floodplain creation in order to meet the biological objective. The San Diego Water Board recognized in the SED that while in-stream restoration projects for streams subject to the objective may occur through the grants programs or as supplemental environmental projects, any such projects are "not required nor undertaken for the purposes of compliance with the Stream Biological Objective," (see SED, section 1.4.5, page 25). Some commenters also cited costs over one billion dollars for compliance based on a City of San Diego report from a historic evaluation of funding needed for compliance with existing stormwater requirements for all existing pollutant objectives and concurrent flooding issues. They state that costs to achieve the objective are prohibitive and therefore it is unreasonable to find the objective is achievable.

Water Code section 13241(d) does not require a regional water board to perform a balancing test. However, the San Diego Water Board appropriately considered the economic considerations factor in Water Code section 13241(d) in evaluating reasonably foreseeable methods for implementation of the objective, specifically finding that most costs would result from monitoring and assessment to identify if streams are meeting the objective; and if not, then monitoring costs to determine which pollutant(s) of concern were causing or contributing to the failure to meet the objective. As identified by the SED (Section 1.9) and Finding 17 of Resolution R9-2020-0234, these costs are expected to be offset by savings realized by the use of the CSCI metric which could

lead to more efficient and effective actions targeting the specific pollutants responsible for beneficial use impacts rather than relying on current approaches through permits, enforcement actions, and total maximum daily loads to address all pollutants individually. In addition, the SED identified long-term economic benefits from updating pollutant water quality objectives as a result of implementation of the biological objective:

> "The use of the Stream Biological Objective is expected to result in economic impacts over the long-term associated with the updating of chemistry-based water quality objectives. Similar to the development of Waste Load Allocations for TMDLs discussed above, the establishment of chemistry-based water quality objectives in the San Diego Water Board Basin Plan was conducted using the best-available science on the levels of pollutants that would or would not be protective of human health and aquatic life beneficial uses. The establishment of those objectives to protect aquatic life comes with assumptions, margins of safety, and site-specific correctional factors (e.g. California Toxics Rule, "CTR"). It is expected that the Stream Biological Objective can, over time, provide evidence for and be used to modify existing chemistry water quality objectives that are over or under-protective of beneficial uses. Both situations are expected to result in overall cost savings. Chemistry-based water quality objectives that are over-protective result in excess cost expenditures for the treatment of pollutants to levels beyond those necessary for beneficial use protection. In contrast, water quality objectives that are under-protective can require additional expenditures for dischargers. This can occur from the development of TMDLs to determine appropriate levels of pollutants in receiving waters and discharges (see above discussion), rather than simply incorporating a more accurate water quality objective up front."

It is appropriate to consider potential costs of implementing the Basin Plan amendment. However, as part of its consideration of economics, the record shows the San Diego Water Board found that biological objectives provide a measure to determine whether pollutants found in excess of a water quality objective are causing an adverse effect on the WARM or COLD beneficial uses of a stream reach, and thus whether mitigation or remediation, and their associated costs, are necessary. Absent biological objectives, if any pollutant subject to a discharge permit exceeds a water quality objective in the receiving water, then permittees are responsible for mitigating or remediating that pollutant to below the water quality objective. The responsibility on the dischargers to mitigate or remediate a pollutant that does not attain water quality objectives remains with the adoption of the biological objectives. Therefore, as documented in the SED, the San Diego Water Board does not expect added pollutant mitigation or remediation cost to implement the biological objective.

The San Diego Water Board expects biological objectives to reduce long-term pollutant mitigation and remediation costs by helping to verify actual impacts to biological integrity and identifying the specific pollutants that are causing or contributing to biological impacts (see SED Section 1.9 and Finding 18 of R9-2020-0234). Additionally, the

biological objective will help identify situations where chemical water quality objectives should be updated to reflect a lack of harm to biological integrity.

The San Diego Water Board considered the required factors in CWC section 13241, as well as oral and written public comments, when developing the biological objective and finding it necessary for the reasonable protection of the WARM and COLD beneficial uses in perennial and seasonal streams as specified in the objective.

Commenters also stated that the San Diego Water Board did not comply with Water Code section 13242. Water Code section 13242 requires that a program of implementation to achieve water quality objectives contain (a) a description of the nature of actions necessary to achieve the objectives, (b) a time schedule, and (c) a description of required surveillance to determine compliance with the objectives. The adopted amendments to Basin Plan Chapter 4 clearly include all the elements of a program of implementation required by Water Code section 13242. Commenters base the asserted lack of compliance with section 13242 on commenters' position that implementation efforts to achieve the biological objective would necessitate removal of stream bank armoring and compensation of adjacent property owners for floodplain creation in order to meet the biological objective. As discussed above in this response, the San Diego Water Board does not expect or require responsible dischargers to perform in-stream restoration as to implement the Basin Plan amendment.

2. Requests to Postpone State Water Board Action on the Amendment Pending Completion of the Statewide Biostimulation, Cyanotoxin, and Biological Condition Project

Multiple commenters requested that the State Water Board postpone action on the Basin Plan amendment until the State Water Board completes statewide action on biological integrity or remand the amendment to the San Diego Water Board for further proceedings to address stakeholder concerns expressed to but not incorporated by the San Diego Water Board. Many commenters state the San Diego Water Board's biological objective is inconsistent with the State Water Board's efforts and the science funded by the State Board, and that the stakeholder process for the statewide Biostimulation, Cyanotoxin, and Biological Condition Provisions development is the appropriate place to consider biological water quality objectives. Commenters also expressed concern that the San Diego Water Board's amendment could establish precedents for use in other regions or even statewide.

While statewide consistency can be a best practice in some situations, the legislature provided each regional water board the authority to establish water quality objectives appropriate to protect beneficial uses of waters in its region. The Amendment is limited to streams located in the San Diego Region. Regional Board boundaries are based on watersheds and water quality requirements are bas based on the unique differences in climate, topography, geology, and hydrology for each watershed. In addition, these same factors often result in differences between the type and nature of regulated

entities throughout the state. Thus, each Regional Board makes critical water quality decisions for its region, including setting standards, issuing waste discharge requirements, determining compliance with those requirements, and taking appropriate enforcement actions.

Delaying the State Water Board's approval of the San Diego Water Board's Basin Plan amendment is not warranted because comments regarding inconsistency with State Water Board's potential policy efforts are speculative; the State Water Board has not yet developed or distributed a proposed policy concerning a rulemaking for biological objectives in inland surface waters; and the San Diego Water Board's Basin Plan amendment has long been identified as one of the Board's highest priority projects, is supported by the external scientific peer review process, and a robust public process. Additionally, it is simply unknown at this time when or even whether the State Water Board might consider a biological objective for inland surface waters that would apply to the San Diego Region and statewide.

Additionally, the San Diego Water Board relied heavily on bioassessment science and publications developed in part by the State Water Board and United States Environmental Protection Agency (USEPA) over two decades (Response to Comments October 16, 2020), (Mazor et al. 2016 and Ode et al. 2016, among other studies).

The San Diego Water Board's Amendment does not represent the first time a California Water Board has adopted a biological objective. Three other regional water board have an existing narrative biological objective in their Basin Plan (see Water Quality Control Plans for the Lahontan Region (2019), Santa Ana Region (2019), and San Francisco Bay Region (2023)). In addition, the Lahontan Regional Water Quality Control Board has biological objectives specific to waterbodies and hydrologic units (see Water Quality Control Plan for the Lahontan Region 2019). It is appropriate for a regional water board to establish an objective specific to its region's waterbodies.

Finally, the San Diego Water Board's establishment of the biological objective would not be "precedential" in terms of itself having the force of law to be followed by other regional water quality control boards or the State Water Board; it will not operate as binding on other boards. However, it is also true that it is possible that it is influential on other boards, to the extent such boards independently evaluate whether developing a similar objective is appropriate and the most logical course to establish and implement water quality standards for waters under the board's water quality control planning authority.

3. Public Participation Process

Multiple commenters state that the San Diego Water Board failed to provide for adequate public participation in the external scientific peer review process (Health and Safety Code, § 57004), in the period prescribed for written comment, and by not establishing a formal stakeholder group to guide development of the Amendment.

The record, including the transcript of the public hearing, reflects extensive public participation and staff engagement with stakeholders. Some of the key public participation milestones during development of the Basin Plan amendment leading up to and including the November 18, 2020, public hearing and December 8, 2020, adoption meeting are:

- July 28, 2016 – CEQA Scoping Meeting
- January 22, 2018 – Administrative Draft Basin Plan Amendment Available
- February 14, 2018 - Staff Workshop to Discuss Administrative Draft
- February 23, 2018 – Written Comments due on Administrative Draft
- November 30, 2018 – External Scientific Peer Review Requested
- February 28, 2019 – Notice of Filing of Draft Substitute Environmental Document (SED), Staff Report and Basin Plan Amendment Language released for public review and comment with written comments due May 2, 2019, later extended to June 1, 2019 ["February 2019 Release"] and Notice of April 18, 2019, workshop, posted on San Diego Water Board Website and Lyris List[4] Notified
- April 4, 2019 – San Diego Water Board Received Peer Review Report
- April 18, 2019 - Staff Workshop on February 2019 Release
- April 19, 2019 - Peer Review Report Sent to Lyris List Subscribers for Basin Plan amendment
- May 17, 2019 – Stakeholder Meeting to Discuss Draft Basin Plan amendment
- June 1, 2019 - Written Comment Deadline for February 2019 Release
- August 4, 2020 – Notice of Public Hearing (for October 14, 2020) and Revised Documents to be Released no later than August 17 for a two-week written comment period ["August 2020 Revisions"]; written comment period later extended to September 4, 2020
- August 25, 2020 – Stakeholder Meeting to Discuss August 2020 Revisions
- September 4, 2020 – Written Comment Deadline for August 2020 Revisions
- September 11, 2020 – San Diego Water Board Staff Response to Peer Review Report Posted on San Diego Water Board Website
- September 22, 2020 – Stakeholder Meeting to Discuss August 2020 Revisions
- September 25, 2020 – Stakeholder Meeting to Discuss August 2020 Revisions
- October 2, 2020 – Notice Rescheduling Public Hearing to November 18, 2020
- October 16, 2020 – Proposed Resolution, August 2020 Revisions, and Written Responses to Comments Report for the February 2019 Release posted on the San Diego Water Board's Website and Lyris List Notified
- October 26, 2020 – Stakeholder Meeting to Discuss August 2020 Revisions
- November 6, 2020 – Written Responses to Written Comments on August 2020 Revisions Posted on San Diego Water Board's Website and Lyris List Notified

[4] Lyris is a project-specific subscription email list maintained by the State and Regional Water Boards.

- November 18, 2020 – San Diego Water Board Public Hearing for Consideration of Adoption of Basin Plan Amendment
- December 8, 2020 – San Diego Water Board Adoption Meeting for Basin Plan Amendment

As further discussed below, the San Diego Water Board satisfied public participation and scientific peer review requirements during the development and adoption of the Amendment.

Scientific Peer Review.
Health and Safety Code section 57004 requires all California Environmental Protection Agency organizations to submit the scientific basis and scientific portion of all proposed policies, plans and regulations for external scientific review. It is the peer reviewer's responsibility to determine whether the scientific findings, conclusions, and assumptions are based upon sound scientific knowledge, methods, and practices. As reflected in section 1.1.5 of the SED certified by the San Diego Water Board on December 8, 2020, the San Diego Water Board followed the process outlined in Health and Safety Code section 57004.

Some commenters stated that because the peer review was conducted during the written public comment period for the February 2019 Release, commenters were unable to address the peer review report in written comments due on June 1, 2019. However, there is no requirement that satisfying the requirements of section 57004 also includes making the scientific basis for the proposed rule and the peer reviewers' response to same, available to the public for an opportunity for written comment. The purpose of the peer review statute is to ensure that qualified and impartial experts ensure that proposed rulemakings meet acceptable standards of relevant scientific disciplines. Nevertheless, as shown in the above key public participation milestones, the Peer Review Report was made available to the interested parties via the Lyris list on April 19, 2019, and posted on the State of California's Peer Review website on May 31, 2019. Interested parties subscribed to the Lyris List had the ability to comment on the Peer Review Report in written comments due June 1, 2019, and numerous commenters did in fact address the report in their written comments.

The San Diego Water Board's Response to the Peer Review Report was publicly available on September 11, 2020, and the public was notified that the Peer Review Report and the San Diego Water Board Response to the Peer Review Report, together with the revised Basin Plan amendment and responses to comment documents, would be available in advance of the public hearing at which oral comment was allowed. The San Diego Water Board staff Response to the Peer Review Report was available to the public more than two months before the public hearing.

There is no requirement that the public have an opportunity to comment in writing on staff written responses to comments or staff responses to the Peer Review Report. None of the written comments submitted on the August 2020 Revisions requested that they be permitted to comment in writing on the San Diego Water Board Responses to

the Peer Review Report. Similarly, at the public hearing, no oral commenters objected that they had been unable to submit written comments on the Responses to the Peer Review Report. The San Diego Water Board considered the Peer Review Report and the staff response to it, along with other relevant documents, comments and responses to comments, and oral comments and responses prior to adopting the Amendment.

Public Comment Process.
Title 40 of the Code of Federal Regulations (CFR), Part 25, identifies public participation requirements for non-adjudicatory decisions such as approval of an amendment to a water quality control plan (here a Basin Plan) subject to the Clean Water Act. (40 CFR §§ 25.4 and 25.10.) The applicable planning process is set forth in Water Code sections 13240 through 13246 and the State Water Board's Certified Regulatory Program regulations also establish public participation requirements for environmental review applicable to development and approval of a Basin Plan amendment. (Cal. Code Regs., tit. 23, § 3720 et seq.) The key public participation milestones listed above together with the discussion below demonstrate that the public review process for the Basin Plan amendment met the public participation requirements applicable to amendments of water quality control plans such as the Amendment.

The San Diego Water Board identified its intent to develop biological objectives in 2015 when it adopted its priorities during its triennial review of the Basin Plan. An administrative draft of the proposed Amendment was released in 2018 to allow for early stakeholder engagement and review. San Diego Water Board staff considered the comments received regarding the 2018 administrative draft and used the information to shape the formal draft Basin Plan amendment. The draft basin plan amendment was released for an initial extended written public comment period of 93 days in February 2019 ("February 2019 Release"), rather than the required minimum 45 day written public comment period (see Cal. Code Regs., tit. 23, § 3779(d)).

In response to the comments on the February 2019 Release and those made by the scientific peer reviewers in the Peer Review Report, additional revisions were made to the draft amendment in August 2020 (August 2020 Revisions). The San Diego Water Board viewed the changes represented by the August 2020 Revisions as a logical outgrowth of the initial written comment process. Where new information "merely clarifies or amplifies or makes insignificant modifications" in an otherwise adequate SED, no recirculation is required. (See Cal. Code Regs., tit. 14, § 15088(b).) Based on the SED approved by the San Diego Water Board, the Board found that "compliance with the Basin Plan amendment will have either 'no effect or a 'less than significant' adverse effect on the environment." (Resolution No. R9-2020-0234 (Finding No. 36.) No significant new information was added to the draft SED such that the public was deprived of a meaningful opportunity to comment on a substantial adverse environmental effect (see Cal. Code Regs., tit. 14 §15088.5(a)).)

While applicable authority did not require recirculation for additional public comment, the San Diego Water Board provided a 21-day written comment period on the August 2020

Revisions to allow for additional written public input on the revisions. The August 3, 2020, notice of opportunity to submit written comments specified that comments were limited to the recent revisions to the Basin Plan amendment and also specified that timely written comments may not be responded to in writing but would be responded to orally at the public hearing. Nevertheless, written responses to significant issues timely submitted were prepared and distributed more than 10 days before the public hearing.

Additionally, stakeholders were provided three written public comment opportunities (including the 2018 administrative draft). The applicable regulations implementing the Water Boards' Certified Regulatory Program require that the San Diego Water Board respond in writing to significant environmental issues raised in comments received during the written comment period and in writing or orally to significant environmental issues raised at the public hearing. (Cal. Code Regs., tit. 23, sec. 3779(d).) Applicable regulations also specify that copies or written responses shall be available prior to the board's approval of the SED and that copies of written responses to public agency comments received during the written comment period shall be provided to those agencies at least 10 days prior to the board's approval of the SED. (Id.) The revised Basin Plan amendment documents, including the San Diego Water Board Response to the Peer Review Report were available more than 60 days before the Regional Board public hearing. Written responses to written comments on the February 2019 Release and on the August 2020 Revisions were available to the public more than 30 days and more than 10 days (provided November 6, 2020), respectively, before the public hearing. Several commenters expressed concern that they were unable to review the Response to Comments (2019) before submitting written comments on the August 2020 Revisions. The need for timely responses to comments certainly fosters transparency in the decision-making process and we understand the concern about the delay in providing responses to the 2019 iteration. The August 2020 Revisions itself was revised in substantial part as a direct response to the feedback received on the 2019 iteration. Minor additional revisions to the August 2020 Revisions were made before the Basin Plan amendment documents were provided to the public on October 16, 2020. The San Diego Water Board determined that the October 16, 2020 revisions to the draft documents were not significant and recirculation was not required pursuant to applicable regulations (Cal. Code Regs., tit. 23, § 3779 and tit. 14, § 15088.5.) (San Diego Water Board Resolution No. R9-2020-0234, finding 30.) The public was able to provide oral comment on the Basin Plan amendment, including revisions and responses to comments, the peer review report and San Diego Water Board responses to the peer review report, at the Regional Board hearing on November 18, 2020. The San Diego Water Board staff responded orally to comments on the revisions. No interested member of the public or stakeholder requested more time to speak at the hearing. San Diego Water Board staff responded in writing to all written comments raising significant environmental issues and responded orally to significant issues raised during the hearing.

Stakeholder Engagement.
Referencing the State Water Board's stakeholder process formed for the statewide Biostimulation, Cyanotoxin, and Biological Condition Provisions efforts, multiple

commenters state that the San Diego Water Board's public engagement process was deficient because the San Diego Water Board did not convene a formal stakeholder process including State Water Board staff during the development of the San Diego Water Board's Basin Plan amendment. Developing a stakeholder group related to a board's proposed rulemaking can certainly offer advantages, by enhancing transparency and effectiveness of the regulatory process. Yet, these benefits were sufficiently satisfied by the San Diego Water Board's extensive public participation throughout development of the Basin Plan amendment, numerous features of which were voluntary. As described above, three drafts were made available for written comment and two publicly-noticed workshops were held at which staff gave presentations and received feedback from various stakeholder groups. Throughout the development process San Diego Water Board staff had numerous meetings with stakeholders to discuss the amendment. San Diego Water Board staff had four (4) stakeholder meetings after the August 2020 Revisions were released.

4. Procedural Concerns with the San Diego Water Board Public Hearing

Several commenters submitted comments to State Water Board saying that their ability to interact with regional board members during the public hearing was preempted when the San Diego Water Board chair moved to the next public speaker after a technical issue was resolved. Other commenters state that the board members generally had insufficient time for discussion before acting to adopt the Amendment. Other commenters state that the San Diego Water Board continued the public hearing from November 18, 2020, to the December 8, 2020, meeting date in part to allow San Diego Water Board staff to facilitate discussions with stakeholders to resolve key issues identified in the Basin Plan amendment's agenda summary, and state that staff did not initiate such meetings.

On October 2, 2020, the San Diego Water Board issued a notice of rescheduled public hearing to consider adoption of the Basin Plan amendment at its November 18, 2020, board meeting. The notice specified that the Basin Plan amendment documents for San Diego Water Board consideration would be available for public review no later than October 18, 2020, and that oral comments generally would be limited to three minutes. The notice also recognized that the Chair had discretion to adjust time limitations depending on the number of people wishing to speak.

At the public hearing on November 18, 2020, the San Diego Water Board heard a staff presentation during which some board members asked questions of staff, followed by public comment which began with coordinated presentations. The first coordinated presentation by five speakers representing Phase I MS4 Copermittees from Orange, Riverside and San Diego Counties was allotted 45 minutes. (Tr., p 62.) The final speaker in the group, Dr. Matt Yaeger, concluded the joint presentation with a summary of the group's two requests and stated, "So with that, we thank you very much for allowing us adequate time for this presentation and we would be happy to answer any questions that the Board may have or staff may have." (Tr., p. 95, lines 22-25.) Dr. Yaeger responded to a series of questions from the San Diego Water Board Chair for

approximately 6 minutes when the Chair responded “Okay, thank you.” At that time, the Chair was informed of a technical issue with the transmission of the public webcast and was asked to pause the hearing so the technical issue could be resolved.

Acknowledging the technical issue and a board member request for a break (Tr, p. 100), the Chair called a ten-minute break at 2:40 p.m., stating, “So at 2:50, sharp, we will hear comments, from the public and then comments/questions from the Board.” (Tr., p. 100, line 20 – p. 101, line 2.) Following the break, the San Diego Water Board Chair stated: “Let’s hear from the Board first, questions from the Board, and then we’ll have public comment.” (Tr., p. 101, lines 4-7.) After the Chair was advised by staff that there was also a presentation from South Orange County Wastewater Authority (SOCWA) and that SOCWA would present comments that touched upon topics already raised by the MS4 permittees in their joint presentation, the Chair stated: “Then let’s hear from the [SOCWA], and then we will have all the input that we expect from the co-permittees today.” (Tr., p. 102, lines 12-15.)

SOCWA’s representative, Amber Baylor, presented comments and then stated in closing, “Please contact me if you have any more questions, and I really appreciate the opportunity to comment on this matter. Thank you so much.” (Tr., p. 109, lines 20-23.) Thereafter, upon being informed that there were additional public speakers, in addition to the earlier coordinated presentations, the Chair stated “Getting aware of the time, I’d like the board members to make short comments. We’ll hear from the public speakers, and then we can make comments and – on all of the information we received.” (Tr., p. 110, lines 15-18.) After San Diego Water Board staff clarified there were nine public speakers remaining, the Chair called on the speakers in turn. Following all of the registered public speakers, board members made comments and invited staff to make closing comments (Tr., p. 153, lines 1-13.) The hearing transcript shows that the Chair stated that he and two other board members would need to leave the meeting due to other commitments no later than 4:30 p.m.

After additional board member comments, and staff summary, the Chair stated: “Okay. All right. It’s 4:11. I declare that to be 4:30, and I would like to end the public input. And thank you, Chad, for the staff comments. They were very helpful. And do we formally continue this item to December the 8th? What is the procedure?” (Tr., p. 162, lines 3-8.) Following a response from counsel, “I would recommend that you close the public hearing today, and you can just indicate that you’re continuing the matter to the December 8th Board Meeting.” (Tr. p. 162, lines 9-12.) The Chair then stated, “I think I can close the public hearing.” The meeting was adjourned at 4:12 p.m. (Tr. p. 162, lines 4-24.) As reflected in the minutes, the Chair closed the public hearing at the end of the November meeting due to anticipated board member departures and continued the item to the December 8, 2020, meeting for deliberations and consideration of adoption.

At the December 8, 2020, meeting, the San Diego Water Board Executive Officer stated “[A]s you recall, the hearing on item number 9, the Basin Plan amendment to add Biological [Objectives], was closed on November 18. And today, you will resume deliberations that you started at the last meeting.” (Tr., page 4, lines 13-17.) The Vice

Chair reopened the public hearing to have an addendum to the draft resolution read into the record. The addendum added a directive requested by board member Olson at the November 18 public hearing to “direct the Executive Officer to solicit and provide to the Board on an annual basis a report on the status of implementation of the stream biological objective.” After invitation from the Vice Chair, staff provided a summation of response to comments that had been provided near the conclusion of the November 18 hearing. Following additional board deliberation, the San Diego Water Board unanimously voted to approve Resolution No. R9-2020-0234 to adopt the Basin Plan amendment (Tr., p. 17, lines 9-24). This action was consistent with the meeting notice and agenda language for the December 8, 2020, meeting, which stated that “[t]he public hearing portion of this item was closed on November 18, 2020. The Board will deliberate and vote during this meeting and may allow limited oral comment if changes are made to the materials presented at the November 18, 2020, hearing.”

The record, including the transcript of the public hearing, for the Amendment shows the San Diego Water Board heard from all persons requesting to make oral comments at the hearing. No presentations, comments or responses were cut short and no requests for additional time were made (or denied) during the hearing. Despite commenter concerns that they were unable to fully respond to board member questions, no board members were prevented from asking additional questions of staff or of public speakers, from seeking further responses or clarifications, or engaging in further discussion or deliberation prior to voting to adopt the Amendment.

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Support for Adopted Basin Plan Amendment

Multiple state agencies and non-governmental organizations (NGOs) submitted comment letters supporting the Basin Plan amendment. These included letters from:

1. State of California Department of Fish and Wildlife, Office of Spill Prevention and Response
2. State of California Water Commission
3. State of California Department of Fish and Wildlife, South Coast Region
4. San Diego Coastkeeper, Heal the Bay, Los Angeles Waterkeeper, and the California Coastkeeper Alliance

These commenters expressed support for the Amendment as promoting climate change resilience, to protect and restore populations of native fish species, to enable resource damage assessment from spills, and to make more effective management decisions. Of those expressing support, the joint letter from San Diego Coastkeeper, Heal the Bay, Los Angeles Waterkeeper, and the California Coastkeeper Alliance commented that while they do not support the exclusion of hardened streambed segments, they nonetheless support approval of the Basin Plan amendment at this time emphasizing that the amendment is needed to: (1) better assess water quality outside of a laboratory setting, (2) comprehensively protect and restore beneficial uses, and (3) fifty years later meet the statutory purpose of the Clean Water Act. These NGOs also urged the San Diego Water Board to adopt a future Basin Plan amendment that would extend the biological objective's applicability to fully hardened streambed segments.

2) Table of Acronyms and Abbreviations

The following table presents acronyms and abbreviations used throughout the document. This includes acronyms and abbreviations that are generally used by commenters.

Acronym/Abbreviation	Definition
Basin Plan	Water Quality Control Plan for the San Diego Basin
BMP	Best Management Practice
CASQA	California Stormwater Quality Association
CSCI	California Stream Condition Index
CWA	Clean Water Act
CWC	California Water Code
Impaired Waters Policy	SWRCB Resolution 2005-0050, Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options
Integrated Report	Clean Water Act Section 305(b) and 303(d) Integrated Report
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
SCCWRP	Southern California Coastal Water Research Program
SED	Substitute Environmental Document
SMC	Southern California Stormwater Monitoring Coalition
SOP	Standard Operating Procedures
SWAMP	Surface Water Ambient Monitoring Program
State Water Board	State Water Resources Control Board
TMDL	Total Maximum Daily Load
USEPA	U.S. Environmental Protection Agency
WDR	Waste Discharge Requirement
WQIP	Water Quality Improvement Plan

3) Comments Received and Response to Comments

The State Water Board received written comments from the following entities:

Requests for Extension of Written Comment Period

California Stormwater Quality Association

Written Comments on the Basin Plan Amendment

California Association of Sanitation Agencies, Central Valley Clean Water Association, and South California Alliance of POTWs
State of California Water Commission
State of California Department of Fish and Wildlife South Coast Region
Coalition of Non-Governmental Organizations
California Stormwater Quality Association
County of Orange MS4 Copermittees
California Department of Fish and Wildlife Office of Spill Prevention and Response
Riverside County Flood Control and Water Conservation District
County of San Diego MS4 Copermittees
Mr. John Odermatt (2 emails)

This document includes individual comments for each commenter, verbatim[5] unless noted, followed by a response. Each comment and State Water Board response has been assigned a unique identifier, which is referenced, as appropriate, in subsequent responses to minimize duplication in responses.

[5] Figures, tables, and footnotes are not included due to accessibility issues. The presence of a figure, table, or footnote is referenced in comments copied into this document. Full comment letters are available upon request by contacting State Water Board staff: https://www.waterboards.ca.gov/resources/public_records/

Extension Request: California Stormwater Quality Association (CASQA)

Generalized Comments: On July 29, 2021, the CASQA emailed the State Water Board chair and Executive Director requesting an extension of the public comment period.

Response: The State Water Board chair approved a 30-day extension request, and a revised public notice for the extension of the public comment period was issued on August 2, 2021.

A. Commenter: California Association of Sanitation Agencies, Central Valley Clean Water Association, and South California Alliance of POTWs

Comment A.1: While CASA and CVCWA do not routinely comment on matters arising from individual regions that come to the State Water Board for approval, we will engage in circumstances such as these where a proposed regional action may have statewide significance. Our organizations provided comments to the San Diego Regional Water Quality Control Board (San Diego Water Board) on this matter in 2019 and 2020 (letters attached), and we appreciated the San Diego Water Board's recognition of the need to revise the original 2019 version of the Stream Biological Objective to exclude hardened streambed segments.

CASA, CVCWA, and SCAP have significant procedural concerns with the San Diego Water Board's adoption of these BPAs, which we detail below. We are also concerned that the Staff Report and Response to Comments do not adequately address or resolve stakeholders' concerns about whether the Stream Biological Objective can be attained in an urban setting, the ramifications if the objectives cannot be achieved, and if they can whether the associated cost of attainment is feasible for the regulated community and local ratepayers.

These shortcomings are particularly concerning given that State Water Board staff is still developing the technical foundation and policy options for a statewide water quality objective and implementation program for nutrients and other biostimulatory substances, including the draft project goals, options, and program of implementation, which they expect to discuss the outline with stakeholders by Spring 2022. Consistent with an expectation that a number of these issues may be addressed at the statewide level by the State Water Board, we understand that the State Water Board has not moved forward on approving the Region 5 BPAs for agricultural beneficial uses. It would not make sense to take a different approach by approving regional BPAs in Region 9, in advance of the statewide effort.

As such, CASA, CVCWA, and SCAP request the State Water Board hold this item for the procedural and substantive reasons identified below, in order to allow for the State Water Board policy to be developed. In the alternative, we request the State Water Board remand these regulatory BPAs back to the San Diego Water Board for additional development and refinement to address stakeholders' concerns.

Response A.1:
Please see General Responses 1 and 2 in the Introduction regarding regional action and statewide significance and implications, as well as the relationship to existing efforts by State Board. Specific comment responses are provided below and in the introduction as noted.

Comment A.2: The San Diego Water Board never adequately discussed, addressed or resolved stakeholders' concerns regarding the BPAs, nor did not it provide a supporting rationale for the recommended Board action. On November 18, the San Diego Regional Water Control Board was scheduled to adopt its Basin Plan Amendments to incorporate a water quality objective for biological condition. Stakeholders from the point and non-point source communities provided comments and made formal presentations on the proposed BPAs and the ultimate attainability of those BPAs due to the associated costs for achieving a California Stream Condition Index (CSCI) score equal to or greater than 0.79, which is the BPA's numeric biological condition water quality objective. In response to the extensive stakeholder input, and in pursuit of a workable outcome on a major policy decision, the San Diego Water Board continued the Public Hearing until December to allow for further deliberation and coordinate with staff and interested parties on an acceptable path forward on the issues and challenges identified.

The December 8 meeting agenda and supporting materials were released with the agenda item's write-up listing the "key issues" identified in the November meeting. However, this document referred the key issues "Discussion" to a supporting document that provided only a narrative chronology of the development of the BPAs and did not actually address or discuss the key issues that had been identified. Neither of those December 8 meeting documents engaged substantively with the outstanding implementation challenges identified in the supporting materials nor did they provide a substantive explanation that resolved the key issues. Thus, the San Diego Regional Board never adequately responded to stakeholders' concerns or comments. Absent such information and discussion, stakeholders' questions remain, and implementation concerns are still outstanding.

Response A.2:
Please see General Response 4 in the Introduction, "Procedural Concerns with the Public Hearing." The comment regarding the circumstances of continuing the San Diego Water Board public hearing until December is not consistent with the transcript of the hearing. The record shows that having heard from all public speakers and due to the time of day, with some board members needing to leave for other commitments, the San Diego Water Board chair closed the public hearing at 4:12 p.m. and continued the matter for deliberation and voting at the December 8 board meeting.

The board considered stakeholders' concerns or comments via the written responses to comments and staff's oral responses during the board item on November 18 and December 8, 2020. The record does not show that the San Diego Water Board expected staff to resolve contested issues with stakeholders between the November

public hearing and December 2020 meeting. The San Diego Water Board chair specifically requested follow-up by the City of Escondido staff to submit a formal comment letter from the mayor and city council because the City's representative stated that her oral comments did not necessarily reflect the official position of the City. A letter from the City of Escondido was subsequently received and is included in the record.

In regard to the December 8 meeting documents, the "key issues" were identified by San Diego Water Board staff in the agenda materials as a reminder for board members of issues that have been raised by commenters or staff considered to be important items for consideration. This identification by staff does not dictate or even direct the board discussion and does not mean the board must resolve key issues to the commenters' satisfaction. The "key issues" identified in the December 8 Executive Officer summary report were responded to by staff in written responses to comments and oral responses during the board item on November 18 and December 8, 2020.

Comment A.3: The San Diego Water Board did not follow through on their commitment to work with stakeholders after the November 18 adoption hearing was continued to December 8.

During the November 18 meeting, San Diego Water Board Chair Abarbanel inquired with each stakeholder at the end of her or his comments about whether the stakeholder would be willing to work further on this project by prospectively contributing funds toward an endeavor to develop the tools and BPAs further. Numerous stakeholders replied they would be willing to participate in this initiative, and Chair Abarbanel responded that we should expect to hear from the San Diego Water Board. However, as far as we are aware, no relevant association or representative was contacted by the Regional Board staff, and subsequent outreach to the Executive Officer and staff leads on the BPAs did not receive a timely response. When staff did respond, after the December 8 adoption hearing, the engagement was non-responsive to Chair Abarbanel's proposal. We feel that this lack of responsiveness to the instruction of the Board Chair and stakeholder outreach undermined our efforts to find a mutually agreeable path forward with the San Diego Water Board on their BPAs to ensure they would be achievable by stakeholders.

Response A.3:
Please see the Introduction and General Response 4 and the preceding response for a discussion of Procedural Concerns with the Public Hearing.

San Diego Water Board Chair Abarbanel engaged in a line of questioning with some commenters during the hearing, but his questioning did not result in any board member or board staff proposed revision to the draft resolution. However, in response to a request by board member Olson at the public hearing, the resolution was modified to include a directive to the San Diego Water Board Executive Officer to solicit annual input from copermittees on implementation efforts.

Comment A.4: The Response to Comments on the 2019 draft BPAs was not provided until 6 weeks after the comment deadline for the 2020 draft BPAs, which denied the regulated community and Board Members the opportunity to fully engage in the rulemaking process and express concerns in writing on the San Diego Water Board staff's explanations and rationales on contested issues.

There were two comment periods for these BPAs. The first one closed on June 7, 2019, after the 2019 draft BPAs were released, and the second was on September 4, 2020, after the revised 2020 draft BPAs were released. However the Response to Comments on the 2019 draft was not provided at the same time as the 2020 draft was released, and in fact the Response to Comments were released 6 weeks after the 2020 comment deadline, on October 16, 2020. This disadvantaged stakeholders from fully engaging in the proceeding and prevented them from having complete information during the public process. Stakeholders were uncertain of how their previous comments were addressed, and were then required to submit comments on the 2020 revisions without seeing responses to their prior comments. This prejudiced stakeholders who raised serious practical concerns with the BPAs use of the Stream Biological Objective, and denied stakeholders the ability to engage more substantively with the San Diego Water Board.

Response A.4:
The need for timely responses to comments certainly fosters transparency in the decision-making process and we understand the concern about the delay in providing responses to the 2019 iteration. The 2020 iteration itself was revised in substantial part as a direct response to the feedback received on the 2019 iteration. Additionally, please see the Introduction and General Response 3, where the numerous additional opportunities for public engagement were voluntarily provided by the Regional Board, which underscores the Regional Board's commitment to robust engagement with the public.

Comment A.5: CASA and CVCWA raised several concerns related to the precedential impact and statewide implications of these BPAs. The Regional Board responded as follows:

Response 139
Please see Response #77 regarding an earlier comment on statewide implications. Regional Water Boards already have and use narrative and numeric biological objectives for streams, lakes, and rivers in their Basin Plans. The proposed regional BPA does not interfere with the State Water Board's efforts, and in fact has considered and used information from that process. As stated in the Executive Summary for this Report, the San Diego Water Board has been involved in the State Water Board's statewide biological integrity efforts since 2008 and has been an active participant in the statewide process on both stakeholder and technical advisory groups.

Response 77
Comment noted. The San Diego Water Board proposal does not set forth any requirement for another Regional Board or State Board to take any action regarding

biological objectives. The San Diego Water Board is a regular participant in the ongoing State Water Board development of WQOs that apply on a statewide basis.

These response [sic] failed to address our core concerns for several reasons. First, the reference to what other regions have done omits critical distinctions about where biological objectives for streams, lakes, and rivers in Basin Plans have been adopted, namely, in forested watersheds by the Region 6 Lahontan Regional Water Quality Control Board, but notably, not in the more urban Victorville watershed in Region 6. This is a critical distinction given the Region 9 BPAs potential impact on more urbanized areas. Second, the fact that other regions may have pursued this approach (albeit in an entirely different context) is no justification for proceeding with these specific BPAs in Region 9. This reference to other Regions' actions underscores why we are concerned and commenting to the State Water Board and requesting your intervention in this proceeding on the San Diego Water Board's Actions. In fact, the expanding number of variant approaches within the Regions on an issue that is being pursued in a more cohesive manner at the statewide level lends support to the idea that Region 9 should not be pursuing these BPAs at this time. Third, while the San Diego Water Board does not directly set requirements for other Regional Water Boards or the State Water Board, if these BPAs with the Stream Biological Objective are ultimately approved, it would potentially "validate" their appropriateness (despite the overarching substantive concerns about the use of the CSCI tool in an urban setting as proposed) and could enable another Regional Water Board to reference and rely on the San Diego Water Board's BPAs in the future.

Response A.5:
Please see discussion of the statewide effort in General Response 2 in the Introduction.

Comment A.6: CASA and CVCWA raised several concerns related to the reasonableness of achieving the Stream Biological Objective. The Regional Board responded as follows:

Response 140
Existing CSCI scores measure current conditions, rather than potential condition, and the draft Staff Report includes examples of streams that have been restored to achieve the proposed Stream Biological Objective. Next, streams with a CSCI score less than the proposed Stream Biological Objective (0.79) will not always require a TMDL be developed…

…The comment references CWC section 13241(c), which states: "Factors to be considered by a regional board in establishing water quality objectives shall include, but not necessarily be limited to, all of the following: (c): Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area." Please see Response #9, #50, #51, and #68 regarding consideration of the factors in CWC section 13241. The San Diego Water Board has modified the proposed Stream Biological Objective (see Response #1). The San Diego

Water Board's evaluation of the section 13241 factors included consideration of water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the region, and additional information has been added to the draft Staff Report SED appendix to further add to and clarify this consideration.

While the additional information added in Responses #1, #9, #50, #51, and #68 to the Staff Report SED appendix is helpful for technical purposes, it ultimately is unresponsive to stakeholders' concern that the water quality conditions cannot reasonably be achieved. Specifically, the costs related to controlling all factors which affect water quality to achieve the Stream Biological Objective is prohibitive for permittees, and thus it is unreasonable to assume the objective could be achieved. Discussions related to the actual economic mandate that these regulations will impose upon permittees are simply inaccurate.

To underscore this point, in the Draft Staff Report's discussion of economic considerations related to restoration activities, the Report cites to Figure 5 which lists eight different smaller scale restoration projects in Region 8, at an average cost of $2.7 million dollars per project. Without dedicated funding sources for these types of projects, the sheer expense of each one underscores why stakeholders are concerned about these BPAs. This challenge is even more stark in consideration of the fact that the San Diego region "would need to raise more than a $1 billion in new revenue over the next decade to get back on track [with its annual funding targets for stormwater needs.]"1

1"San Diego Mayor Kevin Faulconer to leave more than $1 billion in polluted rivers, flood issues to successor. Joshua Emerson Smith. San Diego Tribune. February 24, 2020." See: https://www.sandiegouniontribune.com/news/environment/story/2020-02-24/san-diego-mayor-kevin- faulconer-1-billion-polluted-rivers-flood-issues

Response A.6:
Please see General Response 1 of the Introduction regarding the consideration of CWC 13241 factors. While potential cost concerns are generally valid, the citation used in the comment is not specific for the Basin Plan amendment, but is specific to the City of San Diego's entire stormwater system, which includes pump station and pipe replacements, maintenance and repair activities, and meeting existing water quality standards prior to adoption of the Basin Plan amendment. Section 1.4 of the SED identifies that the Basin Plan amendment is expected to reduce costs associated with compliance by effectively targeting those pollutants and levels of pollutants directly impacting the beneficial use.

Comment A.7: CASA and CVCWA raised several concerns related to the impact of land uses for eventually achieving the Stream Biological Objective. The Regional Board responded as follows:

Response 141
Please see Response #1 regarding the modification of the Stream Biological Objective. There commenter has not provided evidence to support the comment that "surface

waters in the region probably will not ever meet the proposed water quality objective." On the contrary, the program of implementation in Chapter 4 of the proposed BPA describes the nature and types of actions that will achieve the proposed Stream Biological Objective. Additional supporting information is set forth in the draft Staff Report. The proposed BPA satisfied all elements of CWC section 13241 and 13242. See also Responses #9, #32, #50, #51, and #68. The proposed Stream Biological Objective includes a discussion regarding the use of tools developed. Please see Response #43 regarding the potential use and applicability of the Beck et al. tool, for which San Diego Water Board staff is included as a co-author. Please also see Responses #3, #6, and #43 regarding the use of alternative thresholds.

Response 1

The statement that "engineered waterways" will always be significantly impacted by adjacent land uses is speculative and inconsistent with the goals of the Clean Water Act (CWA). To clarify, Basin Plan Chapter 4 Section V. Permitting covers permits for discharges into waterways. Discharge permits are implemented so a discharge into a waterway, engineered or not, does not cause or contribute to an exceedance of any water quality objective, which would include the proposed Stream Biological Objective. As many developments were built prior to implementation of stormwater and nonstormwater discharge requirements under the CWA, these developments were not required to implement design or treatment control best management practices (BMPs) when developed. Thus, discharges from these lands are often unmitigated, resulting in impacts to waterways associated with stormwater discharges. Municipal stormwater permitting under the CWA, which uses an iterative maximum extent practicable (MEP) standard, recognizes this challenge, requires implementation of improved or more effective BMPs with improvements in stormwater quality expected to take place over time. This is also reflected in the peer-reviewed literature cited in the draft Staff Report (e.g. Bernhardt and Palmer 2011). Thus, the assumption that adjacent land use will forever significantly impact waterways is incorrect and inconsistent with CWA regulations and goals.

The scientific literature demonstrates that the CSCI is an effective tool for monitoring and assessing the condition of hardened streambed segments. Research by the Stormwater Monitoring Coalition ("SMC", SMC 2015 and 2017) supports findings in the scientific literature, that the in-stream hardening of a streambed results in direct impacts to the stream's biological integrity, thus precluding the attainment of a CSCI score indicative of beneficial use support while it is fully hardened.

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Response 141 and Response 1 are both insufficient responses to the legitimate objections of stakeholders relating to the feasibility and attainability of the BPAs in the San Diego region. Rather than contending with the objections of stakeholders and affirmatively explaining how the BPA's can be achieved economically, the Responses in 141 and elsewhere misstate then dismiss the concerns as invalid, despite evidence to the contrary. There is a notable lack of acknowledgement and discussion about adjacent land use and what must transpire for it to change from its current use. Instead, the Response conclusively asserts that the proposed BPA satisfied all elements of

CWC section 13241 and 13242, a contention with which we disagree. The regulated community maintains the valid assumption that adjacent land use will perpetually impact waterways, and those conditions are not so easily changed.

Last, while the CSCI may be “an effective tool for monitoring and assessing the condition of hardened streambed segment,” there is a vast difference between using this tool for monitoring/assessment and enshrining a CSCI score of 0.79 as a numeric biological water quality objective in a basin plan for an area in which nearly no waterways have achieved that CSCI score. This critical distinction regarding appropriate use of the CSCI is at the heart of our concerns regarding the BPAs.

Response A.7:
Please see General Response 1 of the Introduction for discussion of San Diego Water Board’s consideration of the CWC sections 13241 and 13242 factors.

Comment A.8: CASA and CVCWA raised several concerns related to the implementation and attainment of the Stream Biological Objective. The Regional Board responded as follows:

Response 142
The proposed Stream Biological Objective has been modified to exclude stream segments that have been fully hardened (see Response #1). Please see Responses #9, #51, #68, and #142 regarding CWC sections 13241 and
13242.
-
We are immensely grateful for the San Diego Water Board’s exclusion of fully hardened stream segments form the BPAs. This decision and the underlying science effectively illustrate the previous point, that the CSCI is well suited to monitor and assess most streams, but imposition of the score as a numeric limit is most often inappropriate in urban settings. Existing data from the Stormwater Monitoring Coalition (SMC) demonstrates the difficulty for the BPAs to be attained in all engineered channels. While the response indicates the difficulty in meeting objectives is speculative, there is no supporting analysis provided to adequately address the issue. This is, in part, currently being studied by the Southern California Coastal Water Research Project (SCCWRP), which lends itself toward holding the policy at the State Water Board until more relevant data has been gathered.

As noted, there are multiple factors affecting the ability for achieving the Stream Biological Objective for any given waterbody. Where these factors do not affect water quality (such as toe to toe hardening), they are not under control or purview of the Clean Water Act. While the fully hardened stream segments are identified and excluded from the BPAs, a more exhaustive review of non-water quality factors should be identified in a holistic watershed approach to evaluate and set appropriate expectations for the biological condition in waterbody segments throughout the region.

Response A.8:
Please see General Response 2 of the Introduction for an explanation as to why delaying approval of the Basin Plan amendment pending a statewide effort is not necessary. Please also see the Introduction and General Response 1 for a discussion of the consideration of CWC section 13241 “Reasonableness and Achievability” regarding the setting of the objective and factors considered. The San Diego Water Board heard and considered the requests of multiple commenters submitted in writing and made orally during the hearing requesting the San Diego Water Board defer adoption of the biological objective to allow further study of non-water quality factors, including by SCCWRP, the SMC, and State Water Board (e.g. see Responses 45,52 of October Response to Comments, see page 7 of November 2020 Response to Comments, see transcript of oral comments at the public hearing from Riverside County Flood Control and Water Conservation District [page 67], Larry Walker Associates [page 75], the California Association of Sanitation Agencies [page 130], and County of San Diego [82]). After deliberation, the San Diego Water Board unanimously adopted the Amendment.

Comment A.9: CASA and CVCWA raised several concerns related to the availability of tools for causal assessment and their appropriateness for regulatory purposes. The Regional Board responded as follows:

Response 143
Please see Responses #66 and #98 regarding causal assessment. As stated in the discussion of CWC section 13241 in the draft SED, the alternative to using causal assessment would be to develop TMDLs for all pollutants, under the assumption doing so would address any/all biological impairments. The results from causal assessment are expected to be used in permitting, development of the CWA 305b/303d Integrated Report, responses to impairments consistent with the Impaired Waters Policy, and Basin Plan amendments. All are subject to public Water Board processes as described in Chapter 4 of the proposed BPA and the draft Staff Report, and referenced in the SED.

Response 66
The San Diego Water Board has modified the proposed Stream Biological Objective applicability regarding hardened channels (see Response #1). While the science and tools regarding causal assessment are constantly evolving, tools regarding causal assessment are published and available for use. Additional updated information regarding rapid causal assessment and screening tools has been added to the draft Staff Report for clarity (see Gillett et al. 2019, Beck et al. 2019, Beck et al. 2019b).
-
Response 143 creates a false dichotomy by suggesting only two paths forward: either using causal assessment or TMDLs. However, stakeholders provided a viable third way that would be workable which was not fully considered or adopted by the Regional Board.2 There are other potential solutions as well that address stakeholders’ concerns about using the causal assessment tools in question in the manner prescribed, some of which CASA, CVCWA, and SCAP have raised in previous engagement on the

statewide process. Thus, the premise of staff's dichotomy and their subsequent recommendation is improperly based.

Additionally, we disagree with the contention in Response 66 that the existence and availability of published causal assessment tools equates to the appropriateness of deploying those tools for regulatory purposes, especially when there will be such stark economic implications. Greater scrutiny should be required of novel tools based on a limited number of publications, especially when they are unproven and there are valid questions about the fit of the tools for the settings in which they will be applied.

2 "Recommendation 4 Summarized: Modify the proposed Chapter 4 Basin Plan language to include the following: • Phase I MS4 Permit receiving water limitations are not set equal to the proposed biological objective, but rather only included for pollutants identified through a causal assessment as contributing to lowered CSCI scores. The proposed biological objective would be used for the prioritization process in the Water Quality Improvement Plans, but not as a receiving water limitation. • The Regional Water Board should conduct a complete causal assessment prior to the waterbody being listed on the 303(d) list. Waterbodies for which pollution is identified as a cause of the biological impairment should only be listed in Category 4c until such time as the pollution is addressed and additional work is needed to attain the biological objective."

Response A.9:
The San Diego Water Board's response accurately describes that TMDLs are required for all Clean Water Act section 303(d) pollutants, and the use of a biological objective and causal assessment would provide for a more focused regulatory (or non-regulatory) effort on the specific pollutants causing impairment of beneficial uses, because the biological objective is a more direct assessment of beneficial use attainment (see section 1.8 of the SED and *Economic Considerations Related to Restoration Activities: TMDLs and TMDL Alternatives*). The commenter has not provided evidence that this approach will result in "stark economic implications." The San Diego Water Board considered the economic considerations factor as required by CWC section 13241(see General Response 1). Lastly, the recommendation generally summarized by the commenter was submitted by multiple commenters, responded to in the October 2020 Response to Comments, and considered by the San Diego Water Board. However, in the October 2020 Response to Comments, the San Diego Water Board identifies the commenter's general recommendations as inconsistent with National Pollutant Discharge Elimination System (NPDES) permit implementation requirements for receiving water limitations as well as the State's Impaired Waters Policy. To summarize this response, NPDES permits require that all water quality objectives be included as receiving water limitations and these permits are required to undergo a separate public participation process for specific permit implementation requirements. In addition, the proposed requirement for conducting a full causal assessment before 303(d) listing is inconsistent with the State Water Board's Listing Policy, which only requires an association with a pollutant impairment.

Comment A.10: Conclusion

CASA, CVCWA, and SCAP appreciate the opportunity to provide written comments on your approval of the San Diego Water Board's BPAs incorporating the Stream Biological Objective. As conveyed in our attached prior comments, the use of the CSCI tool has several practical limitations, and those limitations should be adequately scrutinized before being approved by the State Water Board. The application of a standard that does not accurately reflect actual conditions cannot achieve the goal of healthy watersheds. The BPAs and Stream Biological Objective appear to grossly oversimplify the ability to determine the causes of lowered CSCI scores and implement strategies to address those causes. Little evidence has been shown demonstrating the precision with which causal assessments can accurately identify biological stressors impacting CSCI scores, potentially leading to ineffective and resource wasting implementation actions. The reality of many biological impairments is that they are likely caused by multiple factors, and there is the very real possibility that many of these causal assessments will result in an inconclusive determination.

Response A.10:
Please see the Overview Section of the Introduction regarding the necessity for a biological objective. The use of the CSCI as a biological objective was supported by all scientific peer reviewers for the project. The commenter's statements about causal assessment inadequacies are speculative and not supported by evidence, as the record includes scientific publications and examples of causal assessment methods being used in the San Diego Region (see Staff Report section 5). The San Diego Water Board considered and responded to the concerns regarding causal assessment when adopting the BPA.

Comment A.11:
Due to the above procedural and substantive concerns, we recommend that the State Water Board decline to adopt the BPA at this time, and instead either hold this item or remand the BPAs back to the San Diego Water Board. If the State Water Board were to remand the BPAs, we are supportive of CASQA's recommendation in 2020 for the San Diego Water Board to convene a stakeholder process with the State Water Board and other interested parties so that the significant issues raised can be fully vetted and an implementable regulatory framework can be established.

Response A.11:
Comment Noted. Please also see General Response 3 of the Introduction.

B. Commenter: State of California Water Commission

Comment B.1: The California Water Commission is pleased to have this opportunity to comment on the San Diego Water Board's Basin Plan amendments. The Commission assessed the state role in financing conveyance projects that could help meet needs in a changing climate. Using information gathered at four regional workshops, the Commission earlier this year produced a white paper for state policymakers that describes the essential criteria for resilient water conveyance projects that meet the needs of a changing climate, the potential public benefits of such projects, and the implications of various financing options.

Among our conclusions was that rivers and streams provide crucial conveyance services, and investments in the ecological health of natural waterways will improve the state's green conveyance infrastructure. Using biological measurements that accommodate climate change to monitor the ecological health of streams is an important step in supporting the resilience of California's natural waterways.

The amendments to the Basin Plan will improve the Basin's resilience to climate change, which will improve the State's green conveyance systems. Natural systems provide invaluable services to people and form a critical part of our identity, underpin our economy, and nourish our communities. Californians need healthy natural systems to thrive, and the state's water grid is built on the back of these natural waterways.

Response B.1:
Comment noted.

C. Commenter: State of California Department of Fish and Wildlife South Coast Branch

Comment C.1: The California Department of Fish and Wildlife's South Coast Region (SCR), is pleased to write a letter of support for the California Regional Water Quality Control Board, San Diego Region's biological objectives amendment to the Water Quality Control Plan for the San Diego Basin.

The SCR understands the importance of water quality as it relates to stream health. The current water quality objectives for the San Diego Basin focus on chemical pollutants. The detrimental impacts of chemical pollutants to fisheries are well documented, but a focus on chemical pollutants could also miss other impacts associated with freshwater discharges. For example, freshwater discharges that lead to changes in the aquatic invertebrate assemblage currently present in a particular stream could result in negative impacts to native fishes. With so many populations of native fish already experiencing stressors from drought and invasive species, we believe incorporating biological objectives could help reduce future stressors associated with freshwater discharges.

With this in mind, we fully support including biological objectives in the Water Quality Control Plan for the San Diego Basin.

Response C.1:
Comment noted.

D. Commenter: Coalition of Non-governmental Organizations

Comment D.1: San Diego Coastkeeper, Heal the Bay, Los Angeles Waterkeeper, and California Coastkeeper Alliance are writing to convey our support for the Biological Objectives Amendments to the San Diego Basin Plan and the utilization of the California Stream Condition Index ("CSCI") to calculate numeric Biological Objectives within the San Diego Region. More specifically, we support the utilization of benthic macroinvertebrate data and the CSCI to assess stream beneficial use attainment pursuant to Clean Water Act Sections 303(d) and 305(b). We thank the San Diego Regional Board for its leadership on the development and implementation of scientifically sound Biological Objectives. We hope and expect that the proposed Basin Plan Amendment ("BPA") will serve as a positive example for other regions (including Los Angeles and San Francisco Bay) to develop and implement strong, scientifically sound Biological Objectives, and for the State Water Resources Control Board to timely approve such BPAs as significant and much-needed steps towards improving water quality throughout California.

Response D.1:
Comment noted.

Comment D.2: To be clear, we more strongly support the originally proposed February 2019 BPA which required Biological Objectives for hardened stream beds, but in compromise, we support approval of the BPA adopted by the San Diego Regional Water Quality Control Board ("San Diego Regional Board") on December 8, 2020 ("Resolution No. R9-2020-0234").

Response D.2:
Comment noted.

Comment D.3: Biological Objectives Based Upon the CSCI Are Necessary to Ensure the Biological Integrity of California's Waters.

Over fifty years after the passage of California's landmark Porter-Cologne Water Quality Act ("Porter-Cologne"), the proposed numeric Biological Objectives for streams in the San Diego region would mark the first direct measures of beneficial uses ever adopted as Water Quality Objectives ("WQOs") in California. Numerous beneficial uses of California waters are biological or ecological in nature, so direct measurement of the integrity of these uses is a major advance in fulfilling Porter-Cologne's water quality mandates. [FN1] Porter-Cologne allows designation of beneficial uses for purposes among which are "preservation and enhancement of fish, wildlife, and other aquatic resources…" (See Cal. Water Code §13050(f), emph. added.) The first section of the federal Clean Water Act (which is modeled on Porter-Cologne) similarly annunciates its

purpose to restore and maintain the “chemical, physical, and biological integrity” of waters of the United States. (See 33 U.S.C. §1251, emph. added.)

Yet despite these clear statements of statutory purpose to protect and enhance the biological integrity of California’s waters, until now, WQOs in California have focused almost exclusively on chemical parameters. Chemical WQOs provide a useful but incomplete metric for assessing biological integrity of waterbodies because they provide only a mere “snapshot” of a waterbody’s chemical properties, and thus fail to provide comprehensive indicators of biological and ecological integrity. For example, regional bioassessment data shows that the vast majority of the waterways in San Diego scored “poor” or “very poor.” Implementation of the Biological Objectives BPA will allow our region to determine what is driving the poor ecological health of our waterbodies, and allow for regional decision-makers to implement more effective management decisions moving forward.

Biological Objectives based on the CSCI are important additions to Basin Plan WQOs, because Biological Objectives integrate biological, chemical, and physical indicators into one overall score, which also integrates conditions over time. We agree with the San Diego Regional Board Final Staff Report dated November 18, 2020 (“Final Staff Report”) which states:

“Use of water chemistry alone in waterbody assessment does not adequately protect the biological integrity of waters due to the necessarily constrained temporal and spatial extent of chemical monitoring, the limited number of chemicals and matrices that can feasibly be monitored, cumulative and synergistic effects,[FN2] sublethal effects, and the inability of chemistry-based assessment to detect impairment caused by pollution and not a pollutant (e.g. habitat modification).

Biological objectives are needed, in tandem with chemistry-based water quality objectives and physical assessment, to protect and restore the beneficial uses associated with ecosystem condition. [Citation omitted]. For those waterbodies with a designated beneficial use(s) associated with the protection of aquatic ecosystems, chemistry-based water quality objectives alone do not protect the most sensitive beneficial use, nor do they provide accurate assessments of waterbody condition.” (Final Staff Report, § 3.1).

Further, the use of biological parameters to assess stream biological and ecological integrity relies on conditions in the stream environment itself and not in a laboratory, thus incorporating the synergistic and cumulative effects of many stressors that are difficult or impossible to replicate in a laboratory setting.

Thus, as stated in Finding 9 of Resolution No. R9-2020-0234, “Biological objectives are critical for restoring and protecting the biological integrity of the region’s waters. Therefore, biological objectives are critical for the San Diego Water Board to comprehensively protect and restore beneficial uses.”

Response D.3:
Comment noted.

Comment D.4: Biological Objectives in the Proposed BPA Are Scientifically Sound.

The use of numeric Biological Objectives in the San Diego Region is supported by "State of California standardized methods, peer-reviewed assessment tools, and results from two decades of bioassessment evaluation in the Region." (Final Staff Report, § 4.1). The science supporting the approval of Resolution No. R9-2020-0234 is robust.

"The State of California's Surface Water Ambient Monitoring Program (SWAMP) has developed standard operating procedures for bioassessment field sampling, laboratory identification of specimens, quality assurance/control, data management, and reporting. The development of biological scoring tools, often referred to as indices or metrics, has been on-going during that time period, with various regional indices developed throughout the State for different organisms such as benthic macroinvertebrates (e.g. Ode et al. 2005, Rehn and Ode 2005, Rehn et al. 2008, Rehn 2010), algae (Blinn and Herbst 2003, Herbst and Blinn 2008, Fetscher et al. 2014), and higher trophic level organisms such as amphibians and/or fish (Moyle and Randall 1996, Moyle and Marchetti 1999). In 2015 the State of California released a peer-reviewed statewide California Stream Condition Index (CSCI, Mazor et al. 2016) for assessing the biological condition of wadeable streams throughout the State based on benthic macroinvertebrates.

The CSCI utilizes a combined-reference-site approach to determine the site- specific benthic community expected to be present at any sampled site. The data collected by these programs, and indices developed for benthic macroinvertebrates and algae, serve as the basis for the inclusion of the numeric objective for streams." (Id.)

Furthermore, the scientific basis for this Basin Plan amendment was subject to external scientific peer review pursuant to Health and Safety Code section 57004, and the peer review panel overwhelmingly supported the adoption and implementation of Biological Objectives in the San Diego Basin Plan. (Resolution No. R9-2020-0234, Finding 22).

The CSCI reference approach results in scores reflective of human impacts on biological integrity, rather than natural variation, and therefore facilitates "apples to apples" comparisons and determinations of impairments. (See Final Staff Report, § 3.3.3.). Use of CSCI methodology results in "residual variation as a signal reflective of the degree and nature of anthropogenic stress at play." (Id. § 2.4) The biological condition of a stream is a comprehensive indicator of
the integrity of the stream's water quality, habitat, and biota. Benthic macroinvertebrates are relatively stationary, ubiquitous, and respond quickly and in diverse ways to environmental stressors. These organisms thus represent an almost ideal indicator group for assessing the biological and ecological integrity of waterbodies.

Further, using biological parameters to assess stream biological integrity relies on “real world” conditions rather than laboratory conditions. Biological Objectives based on the ecologically relevant CSCI metric thus inherently account for the effects of many synergistic variables (including chemical and physical stressors) that are difficult or impossible to replicate in a laboratory setting. The inherent methodological difficulties in setting WQOs based on analysis of a pollutant studied in isolation under necessarily artificial laboratory conditions have contributed to the contentious nature of many BPAs adjusting existing chemical WQOs. (See footnote 2 supra.) Biological Objectives based on the CSCI metric do not suffer from the inherent limitations of WQOs based on such laboratory studies. Thus, the inherent comprehensiveness of Biological Objectives using the CSCI metric would represent a major improvement to the Basin Plan.

Response D.4:
Comment noted.

Comment D.5: We Support the Application of Biological Objectives to Fully-Hardened Streambeds.

Biological Objectives are also necessary in concrete-lined channels because chemical WQOs do not “detect impairment caused by pollution and not a pollutant (e.g., habitat modification).” (Final Staff Report, § 3.1). Adoption of CSCI-based Biological Objectives would help rectify this serious shortcoming in the current regulatory system. Throughout California, and in Southern California especially, many to most major streams have been severely hydromodified by channelization and concretization. Such waterbodies typically exhibit greatly reduced biological integrity, which is not always reflected in monitoring data for chemical parameters. Many, if not most, heavily hydromodified streams would likely show evidence of impairment by pollution (e.g., channelization and concretization) reflected in low CSCI scores.

In turn, low CSCI scores would likely lead to listing such streams as impaired under a Category 4C listing (meaning the stream segment would not necessarily require development of a Total Maximum Daily Load (“TMDL”), but the listing would encourage development of restoration or partial restoration plans to improve the CSCI score)[FN3]. While we recognize that attainment of Biological Objectives (and WQOs in general) in some streams impaired for hydromodification may be a long term project, we still support Category 4C listing of such streams and evaluation of potential restoration or partial restoration plans.

The possibility that some concretized streams may never fully attain the draft numeric Biological Objectives, a sentiment expressed by multiple regulated entities through public comment during the development of the Biological Objectives BPA, is not a reasonable argument for omitting such objectives from the Basin Plan and relegating them to guidance documents. Moreover, it is inconsistent with the statutory purpose of both Porter-Cologne and the Clean Water Act. Both laws are designed to restore and maintain water quality, and to protect and enhance beneficial uses. Neither contains the qualifier “unless it might be difficult due to existing pollution.” Failure to require

Biological Objectives in hardened channels unjustifiably ignores a powerful scientific tool developed over countless years by hundreds of dedicated researchers [FN4]. Without the numeric goalposts, permittees are significantly less likely to invest in stream restoration, when the multiple benefits of such “green infrastructure” are needed now more than ever. Without the specificity and granularity of an objective and discrete CSCI score, slight changes in stream condition (both improvements and degradation) would likely be overlooked.

The rationale for the exclusion of concrete bottom streams is not compelling. For example, while earlier Draft Staff Reports acknowledged it is proper to apply the CSCI index to concretized streambeds, the Final Staff Report reverses course thereby exposing a chicken-and- egg problem of its own making. “[T]here is insufficient data concerning timetables by which such stream segments could be restored.” (Final Staff Report, § 4.5.2). “At this time, there is a limited sample size of representative restoration projects.” (Id.) While concrete bottom streams are not “incapable or unworthy” of the protection afforded by Biological Objectives, these waterbodies are nonetheless excluded “due to a lack of information regarding the scope and timeframe over which restoration, relative to the CSCI threshold, can reasonably be expected to be achieved.” (Id.) The problem with this reasoning is that the lack of promulgated Biological Objectives is undoubtedly a major contributor to the lack of restoration projects and restoration data the Final Staff Report claims are needed prior to implementing Biological Objectives.

Furthermore, concrete bottom streams are typically the streams most in need of restoration to improve biological and overall ecological integrity. Restoration of streams to improve CSCI scores also tends to have significant ancillary benefits, including improved access to open space and parkland in adjoining areas, and improved indicia of chemical and physical integrity of waterbodies as overall ecological integrity improves. The excluded streams are also more likely to flow through communities of color and low-income communities. The benefits of the BPA will thus mostly be realized in areas that are wealthier, which already have access to quality open spaces, and where streams already have higher observed indicia of overall biological and ecological integrity. This unquestionably reduces (but does not eliminate) the value of the BPA as compared to implementing Biological Objectives in hard-bottomed channels.

In light of the foregoing, we urge and expect future iterations of Biological Objectives to apply in fully-hardened streambeds.

Response D.5:
Comment noted. The State Water Board encourages the commenter to participate in the public process for the San Diego Water Board’s future triennial review of their Basin Plan.

Comment D.6: Conclusion: We Strongly Support the Adoption of the proposed BPA.

We reiterate our strong support for the proposed amendment to the San Diego Basin Plan to incorporate Biological Objectives, and we again thank the San Diego Regional Board for its leadership in developing protective and scientifically sound Biological Objectives. While long overdue, the BPA is nonetheless a significant step forward for the San Diego region and indeed for all of California. We support approval by the State Water Resources Control Board, the California Office of Administrative Law, and the federal Environmental Protection Agency.
Please contact us if you have any questions.

Response D.6:
Comment noted.

E. Commenter: California Stormwater Quality Association

Comment E.1: On behalf of the California Stormwater Quality Association (CASQA)[FN1], thank you for the opportunity to provide comments on the Basin Plan Amendment to the Water Quality Control Plan for the San Diego Basin (Basin Plan) to incorporate general narrative guidance for the development of biological objectives and a numeric biological water quality objective for perennial and seasonal streams using benthic macroinvertebrates and the California Stream Condition Index (CSCI), which was adopted by the San Diego Regional Water Quality Control Board (Regional Water Board) on December 8, 2020 (Adopted BPA)[FN2].

CASQA understands and supports the need to protect biological integrity as a part of the overall regulatory framework. To this end, CASQA has been an active participant and formal stakeholder in the State Water Resources Control Board (State Water Board) process to develop a statewide biological narrative water quality objective with numeric translators or thresholds – the Biostimulatory Substances Objective and Program to Implement Biological Integrity (Program for Biological Integrity). CASQA was also engaged in the development and adoption of the San Diego Region Biological Objectives, which included reviewing and commenting on the BPA and participating in public workshops and meetings with Regional Water Board staff.

Response E.1:
Comment noted.

Comment E.2: While CASQA appreciates that establishing the technical basis for the biological objectives, determining how the objectives are to be applied and interpreted within the regulatory framework, and identifying implementation and follow up actions for various responsible parties is a multifaceted and complex process, all three aspects are, nonetheless, critical for the water quality objective setting process, especially for the establishment of biological objectives that are the first such objectives in California. As outlined in detail below and consistent with the public notice [FN3], CASQA has significant policy, technical, and implementation-related concerns all of which have been raised within our comment letters and testimony and they were either not adequately

responded to or the responses were not consistent with the analyses presented to the Regional Water Board (thus the responses were incorrect).

As a result, it would be premature for the State Water Board to approve a region-specific significant regulatory action, such as San Diego Region's Adopted BPA, when the state has been and is currently working on addressing the very same and critical technical, regulatory, and policy issues identified by CASQA through the statewide Program for Biological Integrity. Further, as biological objectives are an entirely new approach to objectives, aligning the statewide approach and regional approach is not comparable to traditional numeric water quality objectives, where the more conservative number would apply.

CASQA therefore has two primary comments and associated recommendations, which are further supported by the detailed comments in Attachment A.

Response E.2:
Please see General Response 2 of the Introduction for a discussion of the Statewide efforts relative to the San Diego Water Board BPA. Specific comments are responded to below.

Comment E.3: COMMENT #1: The lead staff person and primary point of contact for the proposed approval of the Adopted BPA by the State Water Board should be a State Water Board staff person. This role is especially critical for this Adopted BPA, given the concurrent effort to develop the statewide Program for Biological Integrity and the comments submitted by stakeholders associated with this statewide effort, as it relates to the Adopted BPA. Thus, having State Water Board staff who have been directly involved in the Program for Biological Integrity will ensure a full and thorough review of the issues raised. [See further detailed comments under Comment #1: Process in Attachment A].

Response E.3:
Please see General Response 2 of the Introduction for a discussion of the Statewide efforts relative to the San Diego Water Board BPA. There is no requirement that State Board staff involved with statewide efforts be a lead point of contact on the review of a regional water board's basin plan amendment. However, scientists from the State Water Board's Division of Water Quality who are working on the statewide Biostimulatory, Cyanotoxin, and Biological Condition Provisions reviewed the San Diego Water Board's biological objectives and associated comments submitted to the State Water Board and additional State Water Board staff is actively engaged in the State Water Board's proposed approval of the biological objective.

Comment E.4: COMMENT #2: The State Water Board should postpone the approval of the Adopted BPA until the State Water Board's Program for Biological Integrity has been completed and the associated technical, regulatory, and policy issues are addressed. In addition to addressing outstanding issues, this approach would allow the State Water Board to ensure there is statewide consistency for this new regulatory

approach [See further detailed comments under Comment #2: Technical, Regulatory, Policy Issues in Attachment A].

Response E.4: Please see General Response 2 of the Introduction for a discussion of the State Water Board effort.

Comment E.5: If the State Water Board opts not to postpone the approval of the Adopted BPA, a less desirable but alternative recommendation would be to remand the Adopted BPA with specific direction to the Regional Water Board to:

- Hold additional, facilitated stakeholder meetings/workshops to address the issues raised as a result of the State Water Board Public Notice. It is further recommended that State Water Board staff involved in the Program for Biological Integrity participate in these meetings/workshops.
- Remove Modified Streambed Segments from the applicable waterbodies
- Modify Chapter 3 to include "Modified Streambed Segments" in Table TBD1. Inland Surface Waters with COLD or WARM Beneficial Uses to Which the Stream Biological Objective Does Not Apply.
- Define Modified Streambed Segments within Table TBD1 as "Stream segments which have channel improvements consisting of modified sides and/or bottoms that have been graded, lined with concrete, riprap or other materials and/or have been straightened as shown by as-built drawings or similar evidence".
- Make other conforming edits as necessary to Chapter 4 and the Fact Sheet identifying that the objectives are not applicable to Modified Streambed Segments.

Response E.5:
Comment noted. Additionally, please see the general responses to comments in the Introduction regarding a stakeholder process (General Response 3), modified streams (General Response 1), and the State Water Board effort (General Response 2).

Comment E.6: Comment #1: Process
The Regional Water Board issued three versions of the BPA; one in January 2019 (Admin Draft BPA – in brown text within the figure), February 2019 (Draft BPA – green text within the figure), and August 2020 (Final BPA – blue text within the figure). CASQA has significant concerns with the process that transpired during the development and adoption of the Adopted BPA. A timeline of the process and summary of the concerns are below.

(State Water Board note: a figure is included in the original comment letter).

COMMENT #1A: MULTIPLE REQUESTS BY CASQA AND OTHERS FOR THE ESTABLISHMENT AND USE OF A STAKEHOLDER PROCESS TO VET THE ONGOING CONCERNS WITH THE APPLICABILITY AND ACHIEVABILITY OF THE OBJECTIVE WERE DENIED

CASQA (and others) requested multiple times that given the regulatory significance of this action and the outstanding technical and policy related issues, that the Regional Water Board convene a formal stakeholder process to vet the concerns. In fact, these requests were made early within the process.

- CASQA comment letters (June 1, 2019 and September 4, 2020) – CASQA's overarching recommendation was "…the Regional Water Board take the comments and questions received as a part of the Proposed BPA comment period and convene a stakeholder process with the State Water Board and other interested parties so that the issues and concerns can be fully vetted and the regulatory framework and expectations established so that they are achievable, implementable, and understandable."

- Regional Water Board RTC on Draft BPA (Oct 2020) – The response to the request to convene a stakeholder process included the following:

  - "San Diego Water Board staff also met with both Counties and CASQA on May 17, 2019, for further discussion of topics related to the proposed BPA." (page 11)

  - "In general, the proposal to convene a statewide stakeholder process is likely to result in significant delay (for example the SQO stakeholder process took approximately 6 years) and is not warranted or necessary when the San Diego Water Board is prepared to move forward with the proposed Stream Biological Objective at this time…." (Response 120, page 148)

- Regional Water Board RTC on Final BPA (November 2020) – The Regional Board did not specifically address the comment (page 13), but did state "…since the August Revisions were released, San Diego Water Board staff have had meetings with multiple commenters to discuss the August Revisions" (page 5). While these meetings did occur, as noted within the timeline above, these meetings were for a limited set of stakeholders, were focused on the Final BPA, and two of the three meetings were held after the comments were due. Thus, they did not allow for full contemplation of the issues that had been raised and/or other issues that were still unresolved..

Response E.6:

Please see the Overview and General Response 3 of the Introduction for a discussion of the public participation process.

Comment E.7:

COMMENT #1B: THE PEER REVIEW DOCUMENTS WERE NOT PROVIDED UNTIL RIGHT BEFORE THE COMMENTS WERE DUE ON THE DRAFT BPA; FULL CONSIDERATION OF THE RESULTS COULD ONLY OCCUR LATE IN THE PROCESS AS A PART OF THE FINAL BPA

The Peer Review documents were not released to the public until May 28, 2019 – right before the comments were due on June 1, 2019 on the Draft BPA. Thus, the Peer Review reports could not be fully reviewed and considered until the Final BPA (the third version of the proposed BPA) was released and comments requested. This severely limited our understanding of some of the technical issues that were raised during the commenting process.

Response E.7:
Please see the description of the Public Participation Process in the Introduction (Overview and General Response 3). The Peer Review Report was not posted to the State Peer Review Website until May 28, 2019, but San Diego Water Board staff emailed it via Lyris list for the Basin Plan amendment on April 19, 2019, and its availability was announced to stakeholders at the April 18, 2019, Public Workshop (see San Diego Water Board Public Workshop Presentation from April 18, 2019). Several of the written comments submitted on or before the June 1, 2019, public comment deadline discussed the peer review report.

Comment E.8:
COMMENT #1C: THERE WAS A LIMITED COMMENT PERIOD FOR THE FINAL BPA WITH NO ABILITY TO REVIEW THE RTC ON THE DRAFT BPA BEFORE THE COMMENTS WERE DUE

The comment period for the Final BPA was originally two weeks, and was ultimately, upon request, extended to three weeks (although the extension request was originally declined, it was extended for another week - four days before the original due date). However, this was still an incredibly expedited timeframe for the final review and comment period allotted to the public for such an important, and novel, regulatory action. In fact, this review period was one of the shortest timeframes, if not the shortest, that CASQA has had to respond to an environmental initiative as significant as an objective setting process.
In addition, CASQA requested that the deadline for written comments be extended such that the public would have access to the Draft BPA RTC prior to the submittal of the comments on the Final BPA, however this request was denied (also see Comment #1D). The accelerated timeline to submit comments and the lack of access to the Draft BPA RTC severely constrained the ability of the public agencies to review the document, understand why comments were accepted or rejected, develop comments, and route the information and draft letters for internal review and approval.

Response E.8:
Please see General Response 3 of the Introduction, for a discussion of the public participation process.

Comment E.9:
COMMENT #1D: BOTH RTC DOCUMENTS WERE NOT PROVIDED IN TIME FOR THE PUBLIC TO FULLY CONSIDER THEM AS A PART OF THE COMMENT PERIODS
Both sets of RTCs were provided to the public either after the next set of comments were due or just prior to the Regional Water Board hearing.

- The RTC for the Draft BPA were provided after the comments were due on the Final BPA (comments on the Final BPA were due on September 4 – the RTC on the Draft BPA were released on October 16), thus the public could not fully review and consider the Board's rationale for accepting or rejecting comments that were made on the Draft BPA and proactively try to address responses that were inadequate, non-responsive, or incorrect.
- The RTC for the Final BPA were provided a few days before the Adoption Hearing, thus the public could not fully review and consider the Board's rationale for accepting or rejecting comments that were made on the Draft BPA and proactively try to address responses that were inadequate, non-responsive, or incorrect.

Response E.9:
Please see Response to Comment A.4 and also General Response 3 of the Introduction, for a discussion of the public participation process.

Comment E.10:
COMMENT #1E: THE ABILITY TO ANSWER QUESTIONS FROM AND INFORM THE BOARD MEMBERS REGARDING REMAINING CONCERNS AT THE NOVEMBER 18 ADOPTION HEARING WAS PREEMPTED BY A TECHNICAL ISSUE, DECLARATION OF A 4:30 STOP TIME FOR THE MEETING, AND CLOSURE OF THE PUBLIC HEARING

At the beginning of the November 18th public hearing, Chair Abarbanel noted the significance of the adoption of the BPA and stated [emphasis added] “I’d just like to mention, the Board knows this, but perhaps for the public, amending the Basin Plan is like getting an amendment to the Constitution of the United States. It doesn’t happen very frequently…it’s a big deal. So we are going to have as much time as we need to discuss this thoroughly…”.

As a part of the hearing, the municipal stormwater programs in Orange County, Riverside County, and San Diego County provided a coordinated panel presentation to outline the remaining concerns. At the end of the presentation Chair Abarbanel started to engage Dr. Yeager regarding the presentation. However, before the questions could be fully stated and answered, the discussion was interrupted due to the loss of the public webcast (at 2:40 pm). When the public hearing resumed at 2:54 pm, instead of starting where the discussion had been stopped, the hearing simply kept going with the presentation from the next speaker.

Thus, the municipal representatives were not provided an opportunity to fully answer the questions that had been initiated by the Board Chair and potentially hear from other Board members and, in fact, the public hearing started to lose Board members and ended promptly at 4:30pm (this end time was discussed multiple times throughout the course of the hearing). Although the final consideration of this item was continued to December, the public hearing was formally closed at the end of the November 18th meeting, pre-empting any ability for the municipalities to have interaction with the Board members. Thus, CASQA would submit that, counter to Chair Abarbael’s opening statements, the adoption of the Biological Objectives did not appear to receive the time that was needed to discuss the remaining issues thoroughly and objectively.

Response E.10:
Please see General Response 4 of the Introduction for a discussion of Procedural Concerns with the Public Hearing.

Comment E.11: CASQA Recommendation for Comment #1:

- Given the significance of this regulatory action, the identified technical, regulatory, and policy issues (see Comment #2), the fact that the State Water Board is working on a parallel process, and the process related issues that occurred with the development and adoption of the Biological Objectives in the San Diego Region (summarized in Comment #1), the State Water Board should direct State Water Board staff to be the point person directly responsible for reviewing and overseeing the San Diego Region’s BPA potential adoption by the State Water Board. Given the complexity and history of process issues associated with the Biological Objectives, CASQA would further request that the State Board assign a staff person that is currently or previously assigned to the Program for Biological Integrity such that they would be aware of the issues that had been raised and related discussions.

Response E.11: Please see response to prior comments regarding Comment #1 (also General Responses 1, 2, 3, and 4 of the Introduction). The State Water Board staff are

assisting in the State Water Board's consideration of the Basin Plan amendment. There is no requirement that State Water Board staff involved with statewide efforts be a lead point of contact on the review of a regional water board's basin plan amendment. However, scientists from the State Water Board's Division of Water Quality who are working on the statewide Biostimulatory, Cyanotoxin, and Biological Condition Provisions reviewed the San Diego Water Board's biological objectives and associated comments submitted to the State Water Board.

Comment E.12:
Comment #2: Technical, Regulatory, Policy Issues
CASQA has raised several foundational technical, regulatory, and policy related issues during the development of the Adopted BPA that we would submit, to date, have not been adequately considered as a part of the San Diego objective setting process. In fact, many of these issues were being contemplated and have been the subject of discussion as a part of the State Water Board's Program for Biological Integrity. Since the results of these discussions will ultimately affect how biostimulatory and biological objectives would be implemented and interpreted, it is critical that these issues be resolved prior to the adoption and application of the objectives at a regional and/or statewide level. If these issues are not resolved, and the Adopted BPA is approved by the State Water Board, it is likely that there will be direct conflict with the Adopted BPA and the approach that was being contemplated by the State Water Board for the Program of Biological Integrity.

Outstanding technical, regulatory, and policy issues are summarized below.

COMMENT #2A: THE FUNDAMENTAL APPROACH FOR THE STATE WATER BOARD PROGRAM FOR BIOLOGICAL INTEGRITY IS DIFFERENT THAN THAT ENVISIONED BY THE SAN DIEGO REGION AND THE ADOPTED BPA.
When the State Water Board Biostimulatory Substances and Biological Integrity work efforts were combined in 2016, the work effort was renamed "Amendment to the Water Quality Control Plans for Inland Surface Waters, Enclosed Bays, and Estuaries of California to Establish a Biostimulatory Substances Objective and Program to Implement "Biological Integrity" and the goals for the Biological Integrity portion of the work effort were stated as5 :

- Develop Statewide plan for assessing Biological Integrity in surface waters; and
- Establish methods to identify, maintain, and protect wadeable streams with high biological integrity.

The State Water Board project website further clarifies that "This project will also now include a water quality control policy to establish and implement biological condition assessment methods, scoring tools, and targets aimed at protecting the biological integrity in wadeable streams."

In fact, the State Water Board previously indicated that a "brightline" regulatory threshold would not be developed, rather the thresholds established would be used for

comparative purposes as a way to identify next steps and priorities among waterbodies. Thus, the focus of the statewide Program for Biological Integrity was intended to be focused on methods, tools, and targets for assessing biological integrity and protecting wadeable streams with high biological integrity.

Conversely, the Adopted BPA categorically establishes a “brightline” numeric biological objective that is to be applied to all wadeable perennial and seasonal streams (except for hardened streambed segments). Thus, the two approaches that were used for these work efforts are fundamentally different.

In the June 1, 2019 and September 4, 2020 comment letters, CASQA noted that “The Proposed BPA does not provide justification for (1) deviating from the State Water Board’s Statewide Biostimulatory Substances Objective and Program to Implement Biological Integrity and (2) potentially adopting a water quality objective that may be fundamentally different, if not in conflict with, the approach being developed by the State Water Board.”

The Regional Water Board responses regarding the differences in the approach being used to establish the biological objectives and programs of implementation within the San Diego Region are summarized below.

- Regional Water Board RTC on Draft BPA (Oct 2020) - ”A Statewide Biointegrity Plan is not currently under development. For over ten years the State Water Board has indeed been considering biostimulatory substances and biointegrity on a statewide basis, and that led to the development of many scientific publications relied upon for the proposed Stream Biological Objective, including the CSCI…” and “The State Water Board currently has a goal to submit to U.S. EPA by 2025 a statewide wadeable streams nutrient/biostimulatory and biological diversity amendment to the ISWEBE Plan. Outside of the description provided in the SED, the State Water Board has not proposed any policy regarding the inclusion of a biological objective using the CSCI. As there is no formal objective proposed by State Water Board at this time, there is no formal schedule for the development of a statewide biological objective for integrity.” (page 44, Response 43)

- Regional Water Board RTC on Final BPA (November 2020) – Similar comments to above (page 13)

Thus, the approach within Adopted BPA is fundamentally different than the approach envisioned for the Program of Biological Integrity (and has been discussed at length with multiple stakeholder groups) and has the potential to conflict with the Program ultimately developed by the State. CASQA submits that this response is inadequate because these considerations are important and should be fully considered prior to the adoption of a fundamentally different type of objective than what was being envisioned by the State Water Board. Biological objectives are an entirely novel and new regulatory approach. It is not comparable to traditional numeric water quality objectives where the

more conservative number applies. State Water Board should ensure statewide consistency in the establishment of these new objectives.

Response E.12:
Please see General Response 2 of the Introduction for a discussion of Statewide efforts relative to Regional Board basin plan amendments.

Comment E.13: COMMENT #2B: THE ADOPTED BPA SHOULD CONSIDER A POTENTIAL, PHASED APPROACH FOCUSED ON HIGH QUALITY WATERS, SIMILAR TO THAT ENVISIONED BY THE STATE WATER BOARD
As noted above, one of the goals for the Program of Implementation for Biological Integrity is to "establish methods to identify, maintain, and protect wadeable streams with high biological integrity." Although the State's Policy is still under development, one of the concepts that was discussed at several SAG meetings and with State Water Board staff was the potential to use a phased approach for the applicability and implementation of the Program. The thought was that this would provide the State and stakeholders with time and ability to collect/develop additional information/tools in order to address water body reaches that have an altered physical habitat, flow regime, and/or is extensively developed so that an achievable objective/approach could be established.

To this point, in the May 17, 2019 meeting with Regional Water Board staff and the June 1, 2019 comment letter, CASQA noted that the Adopted BPA could use a phased approach and first apply the biological objectives to waterbodies that meet reference condition or have a high likelihood of achieving reference condition. Application of the objective to other waterbodies would only occur after careful evaluation and consideration to determine what the requirements should apply and are achievable for other types of waterbodies. In fact, this type of approach would (a) ensure that the high-quality waters are protected, (b) provide the time necessary to collect the additional data and understand the achievability of the objectives in a wide range of channel types and configurations, and (c) avoid unintended consequences and/or non-compliance of an unattainable objective.

An example of how this type of phasing could occur is outlined in the table below and was provided to the Regional Water Board:

(State Water Board note: a table is included in the original comment letter).

The Regional Water Board response regarding the potential for a phased approach is summarized below.

- Regional Water Board RTC on Draft BPA (Oct 2020) - "Please see Responses #34, #43, #44, and #51 regarding proposed phased approaches". (Response 123, pages 152-153). However, none of these comments provided a response regarding the request to phase the applicability and implementation of the Biological Objectives [Response 34 addressed 303(d) Listing Policy, Response 43 addressed the current

status of the Statewide Program for Biological Integrity, Response 44 addressed different approaches to setting a biological objective, and Response 51 addressed the requirements of California Water Code 13241 and 13242].

CASQA submits that this response was non-responsive to the issue raised and is thus, inadequate.

Response E.13:
The San Diego Water Board's November 2020 response to comments document sufficiently addressed CASQA's comment and the responses were included in the materials considered by the Regional Board. In addition, other comments and proposals made requested approaches similar to "phasing" and were responded to by the San Diego Water Board (e.g. Response 58, 69, 70 in the October 2020 Response to Comments). The use of phasing via prioritization is also included and discussed in regards to implementation in Phase I MS4 NPDES permits and Water Quality Improvement Plans (WQIPs) in the Staff Report (Section 5.3.4), October 2020 Response to Comments (e.g. Response #3), and November 2020 Response to Comments (e.g. page 14). In addition, the San Diego Water Board considered the approach proposed by the commenter, as the SED includes and discusses using an anti-degradation only approach as a potential project alternative (Section 1.8).

All referenced Responses were to comments that proposed, and including reasoning for, a phased approach. For example, response #51 was a response to a similar request for a proposed phased "Anti-degradation alternative" similar to the CASQA approach in the context of the CWC. Finally, the record reflects that the San Diego Water Board met with the commenter multiple times in the fall of 2020 prior to the Board hearing (see August 25, September 22, and October 26, 2020 meeting agendas). The proposed phased approach identified in the comment was discussed with the commenter and was specifically included in the August 25, 2020, meeting.

Comment E.14: COMMENT #2C: THERE IS A LACK OF UNDERSTANDING AND AGREEMENT AS TO HOW THE BIOLOGICAL OBJECTIVES WILL BE APPLIED AND INTERPRETED WITHIN THE REGULATORY FRAMEWORK
In the May 17th stakeholder meeting and the June 1, 2019 and September 4, 2020 comment letters, CASQA noted that:

"[The] BPA does not address how the Stream Biological Objective should be incorporated into the regulatory framework so that it is reasonably achievable and can be integrated into existing programs and priorities.
Further, the BPA does not consider how the lack of a regulatory framework may jeopardize a permittee's ability to reasonably comply with permit provisions."

"The permittees have numerous outstanding questions about the framework that the Proposed BPA envisions for the application, assessment, and implementation of the Stream Biological Objective and the resulting decision-making process and regulatory

requirements. In order to provide necessary clarity, it is recommended that the Regional Water Board develop a flow chart/framework."

This issue was also raised and discussed as a part of the State Water Board's Program for Biological Integrity Stakeholder Advisory Group (SAG). In fact, as a part of both the State Water Board and Regional Water Board discussions, CASQA provided a draft flow chart/framework as a means to further identify some of the specific, critical decisions points that should be understood such as:

- How assessment tools would be used, and results interpreted;
- How decision-making processes would occur;
- How implementation actions were related/built on each other; and
- What the follow up regulatory actions would be.

This example, draft flow chart (which needs additional review and discussion) is provided as Attachment B.

The Regional Water Board responses regarding the request to identify how the Adopted BPA would be applied and interpreted within the regulatory framework are summarized below.

- Regional Water Board RTC on Draft BPA (Oct 2020) - "Chapter 4 sets forth the proposed program of implementation for the Stream Biological Objective and describes how the objective is expected to be implemented through the various affected water board regulatory and non-regulatory (e.g. grants) programs. While the implementation chapter is clear, the San Diego Water Board will consider developing a flow chart for use during the public hearing." (page 151, Response 122) [Note: the requested flow chart was not developed]

- Regional Water Board RTC on Final BPA (November 2020) – Not specifically addressed.

The Regional Water Board's interpretation of and response to the CASQA comment was that Basin Plan Chapter 4 addressed the concerns that were raised. However, many of the questions that formed the basis of the CASQA comment in 2019 still apply and are not fully addressed within Chapter 4. The table below summarizes some of the key issues that are outlined within Attachment B, but have not yet been addressed and are thus, not well understood by the regulated permittees (note, this is not an exhaustive list).

Example Remaining Issues Related to the Applicability and Implementation of the Biological Objectives	Address within Adopted BPA Chapter 4?
How is a water body characterized to understand if the objective is applicable (e.g., non-wadeable, ephemeral, hardened streambed segments? (Flow Chart Step 3 and 4)	**No**. Section I.B and I.C identify that this is a determination that needs to be made but does not identify how the determination is made.
What is the temporal and spatial extent of the data that is necessary in order to assess the biological condition of a waterbody? And how is an assessment conducted and interpreted in a segment that contains natural, partially, and/or fully hardened sections? (Flow Chart Step 5)	**No**.
What are the follow up actions for waterbodies that meet the threshold or are below the threshold? (Flow Chart Step 6)	**Partially**. Although there is some discussion about the expected permit requirements and monitoring, it remains unclear who is responsible for "restoration" and how multiple causes for a decreased score will be addressed and prioritized.
How will water bodies that meet biological thresholds, but still have exceedances of individual pollutants be addressed (or vice versa)? Are biological thresholds and chemical constituent-based thresholds/objectives independently applicable? (Flow Chart Steps 9, 10, and 12)	**No**. There is currently no explicit direction as to how these different decisions are made, how to use data from causal assessments which often identify multiple causes (pollutant and pollution), and what the responsibilities are for the regulated dischargers.
How are 303(d) impairments determined and what are the follow up actions/responsible parties? (Flow Chart Steps 10-18)	**Partially**. Section III.B includes guidance for the listing of waterbodies but does not identify how or when the causal assessment is conducted to determine if the lowered CSCI score is primarily associated with a pollutant. There is also limited discussion about the follow up actions for impairments that are primarily due to pollution or other non-pollutant constraints.

CASQA submits that this response is inadequate because these considerations are important and should be fully considered as a part of the objective setting process.

CASQA Recommendations for Comment #2:

• The State Water Board should postpone the approval of the Adopted BPA until the State Water Board's Program for Biological Integrity has been completed and the associated technical, regulatory, and policy issues are addressed, as detailed in Comments #2A through #2C, and as submitted by other parties.

• If the State Water Board opts not to postpone the approval of the Adopted BPA, a less desirable but alternative recommendation would be to remand the Adopted BPA with specific direction to the Regional Water Board to:

o Hold additional, facilitated stakeholder meetings/workshops to address the issues raised as a result of the State Water Board Public Notice. It is further recommended that

State Water Board staff involved in the Program for Biological Integrity participate in these meetings/workshops.

- Remove Modified Streambed Segments from the applicable waterbodies
- Modify Chapter 3 to include “Modified Streambed Segments” in Table TBD1. Inland Surface Waters with COLD or WARM Beneficial Uses to Which the Stream Biological Objective Does Not Apply.
- Define Modified Streambed Segments within Table TBD1 as “Stream segments which have channel improvements consisting of modified sides and/or bottoms that have been graded, lined with concrete, riprap or other materials and/or have been straightened as shown by as-built drawings or similar evidence”.
- Make other conforming edits as necessary to Chapter 4 and the Fact Sheet identifying that the objectives are not applicable to Modified Streambed Segments.

Response E.14:

The record shows that the Amendment specifically includes a program of implementation that addresses the implementation of the Amendment across respective Water Board programs (see Amendment, Chapter 4), including for those areas identified in the commenter's table, and that the Amendment's program of implementation meets Water Code section 13242 requirements. The commenter's concerns regarding implementation were also responded to by the San Diego Water Board in the Response to Comments documents (October 2020 and November 2020) and verbally at the public hearing. The implementation items in the submitted table were responded to by the San Diego Water Board in their Responses to Comments. Please see Responses 122, 126, 130, 131, 132, and 135 of the October 2020 Response to Comments and Section 3a of the November 2020 Response to Comments. See also General Response 3 regarding satisfaction of Water Code section 13242.

After hearing similar concerns from Copermittees during their joint presentation at the public hearing on November 18, 2020, San Diego Water board members recognized that implementation process may not achieve the objective immediately and that responsible dischargers may encounter impediments in implementation efforts (see generally, Nov. 18, 2020, transcript, pp. 111, line 8-p. 115, line 7), and ultimately included in the final resolution approving the Basin Plan amendment a directive that the San Diego Water Board "Executive Officer [ ] solicit and provide to the Board, on an annual basis, a report on the status of implementation of the Stream Biological Objective." (Resolution No. R9-2020-0234, directive 7.). The San Diego Water Board also properly considered the information submitted, including the proposed flow chart provided, but was not persuaded to make the changes recommended by the commenter. Flow charts specific to permit implementation (Figure 20) and CWA Integrated Reporting (Figure 21) were included in the Staff Report, with minor changes made to Figure 20 in response to comments received (see August 2020 Revisions to Staff Report).

Please also see General Response 2 of the Introduction regarding delaying consideration of the Basin Plan amendment while the statewide process proceeds and Response E.5 relative to the general recommendations associated with a remand.

F. Commenter: County of Orange Copermittees

Comment F.1: The County of Orange, the Orange County Flood Control District (collectively, "County"), and the MS4 Copermittee cities of Aliso Viejo, Dana Point, Laguna Beach, Laguna Hills, Laguna Niguel, Laguna Woods, Lake Forest, Mission Viejo, Rancho Santa Margarita, San Clemente, and San Juan Capistrano (collectively, "South OC MS4 Permittees") appreciate the opportunity to provide comments on the Amendment to the Basin Plan of the San Diego Regional Water Quality Control Board to establish Biological Water Quality Objectives, Resolution No. R9-2020-0234 ("BPA").

Written comments have previously been submitted to the San Diego Water Board on the Administrative Draft, the Formal Draft, and the Final Revised Draft of the BPA, and the County participated in two BPA workshops, and testified at the hearing at which the San Diego Water Board adopted the BPA.

The County, with the support of the South OC MS4 Permittees, jointly with the Riverside County Flood Control and Water Conservation District, respectfully submits the attached joint comments. While we support the importance and concept of biological objectives, the BPA's proposed application to partially modified or engineered stream segments, which provide vital flood control protection to millions of people throughout the San Diego region, is not supported by substantial evidence. For this and other reasons detailed in the attached and the administrative record, we request that the State Water Board remand the matter back to the San Diego Water Board, consistent with the recommendations in the joint comments.

Response F.1: Please see discussion in General Response 1 of the Introduction.

Comment F.2: The County of Orange, the Orange County Flood Control District and the Riverside County Flood Control and Water Conservation District ("Riverside Flood") (collectively, the "MS4 Permittees") herewith submit the following joint comments on the Amendment to the Basin Plan of the San Diego Regional Water Quality Control Board to establish Biological Water Quality Objectives, Resolution No. R9-2020-0234 ("Basin Plan Amendment" or "BPA")

The MS4 Permittees operate flood control infrastructure in Orange and Riverside Counties, and Orange County and Riverside Flood serve as principal permittees under the Regional Municipal Separate Stormwater Sewer System ("MS4") permit, Order No. R9-2013- 0001, as amended, jointly issued to municipal stormwater dischargers in the San Diego Region. The MS4 Permittees have previously submitted written comments to the San Diego Water Board, participated in two workshops, and testified at the hearing at which the San Diego Water Board adopted the BPA.

The submission of these comments is not a waiver of any other comments previously made by the MS4 Permittees or co-permittees within Orange and Riverside Counties, to the extent such comments were not accepted by the San Diego Water Board.

Response F.2: Comment noted. Additionally, the commenter states that some comments were not accepted by the San Diego Water Board. The San Diego Water Board considered all written and oral comments timely received during the public comment period and public hearing for the Basin Plan amendment. Please see the Overview and General Responses 3 and 4 of the Introduction.

Comment F.3: The MS4 Permittees submit these joint comments because of their common concern that the Basin Plan Amendment would establish a numeric California Stream Condition Index ("CSCI") objective of 0.79 for stream segments that have been

modified to provide flood control protection to the residents of Orange and Riverside Counties. As the MS4 Permittees have contended before the San Diego Water Board, and as discussed below, application of the proposed numeric objective to modified stream segments is not supported by substantial evidence.

In Orange and Riverside Counties, historical urban development to accommodate population growth has increased imperviousness, which increases storm flow and volume into nearby waterbodies. Additionally, changes in weather patterns due to climate change have resulted in fewer but larger and "flashier" storm events. To protect lives and property from flooding, the MS4 Permittees must operate and maintain flood control channels -- which include channelized stream segments that are either fully or partially modified -- to safely collect and convey flood waters.

In some cases, channelized reaches are fully "hardened" with concrete banks and beds and, as set forth in the Basin Plan Amendment, these fully hardened segments are not subject to the 0.79 CSCI threshold biological objective. However, other maintained reaches have concrete or other hardened banks and a "soft" dirt bottom, or are otherwise engineered (such as with dirt banks or straightened channels) to safely convey flood waters. It is the application of the Basin Plan Amendment objective to these latter, "modified" stream segments that is the focus of the MS4 Permittees' comments.

The San Diego Water Board has taken the position that all modified stream segments can attain the 0.79 CSCI score biological objective. The MS4 Permittees submit that based not only on numerous studies (some relied on by the Water Board), but also monitoring results in the San Diego region, the evidence does not support that position, nor does the evidence support the Water Board's contention that biological objectives can be attained simply through improvements in water quality. Instead, the available evidence indicates that in order to attain an 0.79 CSCI score, significant physical changes would likely be required in modified stream segments, including removal of hardened banks and the consequent destruction of vital flood control infrastructure.

The MS4 Permittees believe that further study into the biointegrity of modified channels is merited. Along those lines, MS4 Permittees Orange County and Riverside Flood, as well as other municipal agencies in Southern California, have agreed to support a study exploring exactly these issues. The study, which also has the support of staff at the San Diego and Los Angeles Regional Water Boards, is designed to address these questions and if approved as expected, will commence in Fiscal Year 2022-2023.

The MS4 Permittees therefore request the State Water Resources Control Board ("State Board"), if it resolves to act on the Basin Plan Amendment, to remand it back to the San Diego Water Board for revision to exempt modified channels pending completion of that study and a companion study of channels statewide being conducted by the Southern California Coastal Waters Research Project ("SCCWRP"). Once those studies are completed, determinations can be made as to which, if any, modified stream segments can achieve the objectives without the need for structural modification or

compromising of flood control requirements, and thus be added to the types of stream segments subject to the Basin Plan Amendment.

Response F.3: Please see General Response 1 of the Introduction for a discussion of the scientific and legal basis for applying the objective to modified channels other than hardened streambed segments. The purpose of the referenced 2022-2023 study is not to identify or determine alternative objectives for modified channels nor determine which modified stream segments can achieve the objective; instead, the study may be an implementation tool to explore priority restoration actions within existing modified channels and evaluate the impact of channel maintenance activities. The State Water Board, which participates as a member of the referenced study being conducted by the Stormwater Monitoring Coalition, supports further studies to evaluate various management approaches to improving stream water quality, including in already modified channels. The State Water Board is also aware that the San Diego Water Board will be participating in the development and implementation of the project.

Comment F.4: Concerns Regarding Public Comment Process on Basin Plan Amendment

Due to the limited nature of the BPA public comment process and, in light of the groundbreaking nature of the BPA, inadequate stakeholder engagement, the MS4 Permittees submit that the San Diego Water Board was not provided with a sufficient opportunity to receive and consider the facts necessary to make a fully informed decision on the scope of the Basin Plan Amendment.[FN1]

The Basin Plan Amendment is the first effort by any water board in the State of California to impose numeric biological objectives. Because it broke new ground, the BPA required extensive consultation with staff and significant stakeholder input. The MS4 Permittees note that the State Board's effort to develop a statewide biological narrative water quality objective with numeric translators or thresholds in the Biostimulatory Substances Objective and Program to Implement Biological Integrity ("State Board Biointegrity Program") has received such consideration and input and yet continues to be in development, as participants grapple with some of the same issues as posed by the BPA.

Because of the novelty and importance of the BPA, stakeholders requested a facilitated stakeholder process to allow a full and robust discussion of issues and concerns. San Diego Water Board staff instead proceeded with a public comment process which, while it allowed for stakeholder input, was not interactive and did not produce a record which, in the MS4 Permittees' view, provided an adequate factual foundation for the San Diego Water Board.

While development of the Basin Plan Amendment took several years, opportunities for public comment have been isolated and limited. For example, on February 14, 2018, three weeks after initial release of the BPA Administrative Draft and Staff Report on January 22, 2018, the San Diego Water Board provided an opportunity for stakeholders

to make brief oral comments at a public workshop. Stakeholders then were permitted to provide written comments by February 23, 2018. San Diego Water Board staff did not respond to these written comments.

A year later, on February 28, 2019, Water Board staff released a revised Draft BPA and Staff Report. A public workshop was held on April 18, 2019, and formal written comments on the draft BPA and Staff Report (which included a Substitute Environmental Document ("SED") providing the CEQA analysis for the BPA) were required to be submitted by June 1, 2019. The reports of the BPA Peer Reviewers were not released until May 28, 2019, which was not enough time for their comments to be considered and addressed in the stakeholders' written comments.

After submission of the written comments, nothing further was released regarding the BPA until August 14, 2020, when a significantly revised final draft Basin Plan Amendment and Staff Report (minus SED) were released for an initial comment period of only 10 business days (later extended to September 4, 2020). Moreover, the MS4 Permittees and other stakeholders did not have access to the Water Board's response to the June 2019 comments on the draft BPA, since those responses were not released until October 16, 2020. This limited the ability of stakeholders to fully comment on the final BPA in that Water Board staff had not yet provided its rationale for its rejection of previous comments.

On November 6, 2020, San Diego Water Board staff released a 15-page response to the September 4, 2020 comments on the final draft BPA. Staff's more detailed response to the MS4 Permittees' comments was provided in oral testimony at the November 18, 2020 adoption hearing before the San Diego Water Board. That testimony is addressed in Section II.D below. [FN2]

Response F.4: Please see General Response 3 of the Introduction for a discussion of the Public Participation Process.

Comment F.5: Overview of Comments

In Section II, the MS4 Permittees set out in detail the reasons why the State Board should not approve the Basin Plan Amendment in its present form. In brief, those reasons are:

The studies relied on by the San Diego Water Board to support application of the 0.79 CSCI score threshold to all modified channels do not in fact provide such support, but actually show that the vast majority (86 percent) of modified channels do not meet the score. In addition, other studies demonstrate that modified channels provide poor habitat for benthic organisms due to their physical features, the same rationale that caused the Water Board to exempt fully hardened engineered channels.

At the adoption hearing, San Diego Water Board staff identified several waterbodies where modified stream segments met the 0.79 CSCI score. However, only

three of nine modified reaches in those waterbodies met that score, and those three examples were not representative of most modified channels. Two of those segments had a “natural shape,” with relatively wide streambeds and earthen banks, and appear to mimic natural streambeds. The other example, Los Coches Creek (mentioned in the Staff Report), has only limited engineering of its banks and is located directly downstream of a natural stream segment.

In assessing all waterbodies in the San Diego Region, the MS4 Permittees determined that only five out of 50 modified stream segment sites in the Region and only six samples out of 124 met the CSCI objective. Additionally, four of the five modified stream segments attaining the CSCI objective were waterbodies with a “natural” shape and the other site had less than five meters of engineered features.

Despite claims that modified channels could meet the 0.79 CSCI score through improvements in water quality, the available evidence reflects no relationship between water quality and meeting the biological objective. The MS4 Permittees identified two modified streambed segments which have good water quality, but poor CSCI scores, and two others with low CSCI scores where the only water quality impairment, from conductivity, was likely not related to discharge quality.

To address concerns regarding possible flood control impacts from stream restoration, Water Board staff stated that hydromodification and other requirements of the Regional MS4 Permit could address flooding. In fact, channels modified for flood control are designed for storm flows far greater than are addressed by permit best management practices, and such BMPs, while appropriate for water quality or hydromodification purposes, have no substantive impact on reducing flooding.

To address uncertainties regarding biointegrity in modified channels, a study is planned to be conducted for the Southern California Stormwater Monitoring Coalition (“SMC”) titled, “Developing a Framework for Improving Biological Condition in Modified Streams.” That three-year study, projected to start in FY 2022-2023, will examine what factors influence CSCI scores in modified channels and what tools decision makers can use to improve biointegrity scores in these channels. This study is also intended to leverage an ongoing three-year study conducted by SCCWRP that is also examining modified channels.

In addition to the comments set forth in this document, the California Stormwater Quality Association (“CASQA”) and the County of San Diego and San Diego County copermittees have also submitted comments on the BPA. The MS4 Permittees support the comments in those letters..

Response F.5: The comment overview is appreciated. The individual comments identified in the overview are responded to below.

Comment F.6: Support for Promulgation of Water Quality Objectives to Protect Biological Integrity of Streams

As the MS4 Permittees have set forth in previous written comments and testimony to the San Diego Water Board, we are not opposed to the development of biological objectives to protect the health of California waters. In particular, the MS4 Permittees have supported the State Board Biointegrity Program and its focus on methods, tools and targets for assessing biological integrity.

As also previously commented, the MS4 Permittees continue to believe that the State Board Biointegrity Program is the appropriate vehicle for establishing criteria to protect the biologic integrity of the state's most important wadeable streams, and that a phased approach focusing on high quality waters is preferable to the BPA's across the board "bright line" imposition of a 0.79 CSCI threshold, especially because the latter may conflict with the state policy once it is adopted. For further detailed discussion of this issue, please see the CASQA comment letter filed herein, pp. 6-8.

The MS4 Permittees also do not oppose using the CSCI as a tool for evaluating biological integrity. While any CSCI scoring employed to evaluate California streams for biological integrity should reflect regional differences (Southern California streams generally have reflected lower CSCI scores for reasons unrelated to water quality), the use of CSCI scoring is, as the Peer Reviewers found, an appropriate investigatory tool.

Response F.6: Please see the discussion in General Response 2 of the Introduction regarding the Amendment relative to statewide efforts. Additionally, the commenter's statement that the CSCI's scoring needs to reflect regional differences because the southern California scores are generally lower for reasons unrelated to water quality is inaccurate. The CSCI was developed by the State Water Board to represent a modeled index that considers regional conditions to set expectations. Finally, the peer review conducted for the projected evaluated and concluded the BPA's use of the CSCI as a water quality objective is appropriate and scientifically justified.

Comment F.7: Support for Aspects of Basin Plan Amendment

The San Diego Water Board made several modifications of the BPA in response to stakeholder comments. The MS4 Permittees support exclusion of hardened channels from application of the BPA, a change made in response to prior comments. The MS4 Permittees also support deferring for at least five years incorporation of the 0.79 CSCI score as a receiving water limitation in the regional MS4 permit, as the question of BPA implementation as an enforceable MS4 permit limitation has been of significant concern to municipal stakeholders. The MS4 Permittees further support the use of a 10-year rolling average of flow records to determine if a stream is ephemeral, a concept which better reflects actual conditions and the reality of the impact of global climate change on Southern California hydrology.

And, while the MS4 Permittees believe it better that the determination of biological integrity be established through processes developed through the State Board Biointegrity Program, rather than undertaken in a piecemeal fashion by individual water

boards, we do not oppose application of the biological objective to natural streams within the San Diego region. The MS4 Permittees do, however, take issue with application of the BPA to modified streams, as discussed below.

Response F.7: Please see General Response 2 of the Introduction for a discussion of the San Diego Water Board's establishment of water quality objectives relative to state-wide efforts. Please see below for a discussion of the application of the biological objective to modified streams.

Comment F.8: The BPA Should Not Apply to Modified Streams

1. Modified Streams Provide Necessary Flood Control Protection

In numerous watersheds across the state, and especially in the urbanized areas of Southern California, natural streambeds have been modified to provide necessary flood protection for residents and businesses. The purpose of these modifications (which may include simple straightening, construction of earthen banks, construction of hard banks with concrete or rip rap, or full hardening of banks and streambed) is to ensure that flood waters can be quickly and safely conveyed. Historic development patterns mean that thousands of homes and businesses are located within former natural streambeds and floodplains.

The importance of the flood control role was emphasized in testimony at the BPA adoption hearing by Grant Sharp, Manager, South OC Watershed Management Area, County of Orange Department of Public Works. Mr. Sharp provided detailed testimony as to the potential impact on infrastructure were one particular modified stream, San Juan Creek in south Orange County, restored to its natural state in order to meet the 0.79 CSCI biological objective [FN3]. San Juan Creek features concrete banks and a narrow dirt bottom [FN4].

Response F.8: The State Water Board recognizes the importance of protecting residents and businesses from flooding. The record, including the referenced oral comments, shows the oral comments were considered by the San Diego Water Board and adequately responded to by San Diego Water Board staff prior to adoption of the Amendment. It may take longer for some modified streams subject to the Amendment, such as San Juan Creek, to achieve the objective due to existing pollutant loading and flow alteration. The San Diego Water Board did not propose that streams used for flood control purposes eliminate their flood control function in order to achieve the objective more quickly, nor did the San Diego Water Board indicate that removal of modifications are required to achieve the objective. The San Diego Water Board Staff Report and SED support the conclusion that modified streams are capable of achieving the objective, even though achievement may take longer for some streams. Please also see General Response 1 in the Introduction.

Comment F.9: Existing Studies Do Not Support the Water Board's Claim that Modified Channels Can Routinely Meet the 0.79 CSCI Score

The same analysis which led the San Diego Water Board to exempt fully hardened stream segments from application of the 0.79 CSCI score threshold applies with equal force to modified channels. This conclusion is backed by studies conducted not only in California but in other states and countries, studies that show both that modified stream segments rarely meet the 0.79 score and that physical alteration of the streams, not adverse water quality, is the most significant obstacle to stream biointegrity.[FN5]
The final Staff Report concluded that while "there is insufficient data concerning timetables by which such [hardened] stream segments could be restored to achieve the Stream Biological Objective," it did apply to all other perennial and seasonal streams not otherwise excluded, including partially- modified stream segments that do not meet the definition of hardened streambed segments, as such streams do have timeframes associated with restoration through the control of discharged pollutants. Prior studies in southern California have found that a CSCI threshold of 0.79 is attainable in stream segments that exhibit some form of reach- scale modification, such as artificial bank armoring (Stein et al. 2013, SMC 2017). Such studies identify factors applicable in efforts to achieve the Biological Stream Objective in segments that have some level of local modification (e.g. hardened banks). Furthermore, properly bioengineered bank controls have been found to have a positive effect on benthic macroinvertebrate communities compared to other methods in urban streams (Sudduth and Meyer 2006).[FN6]
In fact, the studies cited in the Staff Report not only fail to support its conclusion as to the attainability of the CSCI threshold in modified streams, they call that conclusion into question.

For example, SMC 2017, a study of modified channels in Southern California conducted by SCCWRP, concluded that of the modified streams surveyed, only 14 percent achieved the CSCI threshold score of 0.79 while 86 percent did not. In discussing the findings of SMC 2017, SCCWRP concluded: "Researchers found that Southern California modified channels achieve lower-than-expected bioassessment scores even in the absence of environmental stressors that bring down scores for other types of streams. The study [SMC 2017] concluded that channel hardening itself was likely responsible." [FN7]

SMC 2017 identified multiple stressors, such as reduction in physical habitat complexity, loss of riparian shading/vegetative structure, and flow alteration as reasons that hardened stream segments could not reach the 0.79 CSCI threshold.[FN8] Modified streams share many of these same characteristics, including reduced physical habitat complexity, loss of riparian shading from hardened sides, dissociating substantial vegetation from the wetted stream margins, and altered localized hydrology.
The Staff Report also cited Stein, et al. (2013)[FN9] as support for application of the Biological Objective to modified streams. This study, which used Indices of Biotic Integrity ("IBIs") instead of CSCI scores, assessed mechanistic ecosystem responses to armoring by comparing conditions upstream, within, and downstream of six reaches with bank armoring and a natural substrate in Los Angeles and Ventura Counties. The six stream reaches selected for this study were all from ecoregions 6 and 8, which are

reflective of Southern/Central California Chaparral/Oak Woodland and Southern California Mountains, respectively.

Among the key findings of this study are the following:

- "Although few studies have examined it directly, it seems likely that channel adjustments to bank armoring can have negative impacts on aquatic biota." (p. 114)
- "At the individual attribute level, the most pronounced effect was that of consistently and significantly lower Biotic Structure in the armored segment relative to the upstream control segment. This result likely reflects the loss of riparian vegetation and instream habitat as a result of bank armoring." (p. 119 and Figure 3 on p. 120)
- "We found evidence that stream channel morphology responds to channel armoring and that such physical responses can in turn affect instream biological communities." (p. 121)
- "Physical changes were accompanied by lower CRAM attribute scores for Biotic Structure at all sites, which is likely reflective of the direct effects of removing streamside vegetation to construct armoring. However, it is important to note that we cannot conclude that our observations and measurements can be solely attributed to the presence of a hardened bank. Site-specific conditions as well as natural and anthropogenic influences affect the extent to which hardened bank structures influence channel form and bed complexity as well as the ability to decipher these impacts." (p. 122)
- "Given the low number of sites in this study and the high variability among the study sites with regard to geomorphic setting and upstream land use, consistent, detectable responses to bank armoring of macroinvertebrate communities, as measured by the IBI and its constituent metrics, may be unlikely even if actual physical and biological responses are large." (p. 123)

The results of this limited-scale study do not support the conclusion in the Staff Report that a CSCI of 0.79 is attainable in modified stream beds. In addition, it is unclear how the IBI scores were recalculated to derive a CSCI score which support the Staff Report's conclusion that "most sampled sited met or exceeded the 0.79 threshold," since that calculation was not provided.

The Staff Report (at p. 60) finally cites Sudduth and Meyer (2006[FN10]) (a study conducted in Atlanta, Georgia) for the conclusion that "properly engineered bank controls" had a positive effect on benthic macroinvertebrate communities compared to other methods in urban streams. This study, however, utilized traditional IBIs, such as diversity, richness, abundance, and biomass, and did not include significant analysis of the metrics used to develop CSCI scores. The study also cautioned that bioengineered streambanks stabilization "can have small, positive effects on bank habitat and macroinvertebrate communities in urban streams, but it cannot solve all the problems facing these streams." Sudduth and Meyer (2006) at p. 223.

Additional studies not addressed in the Staff Report, the response to comments or oral testimony, also reflect findings that the physical limitations of modified stream segments make them poor candidates to meet the CSCI threshold. The 2018-2019 Report on the SMC Stream Survey (SMC 2020),[FN11] for example, provides a more detailed

assessment of CSCI scores in modified channels. SMC 2020 distinguished between different types of modifications and demonstrated that few of these modification types could reach the 0.79 threshold. Among the findings in SMC 2020 was that “CSCI scores were nearly always below the 0.79 threshold, regardless of hydromodification susceptibility (consistent with the SMC’s previous study [SMC 2017]). Many of the engineered streams (both hardened and earthen) fell well below the 0.79 threshold. The few high-scoring sites were typically mountain streams with natural bottoms and armored banks that protect streamside roads or other infrastructure.” SMC 2020, p. 12. Such mountain streams have on average lower order, colder flows, lower flow volume, and greater instream physical diversity. Both SMC 2017 and SMC 2020 found that a variety of types of stream modifications, not just entirely hardened channels, can impact biological integrity independently of pollutant concentrations.

In addition to California studies, findings of lower benthic community health in modified channels has been reported in multiple additional studies, which are discussed in the September 4, 2020 comment letter filed by the County of San Diego, pp. 13-14. Among these studies are Horsak et al. (2009[FN12]), which found that benthic macroinvertebrates in Central European streams with soft bottoms were progressively impacted as the level of channelization (i.e., bank stabilization) increased and that the degree of riverbank modification was found to be the most important factor explaining the variation in species composition. This study found that many metrics, including decreased species richness, total abundance, proportion of individual functional feeding groups, pattern of distribution of current preference groups, and values of several biotic indexes, all corresponded to the degree of channel modification, while no significant differences in organic pollution were noted across sites.

In a study along a segment of the Rio Grande River in New Mexico (Kennedy and Turner, 2011[FN13]), channelized reaches contained 48% lower density of macroinvertebrates and 47% lower average taxonomic richness than non-channelized reaches. Kairo et al. (2017[FN14]) observed that richness of sensitive taxa, Shannon diversity, mean sensitivity of taxa in the sample, and multi-metric indices were all significantly lower for modified streams than natural sites. In an Illinois study spanning 1995 to 2014, with 3,021 sampling events across 567 streams, Blake and Rhanor (2020[FN15]) found significantly lower taxonomic richness, EPT taxa richness, and multi-metric index scores in channelized sites, with these indicators likely impacted by increased siltation and lower availability of quality habitat. Similarly, decreases in overall abundance and species richness in channelized streams relative to natural channels were also observed by Moyle (1976[FN16]), Quinn et al. (1992[FN17]), and Negishi et al. (2002[FN18]).

These studies offer substantial evidence of the challenges to biointegrity in modified channels, and contradict the Water Board staff position that the biological objective can be met in those channels simply by improving water quality and without undergoing significant physical change and/or stream restoration. The Water Board failed to address these studies. The BPA’s application of the numeric objective to modified channels is thus not supported by substantial evidence.

Response F.9: Please see General Response 1 of the Introduction for a discussion of modified streams and the factors considered when setting a water quality objective under Water Code section 13241. The San Diego Water Board considered the studies the commenter references. The information relied upon by the San Diego Water Board (see Staff Report section 4.5.2 and SED section 1.3.2, 1.9.1, Staff oral comments during the November 2020 hearing) constitutes substantial evidence relied upon by the San Diego Water Board in the decision to adopt the Basin Plan amendment. The San Diego Water Board also appropriately considered studies included in the Staff Report and SED, as well as the evidence submitted during the public process (see General Responses 3 and 4).

Comment F.10: The Results of Monitoring Call Into Question the Conclusion that Modified Streambed Segments Can Achieve the 0.79 CSCI Score Biological Objective

1. The San Diego Water Board Asserts, Without Reference to Substantial Evidence in the Record, that Modified Stream Segments Can Achieve the Biological Objective

As noted above, the San Diego Water Board addressed the September 4, 2020 comments of the MS4 Permittees and other stakeholders in a brief written response released November 6 and in testimony at the adoption hearing on November 18. The written response (at p.7) addressed the modified streambed segment comments as follows:

"Such otherwise modified streams are included in the proposed objective because, in contrast to hardened streambed segments, otherwise modified streams do have timeframes within the existing regulatory permit framework that can be applied through specific permitting actions to address pollutants and flows that are precluding attainment of the Stream Biological Objective. Using the CSCI to restore biological integrity was supported by Scientific Peer Review as a scientifically sound approach. The draft Staff Report identifies prior research in areas with low anthropogenic flow and pollutant impacts, but where the streams are otherwise modified, that had CSCI scores that meet the proposed Stream Biological Objective. This was done to illustrate the appropriateness of this approach and some language has been added to clarify this intent."

Staff's reference to the Scientific Peer Review is inapposite. The Peer Reviewers were not asked for their opinion on application of the 0.79 CSCI threshold to modified stream segments. Please see Riverside County Copermittee comment letter, September 4, 2020, at pp. 10-11.

Response F.10: The commenter is correct that the San Diego Water Board did not ask the peer reviewers to provide specific opinions on the appropriateness of application of the CSCI to modified streams. The purpose of the peer review request was to verify the scientific soundness of applying the CSCI and the proposed thresholds to assess,

protect, and restore biological integrity for streams within the San Diego Region. The peer reviewers supported the scientific soundness of applying the CSCI to all streams in the region, including modified streams. Specifically, the peer reviewers were asked, in the November 30, 2018 Peer Review Request Letter, to review the following:

"The underlying method for deriving the numeric biological objective for streams is scientifically sound and protective of Beneficial Uses.

The Basin Plan amendment proposes to incorporate a numeric water quality objective for streams using a reference-based predictive benthic macroinvertebrate scoring index (Mazor et al. 2016). The proposed Basin Plan amendment uses this index to set the water quality objective using a percentile of reference approach (Ode et al. 2016):

a. Use of benthic macroinvertebrates and the California Stream Condition Index – The underlying method for using benthic macroinvertebrates and the California Stream Condition Index is scientifically sound and will protect and restore the biological integrity associated with perennial and seasonal stream systems.

b. Use of a reference approach – The assumptions and methods used to identify and define "reference" as a biological integrity benchmark are scientifically sound and will protect and restore the biological integrity associated with perennial and seasonal stream systems.

c. Setting of index score threshold – The assumptions and methods to set the water quality objective as a percentile of reference using the California Stream Condition Index is scientifically sound, incorporates a margin of safety, and will identify sites that have a degraded biological condition. The allowance of site-specific scientific information on the physical, chemical, and biological condition of specific sites to prevent false positive identifications of impairment is scientifically sound."

As specified in the October and November 2020 Responses to Comments for the Basin Plan amendment (and in the above language provided in the comment), hardened streambed segments were excluded from the objective because of the acknowledgement that some restoration of hardened streambed segments would be necessary, along with pollutant controls, for such streams to attain the objective and the San Diego Water Board lack of permitting authority and uncertainty regarding timeframes to require such restoration (see Introduction, General Response 1, for a discussion of CWC section 13242 considerations). External scientific peer review affirmed the Amendment is based upon sound scientific knowledge, methods and practices. The exclusion of hardened streambed segments from the objective was not based on a determination that the scientific application of the CSCI to hardened streambed segments is inappropriate. Additionally, see also General Response 1 in the Introduction which explains that Water Code section 13241 does not require the San Diego Water Board to conduct an achievability analysis.

Comment F.11: San Diego Water Board staff provided a more detailed response to the comments of the MS4 Permittees and other stakeholders regarding modified channels

during the November 18, 2020 adoption hearing before the San Diego Water Board, in part through responses to Board member questions.

In response to one question, staff stated that “when you do have a soft bottom and you have good water quality, even when you have riprap on the sides or concrete on the sides, grade control in the stream, you can get a good CSCI score if you have good water quality. Unfortunately, there aren’t a whole ton of examples of that in our region, because we have a lot of examples of those soft bottom streams with very poor water quality.”[FN19]

Staff was asked by Board members to provide examples of modified soft-bottom channels that achieved good CSCI scores in addition to the two reaches mentioned in the Staff Report and in staff testimony, Los Coches Creek in Lakeside (within the San Diego region) and Santa Paula Creek (located in Ventura County).[FN20] Water Board staff could not provide a map of those reaches, or percentage by stream miles.[FN21] Board members were shown a map showing green dots on stream segments with 0.79 or better CSCI scores and red dots with CSCI scores below that level. A Board member asked staff “if we could just get like a scatter shot idea of how many of these green dots are highly modified soft bottoms.” In response, staff identified Aliso Creek, Buena Vista Creek, Agua Hedionda, lower San Marcos Creek and portions of Escondido Creek. Los Penasquitos and Rose Canyon Creeks.[FN22]

After staff identified these streams, the Board member remarked that “it sounds like you have quite a few examples of them.” Staff responded “Yes.”[FN23] A review of CSCI scores for modified stream segments in those waterbodies, however, shows this conclusion to be incorrect.

2. Analysis of CSCI Monitoring Results in the Named Stream Segments Demonstrates that Most Modified Stream Segments Do Not Attain the 0.79 CSCI Threshold

Because San Diego Water Board staff, for the first time during the adoption hearing, identified a number of streams containing modified stream segments which allegedly achieved the CSCI threshold, it was not possible for the MS4 Permittees to address that testimony without further research, and thus could not respond to the testimony at the hearing. However, the MS4 Permittees have since been able to review monitoring and other data to see what evidence exists within the identified reaches to support staff’s conclusions. As demonstrated below, that evidence indicates that the modified streambed segments in the streams identified by staff overwhelmingly fail to achieve the threshold CSCI score.

The MS4 Permittees requested information from SCCWRP on channel characteristics and CSCI scores for the waterbodies identified by Water Board staff, as well as Los Coches Creek.[FN24] For some of the monitoring locations on these waterbodies, channel engineering information was not available in the obtained datasets. In these cases, engineering information was obtained from San Diego County and Orange

County records. CSCI scores and associated channel engineering for sites in each of these waterbodies is summarized in the following table, in which “modified” streams refers to engineered streambeds and partial hardening with soft bottoms and “hardened” streams refers to engineered streams with concrete bottoms.

(*State Water Board note: a table i*s included in the original comment letter).

Of the nine waterbodies cited in the hearing as having modified stream segments that met the CSCI objective, only three were found to have segments that met the objective. And, for those waterbodies, only three out of 29 samples collected in modified stream segments met the CSCI objective. The MS4 Permittees thus found no evidence in the available datasets to demonstrate that modified stream segments were regularly attaining the CSCI objective in the cited waterbodies.

In defining types of engineered channels, the SCCWRP dataset identifies the shape and the width of the engineered modifications in the stream segment. The structure shapes assigned in the dataset are trapezoidal, rectangular, or “natural”. The structure widths assigned in the dataset are “< 5 m”, “5 to 10 m”, “10 to 50 m”, “50 to 100 m” or “>100m”. Two of the three “engineered” sites that attained the CSCI objective have a channel shape that was described as “natural” in the SCCWRP dataset. Both sites (in Agua Hedionda and Aliso Creeks) had earthen sides, significant vegetation and enough soft bottom channel width to allow the stream to assume a more complex flow pattern. The third site that attained the Biological Objective (Los Coches Creek, previously mentioned) had less than 5 meters of engineered modifications located in a primarily natural channel.

(*State Water Board note: Three figures are included in the comment letter*).

Waterbodies that are modified stream segments with a “natural” shape include a broad range of modifications, some of which are located in the flood plain rather than in the stream itself. The SMC study discussed in Section F below will be designed, in part, to help better characterize these waterbodies and clarify what types of engineered modifications impact CSCI scores.

3. Within the Entire San Diego Region, Only a Handful of Modified Stream Segments Have Recorded CSCI Scores above the 0.79 Threshold

In addition to the specific waterbodies identified by San Diego Water Board staff, the MS4 Permittees obtained publicly available CSCI, channel engineering, and chemistry data from the SCCWRP website (smc.sccwrp.org) and evaluated the number of modified stream segments in the entire San Diego Region that had attained or bettered the CSCI objective of 0.79.[FN25] Because the analysis shown in Table 1 found that two modified stream segments with “natural” shapes were able to attain the CSCI objective, modified stream segments with “natural” shapes were evaluated as a separate category.

(*State Water Board note: a table is included in the comment letter*).

The results show that only 5 out of 50 modified stream segment sites in the entire San Diego Region and only 6 samples out of 124 samples taken at those sites met the CSCI objective. Additionally, 4 of 5 sites attaining the CSCI objective were in waterbodies with "natural" shapes and the one other site meeting the objective had less than 5 meters of engineered features in a primarily natural channel, as shown in Figure 3. Two of the modified streambed sites with a natural shape, Agua Hedionda Creek and Aliso Creek, were discussed previously. Of the other two sites with a natural shape, one has earthen sides, extensive vegetation and a very wide natural channel and the other is located in a rural area in the mountains, has vegetated sides and less than five meters of engineered modifications.

This analysis demonstrates that there are very few examples of modified stream segments that have attained the 0.79 CSCI objective and those which do appear to have characteristics that allow the waterbody to mimic natural watercourses. In those segments, engineered features do not appear to be substantially impacting the biological habitat and thus constraining the potential CSCI score.

It should also be noted that less than half of all sites in the Region, including natural channels, are attaining the CSCI objective. As noted above, stakeholders have commented that the biological conditions in reference streams in the San Diego Region generally have reflected lower CSCI scores for reasons unrelated to water quality, and that the CSCI objective should be adjusted to reflect regional differences.

Response F.11: Please see General Response 1 of the Introduction for a discussion of the inclusion of modified streams and consideration of factors in Water Code section 13241. Please also General Response 3 of the Introduction for discussion of the Public Participation Process which shows that while the hearing for the Basin Plan amendment was conducted on November 18, 2020, the Basin Plan amendment was adopted at the San Diego Water Board's December 8, 2020 meeting.

The commenters raise several points questioning the accuracy and timing of information San Diego Water Board staff presented at the hearing in response to board member questions. Based on these alleged inaccuracies and the mistaken position that the modified stream segments staff identified as achieving the CSCI threshold was new information presented during the hearing, the commenters subsequently obtained engineering studies detailing channel characteristics and CSCI scores for the streams staff identified as both modified and meeting the CSCI threshold in response to board member questions at the hearing. Commenters also obtained engineering data from San Diego County and Orange County records to support their comments.

Commenters rely on this post-hearing information to introduce a new argument that in addition to excluding hardened streambed segments, the biological objective should exclude all other modified streams unless they fall within a proposed new subcategory of modified streams with a "natural shape." "Natural shape" is a new term commenters

attribute to a classification within a SCCWRP dataset, that is based on the shape and size of engineered features in the stream. As detailed below, none of the information commenters present to support their new argument to further categorize or classify and exclude modified streams invalidates the rationale and bases underlying the San Diego Water Board's conclusion that the biological objective should apply to modified streams with the exception of hardened streambed segments, as defined in the objective.

First, the commenters state that the information presented by San Diego Water Board staff orally at the hearing constitutes new information which commenters could not address during their presentation and which therefore required subsequent research. However, the information described by staff in the hearing did not constitute new information. In responding to board member questions during the public hearing, San Diego Water Board staff showed a slide (Slide 16) from the staff presentation which identified examples of unmodified and modified streams sampling locations meeting the proposed biological objective within the San Diego Region. The Amendment record includes the data staff relied on to identify modified stream sites meeting the objective's CSCI threshold. The data sources are referenced in the Staff Report (see section 4.5.2) and SED (see sections 1.3 and 1.9). The data, generated through Phase I MS4 permittees' monitoring activities in the San Diego Region, as well as State of California Surface Water Ambient Monitoring (SWAMP) program sampling, are contained in the following documents in the record:

- 2014/2016 Clean Water Act Section 305(b) and 303(d) Integrated Report (reference 4314)
- 2018 Clean Water Act Section 305(b) and 303(d) Integrated Report
- 2015 Report on the SMC Regional Stream Survey (cited as SMC 2017)

These documents are referenced in the Staff Report for the Basin Plan amendment and were publicly available prior to the public hearing. Thus, the source of the data staff referred to in oral comments at the hearing was already in the record. [Note that in their comments, the commenters incorrectly state San Diego Water Board staff identified Trabuco Creek as a modified stream scoring above the objective (see 11/18/2020 transcript pages 22-23).]

Second, the commenters also question the validity of San Diego Water Board staff's identification of portions of Buena Vista Creek, Escondido Creek, Los Penasquitos Creek, Rose Canyon Creek, or San Marcos Creek as modified streams with segments meeting the CSCI threshold in oral response to a board member question asking for examples of such streams. Commenters assert that staff's identification of examples of modified stream segments meeting the CSCI threshold was incorrect, and/or that staff's affirmative response to a board member question that there were "quite a few examples" of such streams was incorrect. As explained below, San Diego Water Board staff's identification of such streams is supported by data depicted on the referenced slide.

Based on the inaccurate view that San Diego Water Board staff introduced new information during the November 2020 public hearing, commenters obtained stream engineering data and analyses in 2021 from SCCWRP and from San Diego County and Orange County records. Commenters assert that these new data sets demonstrate San Diego Water Board staff's identification of example streams as modified stream segments meeting the CSCI threshold during the hearing was incorrect. Based on these incorrect assertions, commenters then rely on stream engineering information in that new data to propose a new subcategorization of modified streams with a natural shape. On the basis of this new subcategory, commenters assert San Diego Water Board staff's identification of example streams as both modified and meeting the 0.79 CSCI threshold was inaccurate. The commenters' premises and conclusions are both incorrect.

Staff's identification of examples of modified streams that meet the CSCI threshold was accurate and supported by the data depicted in the referenced slide. The commenters' newly submitted stream engineering data and analyses are incomplete and do not include all information relied upon by the San Diego Water Board staff to determine that the referenced example modified stream segments did indeed meet the CSCI threshold.

As discussed in the Introduction (footnote 3), the term "modified" is not specifically defined in the Basin Plan amendment but, as used during the development and presentation of the Amendment to the San Diego Water Board, conveys some degree of anthropogenic modification to a stream segment. The only distinction among modified streams recognized in the Basin Plan amendment is the excluded category of hardened streambed segments.

In their comments presented to the San Diego Water Board, commenters argued that all modified streams, not just hardened streambed segments, should be excluded from the objective and proposed the following language to implement their proposal:

"Modified Streambed Segments
Stream segments which have channel improvements consisting of modified sides and/or bottoms that have been graded, lined with concrete, riprap or other materials and/or have been straightened as shown by as-built drawings or similar evidence." (See Commenters' September 2020 written comments, p. 9; Hearing Tr. pp. 93-94.) In contrast, commenters now propose that among modified streams, the biological objective should apply only to a narrow subclassification characterized by a "natural shape."

After consideration of the factors in Water Code sections 13241 and 13242, the San Diego Water Board concluded it was appropriate to establish the objective for the reasonable protections of the WARM and COLD beneficial uses to apply to all inland streams other than the stream types the Amendment explicitly excluded. That modified streams along one end of a continuum of those exhibiting natural features may more easily attain the biological objective does not invalidate the rationale and bases underlying the San Diego Water Board's determination of the objective's applicability.

The purpose of the Board's action to adopt a water quality objective, subject to considerations of Water Code section 13241 and 13242, is to identify a metric that can be assessed and confidently used to determine whether the condition of a freshwater stream, with specific exemptions, can support the designated uses related to biological integrity. Neither the commenters' new argument, nor the new information on which it is based, undermines the evidence and analyses supporting the San Diego Water Board's determination as to need for the biological objective and the appropriate scope of applicable streams.

Comment F.12: There is a Lack of Evidence that Good Water Quality Contributes to Positive CSCI Scores in Modified Streambed Segments

As previously noted, in responding to comments questioning the ability of modified stream segments to meet the biological objective, Water Board staff asserted that this depended on the presence of good water quality in the segment. However, neither the Staff Report nor the Responses to Comments provided any evidence to support this assertion, beyond providing examples of modified reaches, Los Coches Creek (discussed above) and a reach in Ventura County.[FN26]

In fact, there is little evidence on the relationship between good water quality and achieving a positive CSCI score in modified channels. Staff noted at the adoption hearing that even if there was good water quality in a fully hardened segment, "you're not going to get a CSCI score that would meet the objective. And that's because we know that the concrete must be removed for restoration to occur."[FN27] The logical extension of this statement is that in a segment where the streambed banks were fully hardened but there was a narrow natural bottom between those banks (such as San Juan Creek in Orange County), even good water quality would not lead to meeting the objective.[FN28]

To test this proposition, the MS4 Permittees looked for examples of modified stream segments with good water quality that had been scored for CSCI. We were able to identify two examples of such streams (e.g., that met water quality objectives based on the available dataset). Neither segment, however, met the CSCI objective. Nitrogen, phosphorus, pesticides, and conductivity are constituents that are typically identified as constituents that can impact CSCI scores. Conductivity is often naturally occurring and not a result of MS4 discharges. The chemistry of water sampled at Site 901PS0057 on Trabuco Creek reflected nitrogen and phosphorus concentrations that did not exceed water quality objectives, no significant pesticide or other toxic pollutant measurements, and reasonable conductivity levels. The CSCI score, however, was only 0.708. While not located in the San Diego Region, Site SMC00958 on Carbon Creek in the San Gabriel River Watershed had a very poor CSCI score of 0.25, but met water quality objectives and had good conductivity. An additional two modified segment sites were identified that met water quality objectives, but had elevated conductivity. These are sites SMC01934 on Trabuco Creek and site SMC03523 on Osos Creek. Neither met the CSCI objective.

And, despite being identified by Water Board staff as an example of a modified reach achieving the 0.79 CSCI score, water quality data for Los Coches Creek reflected average nitrogen concentrations that exceeded water quality objectives.
As previously discussed, existing studies do not support the contention that modified stream segments can achieve the CSCI objective solely with water quality improvements. In fact, this point was made by SCCWRP in a press release on its ongoing three-year study to explore when and how bioassessment scoring tools should be used to evaluate the health of California modified streams. In that press release, SCCWRP noted that modified channels:

Tend to score uniformly lower with bioassessment indices than other stream types do – a phenomenon that persists even when water quality in modified channels is relatively good.

As a result, managers may lack effective options that they can implement to improve bioassessment scores in modified channels – short of removing or extensively modifying the hardening features altogether, which would be a costly option that could compromise flood control."[FN29]

Additionally, as noted in comments by the County of San Diego filed on September 4, 2020, there is no existing evidence that controlling nitrogen or phosphorus would lead to improvements in CSCI scores. Please see text on pages 15-17 and Figures 5 and 6 in the County of San Diego comment letter. The Water Board did not address these comments.

Response F.12: Please General Response 1 of the Introduction for a discussion of applicability of the Basin Plan amendment objective to modified streams. The San Diego Water Board's October and November 2020 written responses to comments adequately address the original comments regarding water quality and achievability as cited by the commenter. The San Diego Water Board also acknowledged a general lack of modified streams where good water quality is currently present (see Staff oral statements in November 2020 Public Hearing Tr. page 44).

The commenter also identifies two modified streams in the San Diego Region as examples where water quality is, according to the commenter, meeting water quality objectives but where CSCI scores are not meeting the Basin Plan amendment biological objective. However, the prior 305(b) and 303(d) Integrated Reports referenced in the Staff Report (section 4.5.2) and SED (Sections 1.3 and 1.9) show these streams to be 303(d) listed for the following pollutants:

- Trabuco Creek (lower): CWA 303(d) listed as impaired for toxicity (including sediment), nitrogen, and phosphorus.
- Oso Creek: CWA 303(d) listed for toxicity, nitrogen, phosphorous, and selenium.

The comment also references an alleged inadequate response to a County of San Diego comment from September 4, 2020, which stated that there was a lack of evidence that improving nitrogen or phosphorous concentrations would result in improvements in CSCI scores. The County of San Diego claimed a lack of association of lower nutrient concentrations with better CSCI scores showed controlling pollutants would not improve CSCI scores. This comment, which only focuses on one type of pollutant and solely on concentrations, was addressed in the November 2020 Response to Comments document (page 7), as well as orally by San Diego Water Board staff at the November Board Hearing (Tr., p. 44) and in response to board member questions. These responses clarified that both pollutants (multiple types/forms) and flows were precluding the attainment.

Additionally, the comment does not take into account modified hydrology from NPDES regulated discharges (e.g. stormwater) as impacting water quality, and focuses only on water column chemistry. Impacts to the CSCI can occur due to water chemistry, sediment chemistry, and flow impacts. The San Diego Water Board responses to comments (page 7 of the November 2020 Response to Comments and, oral comments by San Diego Water Board staff at the public hearing) discussed the impact of modified hydrology in addition to water column chemistry and identify both as controllable factors that impact the CSCI. In addition, the Staff Report includes multiple references (Stein et al. 2017a, Stein et al. 2017b, Sengupta et al. 2018) to work done in southern California specifically focused on flow alteration and impacts to benthic macroinvertebrates and the CSCI, including within the San Diego Region. In contrast, the commenter's argument focuses on a narrow suite of water chemistry parameters, specifically nutrients and conductivity.

Finally, the commenter provides a citation for a news release by SCCWRP which includes generalized statements about all modified channels, including those not included in the Basin Plan amendment (hardened streambed segments). The statement in the news release cites work done for the reference SMC 2017, which is cited in the Staff Report and specifically supports the exclusion of fully hardened streams because it concluded that improved water quality did not improve CSCI scores due to the anthropogenically hardened streambed.

Comment F.13: The Flood Protection Provided by Modified Channels Cannot be Achieved Through Off-Channel BMPs Required by the Regional MS4 Permit

The Orange County Flood Control District and the Riverside County Flood Control and Water Conservation District have a statutory responsibility to provide flood control protection to the residents living with[sic] the districts, pursuant to the Orange County Flood Control Act, Water Code App. § 36-2(a) (West) and the Riverside County Flood Control and Water Conservation Act, Water Code App. § 48-9 (West). Creek "restoration," through removal of flood control improvements such as concrete or hardened banks, necessarily conflicts with these statutory mandates, and moreover is beyond the power of the Water Boards under the Porter Cologne Water Quality Act.[FN30]

Flood control channels must meet specified flood control requirements. Without modifications, watercourses would require much wider riverbeds to contain storm flows, and, as described by Mr. Sharp in his testimony, potentially encroach on existing properties and transportation and utility infrastructure. Neither the Staff Report nor the SED discusses the economic and environmental impacts of restoration of modified flood control channels. And in addition to channel design, flood control agencies are required routinely to restore channel profiles to their engineered design to maintain hydraulic capacity, an effort which may involve the removal of both sediment and vegetation. If this work is not done, the risk to the lives and property of persons living in the urban areas served by the channels is increased.

Water Board staff addressed this comment during the adoption hearing. In response to a question from a Board member regarding flood control concerns, staff replied that "flood control actions aren't strictly limited to in-channel. They're directly linked to stormwater actions, and post-construction BMPs and captured stormwater. So we feel – and that's why we have hydromodification requirements in our stormwater permit. So, we feel that we have the mechanism in place to handle both the pollutant and the flow issue through our permitting process, which makes this an appropriate objective."[FN31]

In offering that explanation, staff proffered no analysis of the impacts of stormwater capture and hydromodification BMPs on flood control hydrology. While stormwater capture and hydromodification BMPs are accepted mechanisms to address urban runoff discharges and to support beneficial uses by regulating stormwater discharge quality and erosion threats, these BMPS do not, and cannot, substitute for flood control channels. The Regional MS4 Permit does not require these BMPs to be engineered to achieve any desired flood control goal. This is appropriate, since the MS4 permit addresses stormwater discharge quality, not flood control.

Also, as noted above, the Porter-Cologne Water Quality Control Act does not authorize the water boards to address flood control.

Flood control infrastructure is designed to handle not only typical storms but atypical major storms, since the latter pose the greatest risk to life and property. For example, even with flood control infrastructure in place, the Temecula area in southwest Riverside County suffered significant flooding damage as recently as 1993, affecting thousands of residents. This flooding in part prompted construction of the Murrieta Creek project, described in previous comments.[FN32]

But the limited impact of infiltration BMPs on flood flows is not merely theoretical. The actual impact of such BMPs on flood control capacity has been analyzed in a study performed by the Los Angeles County Flood Control District. As a condition in the waste discharge requirement issued for maintenance of soft-bottom channels in the Los Angeles River, the Los Angeles Water Board required the District to conduct a hydraulic analysis feasibility study of the capacity of those channels when taking into account

expected changes in storm flows from the infiltration requirements of the Los Angeles County MS4 permit and other local stormwater management plans.

To assess these changes, the Flood Control District devised a model which assumed "that the entire surface of the watershed was designed to capture flows generated during the 85th percentile storm, which is the standard LID requirement (and which is contained in the current Los Angeles County MS4 permit." Hydraulic Analysis, Technical Assessment Report for Engineered Earthen-Bottom Flood Control Channels Located Within the Los Angeles River Watershed, August 1, 2013, p. 9. As the analysis noted, this assumption "actually overestimates the impact of the infiltration requirements required to be assessed in the Feasibility Study, since those requirements do not apply watershed wide and are being implemented over multiple year time horizons." Id., pp. 9-10. Moreover, the model assumed that the infiltration capacity of the watershed was unimpeded by previous storms. Id., p. 10.

The model was run and showed that the volume of only the first 4.5 hours of a Flood Control Storm hydrograph [7 inches over 24 hours] would be captured in the LID/infiltration infrastructure. After that point, any remaining volume would not infiltrate and would have to be contained in the flood control channels, as shown in Figure 1-3. Thus, while LID/infiltration facilities will reduce storm flows during typical (up to the 85th percentile) storm events, flows from the major storms for which the flood control channels, including the soft bottom reaches, were designed will not be affected. Ibid. This study shows conclusively that infiltration BMPs cannot materially affect the amount of flood waters required to be safely conveyed by flood control infrastructure. A copy of excerpts of the report to the Los Angeles Water Board discussing this study is attached as Exhibit 2.

The MS4 Permittees further note the conclusion reached by the investigators in SMC 2017, that in trying to restore biointegrity to modified streams, "tradeoffs between flood protection and ecological condition may be unavoidable." SMC 2017, p.5. The failure to address potential impacts on flood control, and other environmental issues, raises concerns about the adequacy of the San Diego Water Board's analysis of the factors required by Sections 13241 and 13242 of the Water Code, and of the adequacy of the CEQA analysis in the SED, Appendix II of the Staff Report.

Response F.13: As the San Diego Water Board explained in the SED (pp. 130-132) and in written responses to comments in November 2020 (November 2020 Responses to Comments, p. 14), and as San Diego Water Board staff orally commented at the public hearing (Nov. 18, 2020, Tr., p. 155), the Basin Plan amendment does not require or anticipate that the removal of critical flood control infrastructure (e.g. modified banks) through stream restoration activities will be necessary for streams to achieve the objective. The November 2020 Response to Comments states:

"The San Diego Water Board's regulatory permitting programs that would implement the Stream Biological Objective already regulate the discharge of pollutants into receiving

waters, and they do not mandate removal of historic in-stream alteration of receiving waters for flood control purposes."

The SED discusses "In-stream Restoration" as a reasonably foreseeable method of compliance (section 1.4.5) because an entity might voluntarily undertake stream restoration that would result in improved conditions meeting the objective. Section 1.4.5 of the SED states:

"The Stream Biological Objective may be used by the San Diego Water Board or others when evaluating the suitability of the direction of resources to in-stream physical habitat restoration as a result of enforcement actions, voluntary permit actions, and non-regulatory actions. While in-stream habitat restoration activity is considered a reasonably foreseeable method of compliance, the San Diego Water Board has statutory responsibility to regulate in-stream restoration activities to ensure significant impacts will not occur, and such restoration activities are typically intended to protect and restore multiple beneficial uses, including those not directly related to aquatic life. Regulated entities and other organizations (e.g. NGOs) may choose to undertake such activities to restore Beneficial Uses, and already do so within the San Diego Region. These actual activities vary widely in project scope, magnitude, duration, and methods."

The commenter also states that Porter-Cologne Water Quality Control Act does not authorize the State and Regional Water Boards to address flood control and suggests that the biological objective in some streams would force municipalities to rely on low-impact development to maintain the design storm capacity of streams that have been modified to reduce overbank flooding. This argument mischaracterizes the San Diego Water Board's action in adopting the Amendment. When the commenter refers to a study in the Los Angeles basin and says that it would not be possible to implement flow controls outside of streams that would be sufficient to facilitate the removal of existing flood control infrastructure within streams, it is suggesting that the San Diego Water Board intends to impose effluent limitations for "major storms" to ensure that MS4 discharges are not causing impairments related to the biological objective. However, the San Diego Water Board has clearly noted that is not its intention (e.g., see October 2020 Response to Comments p.6) and the implementation provisions of the Amendment denote separate approaches concerning impairments caused by failures to meet the maximum extent practicable standards for stormwater pollutants and nonpoint sources such as hydromodification (Chapter 4 sections IV.A.1 and VI.A).

There is a difference between flood control infrastructure design, which targets property protection during the largest anticipated storm events, and impacts to the CSCI associated with the discharge-driven modification of natural stream flows throughout the entire hydrologic year (e.g. frequency of peak flows, duration of wet season base flows, dry season flows) from permitted discharges. NPDES permits require implementation of BMPs to control pollutants, including modified flow regimes, in receiving waters. The premise of the comment that BMPs would need to be implemented to remove flood control infrastructure installed for the largest anticipated storm event is inaccurate. The inclusion of modified hydrology and implementation to address impacts is discussed

throughout section 5 of the staff report and cited therein (Stein et al. 2017a and 2017b). The implementation of NPDES MS4 flow-control BMPs are expected to improve altered flow conditions to achieve the CSCI, which are expected to work within existing flood control needs and infrastructure.

Additionally, impacts associated with stream flood control maintenance activities are adequately addressed in the implementation section of the Amendment (Chapter 4 implementation section (e.g. section 5.6 for dredge activities)) as well as in the Response to Comments documents (e.g. page 12 for the November 2020 Response to Comments, page 78-79 of the October 2020 Response to Comments document). The October 2020 Response states:

“The maintenance activities described in the comment are subject to obtaining CWA Section 401 Water Quality Certifications and/or Waste Discharge Requirements (WDRs) under Porter-Cologne. The 401 Certification (generally issued by the Executive Officer) and/or WDRs (issued by the San Diego Water Board), will ensure that proposed discharges of dredge and fill material protect existing beneficial uses, regardless of the adoption of the Stream Biological Objective. While the scope of the proposed Stream Biological Objective has been modified as described in Response #1, it should be noted that biological objectives can be used to more accurately assess the potential impacts associated with proposed dredge and fill activities, and thus more accurately prescribe compensatory mitigation requirements.”

Finally, the comment: “The MS4 Permittees further note the conclusion reached by the investigators in SMC 2017, that in trying to restore biointegrity to modified streams, ‘tradeoffs between flood protection and ecological condition may be unavoidable. SMC 2017, p.5.” is inaccurate since the referenced report refers to fully hardened channels. Hardened streambed segments are excluded from the objective established in the Basin Plan amendment.

Comment F.14: Legal Concerns

1. Water Code Section 1324[sic] factors have not been adequately addressed

In previous comment letters and the testimony of Principal Deputy County Counsel Julia C. Woo of the County of Orange at the adoption hearing,[FN33] the MS4 Permittees set forth concerns regarding legal issues, including with respect to the analysis of Water Code Section 13241 and 13242 factors and the adequacy of the CEQA analysis in the SED.

Water Code § 13241 requires, in relevant part:

Factors to be considered by a regional board in establishing water quality objectives shall include, but not necessarily be limited to, all of the following:

(a) Past, present, and probable future beneficial uses of water.

(b) Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto.

(c) Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area.
(d) Economic considerations.
(e) The need for developing housing within the region.
(f) The need to develop and use recycled water.

The San Diego Water Board did not fully address the environmental impacts of the adoption of the BPA. In discussing Section 13241(b), the SED did not recognize the entire environmental characteristics of the hydrographic unit under consideration because it failed to address modified channels. The discussion on SED page 116 only mentioned waterbody segments identified with impairments associated with a pollutant or pollutants and not modified channels, where engineered design and/or concrete are considered to be "pollution."

In discussing the water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area (Section 13241(c)), the brief statement at SED page 116 regarding the estimated "almost 30 percent of the stream-miles are estimated to be similar-to-reference and in good condition," failed to support an inference that achieving the 0.79 CSCI score in modified stream segments is attainable throughout the San Diego Region, despite the statement in the SED that “streams throughout the region subject to such discharges are capable of meeting the Stream Biological Objective through implementation of existing water quality control programs and pollutant control measures (San Diego Water Board 2016, San Diego Water Board 2019).” SED at 116.

The SED did not analyze how the objective will be achieved or as to which waterbodies it would apply, whether it could be achieved through a program of implementation on controllable factors nor was there any consideration of historic land use development, water supply, and flood control. The SED was revised to state that with regard to modified streambeds, “successful implementation of existing regulatory requirements that control discharges into streams provide the conditions needed to support attainment of beneficial uses.” SED at 117. With respect, the discussion in Sections C and D of these comments casts considerable doubt on whether achieving the biological objective in modified channels is achievable, much less through changes in water quality. And, as discussed throughout these comments, the evidence in the record indicates that achieving the CSCI score in most modified streambed segments cannot “reasonably be achieved.”

Regarding economic considerations (Section 13241(d)), the SED contained only a limited discussion of the costs of channel restoration, and did not discuss the costs associated with the removal of homes and businesses to allow for a natural floodplain.

The SED stated that in- stream habitat restoration to restore degraded biological conditions in channels is "not required under this Basin Plan Amendment." SED at 130. However, in the case of modified channels, the evidence indicates that habitat

restoration ultimately would be required to ensure that such channels could meet the objective.

The SED did not discuss impacts on housing (Section 13241(e)) if, as a result of stream restoration to attain the numeric objective in modified stream segments, housing will be threatened by flooding or be required to be removed from a newly naturalized floodplain.

Water Code section 13242 requires a description of the nature of actions needed to achieve the objective. Here, the SED was deficient because it did not discuss the need to address in-stream restoration activities in modified channels.
While the final SED contained revised sections discussing Sections 13241 and 13242, those revisions did not address the comments of the MS4 Permittees.

2. Environmental Impacts Review Deficiencies
The CEQA analysis of environmental impacts contained in the SED also was deficient, as described in previous comment letters and Ms. Woo's testimony, including with respect to the discussion of impacts on land use and planning, hydrology and flood impacts, population and housing, and major construction impacts associated with the effort to restore modified stream segments. Because of these deficiencies, there were also deficiencies in the SED's cumulative impacts and mandatory findings of significance portions. The MS4 Permittees also commented that the SED should have been re-circulated, given changes in the project. This was not done, and the San Diego Water Board made no substantive changes in the final SED to address these comments.

Response F.14: Please see General Response 1 of the Introduction regarding modified streams and for a discussion of the San Diego Water Board's consideration of the required factors in Water Code sections 13241 and section 13242. With regard to the comment that the SED should have been recirculated, please see General Response 3 in the Introduction, for a discussion of the public participation process. The prior oral comments provided by Ms. Woo appear to have been based on the mistaken assumption the proposed Amendment would mandate the removal of flood control infrastructure to achieve the objective. As discussed in prior responses herein, the Amendment does not require removal of flood control infrastructure nor adjacent housing.

Comment F.15: Major Studies are Underway or Planned That Will Address the Ability of Modified Channels to Meet the Numeric Biological Objective

As set forth above, the evidence does not support application of the Basin Plan Amendment's 0.79 CSCI threshold to modified stream segments. Studies and monitoring conducted in the San Diego Region indicate that the physical constraints of most modified channels prevent them from achieving the 0.79 CSCI score, for the same reasons that exempted hardened channels cannot achieve the score.

The MS4 Permittees however acknowledge that further analysis could determine categories of modified channels that may be susceptible of achieving a 0.79 or better CSCI score. Such a study is planned to be conducted by the SMC, which is a regional partnership of 16 stormwater management agencies working to develop solutions to regional challenges in stormwater management. Since its founding in 2001, the SMC has been pooling its members' resources and expertise to collaboratively conceptualize, develop and fund stormwater research and monitoring initiatives across coastal Southern California.

One of the SMC projects proposed for the coming year is Project 5.3, "Developing a Framework for Improving Biological Conditions in Modified Streams." A copy of the Project description is attached as Exhibit 3. The study is intended to address the following key questions around biological conditions in modified streams:

What are the ranges of biological conditions in different types of modified streams?

How do conditions in modified streams respond to changes in water quality and flows? That is, what can be done to improve conditions within existing channel forms?

How do conditions in modified streams respond to restoration of channel form or removal of bank armoring? That is, what can be done to improve conditions by restoring natural forms/features?

SMC is proposing this project, which has a budget of $445,000, though it is anticipated that existing regional monitoring and the ongoing SCCWRP statewide modified stream study (discussed below) can be leveraged to provide $175,000 of that amount. The project is expected to take 36 months, depending on data availability and the level of effort to test and refine the tool development for decision making.

Project 5.3 was described in conceptual terms during testimony at the adoption hearing. [FN 34] At that time, the project was still in development. Since last November, the project scope and budget has been developed and, on September 14, 2021, the SMC Executive Steering Committee accepted the final scope for Project 5.3. Orange County Public Works, the Riverside County Flood Control and Water Conservation District, County of San Diego Watershed Protection, the City of San Diego, the San Bernardino County Flood Control District and SCCWRP have all pledged financial support for the project. In addition, the Los Angeles County Flood Control District and the Ventura County Watershed Protection District have indicated they would also approve funding, pending budget approval from co-permittees.

Given approval by the Executive Steering Committee, and the funding commitments from these agencies, it is the strong expectation that this project will be formally approved for the budget at the December 2021 SMC meeting, and will thus commence in FY 2022-2023.

As noted, SCCWRP initiated a three-year study (in August 2020) to explore when and how bioassessment scoring tools should be used to evaluate the health of California

streams that have been modified through channel hardening. This study is the one referenced in the SCCWRP August 7, 2020 press release quoted above.[FN35] The SCCWRP study should add substantially to the body of knowledge regarding the biointegrity characteristics of modified channels across the state.

Response F.15: The State Water Board, which participates as a member of the referenced SMC, supports further studies to evaluate implementation approaches to improving stream biological condition, including in already modified channels and those with flood control infrastructure. The State Water Board is also aware that the San Diego Water Board will be participating in the development and implementation of the project. The purpose of the study is not to identify or determine alternative objectives for modified channels; instead, the study may be informative in implementation of the objective in the Basin Plan amendment as the focus is to explore priority restoration actions within existing flood control infrastructure footprints, as well as evaluate the impact of maintenance activities.

Finally, the commenter's reference to the August 7, 2020, press release regarding the SCCWRP's 3-year study is not directly relevant because it focuses on streams largely outside of the San Diego Region 9 (e.g. Central Coast, Central Valley). The press release states:

"Researchers are tentatively planning to focus on agricultural regions in Southern California, the Central Valley and the Central Coast, as well urban areas outside of Southern California. Modified channels in urban Southern California already have been studied."

Comment F.16: RECOMMENDATIONS FOR FURTHER ACTION

The Basin Plan Amendment Should Be Remanded to the San Diego Water Board with Instructions to Exempt Modified Channels Pending Completion of the SMC and SCCWRP Studies

Because of the importance of SMC Project 5.3 and the ongoing SCCWRP study, and their direct application to answering questions about biointegrity in modified stream segments, the results of the studies should be known before any effort is made to apply a numeric biologic objective to modified stream segments. When the State Board is prepared to act on the Basin Plan Amendment, the MS4 Permittees request that it remand the Amendment to the San Diego Water Board with the following instructions:

a. Remove Modified Streambed Segments from the waterbodies to which the BPA applies by:
i. Modifying Chapter 3 to include "Modified Streambed Segments" in Table TBD1. Inland Surface Waters with COLD or WARM Beneficial Uses to Which the Stream Biological Objective Does Not Apply.

ii. Define Modified Streambed Segments within Table TBD1 as “Stream segments which have channel improvements consisting of modified sides and/or bottoms that have been graded, lined with concrete, riprap or other materials and/or have been straightened as shown by as-built drawings or similar evidence”.

b. Defer application of the BPA to “Modified Streambed Segments” until completion of SMC Project 5.3 and the SCCWRP studies.

This approach will ensure that science informs the application of the BPA to appropriate waterbodies within the San Diego Region, and also will inform the work of the State Board and other water boards across the state in grappling with these issues.

The MS4 Permittees further request that if the State Board elects to consider the BPA, it hold a workshop so that stakeholders can further explain their concerns to Board members. A workshop is merited since, as discussed above, the Amendment represents the first time that any California water board has attempted to impose a numeric biological objective. The technical and engineering issues discussed in this joint comment document alone make it important for the State Board members to hear from stakeholders and San Diego Water Board staff.

The MS4 Permittees appreciate this opportunity to provide comments on the Basin Plan Amendment. Questions regarding these comments may be addressed to the individuals identified in the transmittal cover letters.

Response F.16: Please see the discussion in the Introduction describing the scientific and legal basis for the objective in General Response 1. See also General Response 2 regarding the statewide effort. Commenters will also have the opportunity to provide oral comment at the State Water Board’s public meeting to consider approval of the San Diego Water Board’s Basin Plan amendment.

G. Commenter: California Department of Fish and Wildlife Office of Spill Prevention and Response

Comment G.1: I write to express my strong support for the proposal to approve the Amendment to the Water Quality Control Plan for the San Diego Regional Water Quality Control Board (San Diego Board) to Incorporate Biological Objectives (Resolution No. R9-2020-0234) being considered by the State Water Resources Control Board.

Because of our office’s dual roles as both a major pollution response authority and a public trustee for wildlife and habitat, the California Department of Fish & Wildlife’s Office of Spill Prevention and Response (OSPR) has a fundamental interest in tools that improve our ability to measure the health of aquatic ecosystems. OSPR continually seeks to develop and support best achievable technologies for prevention, preparedness, and response. We frequently collaborate with are broadly support the

State and Regional Water Boards' efforts to build both technical and regulatory frameworks for directly measuring the biological health of streams.

We endorse the San Diego Board's approach and its strong grounding in quantitative scoring tools like the California Stream Condition Index (CSCI). OSPR frequently uses bioassessment tools, including the CSCI, in inland response applications, including assessments of baseline conditions, resource damage assessments, and in setting restoration goals and measuring restoration success. Regulatory infrastructure like that proposed in this San Diego Basin Plan amendment makes it easier to establish benchmarks for stream health that we can use in our own efforts and makes it easier to communicate these targets with both our stakeholders and partner agencies. OSPR also shares the Water Boards' interest in protecting and restoring high quality waters, which is a central feature of this regulation.

We are pleased to support the Water Boards as they continue to produce tools to monitor and improve the health of California's aquatic ecosystems. We look forward to using these tools as part of our shared mandate to protect and restore these important ecosystems.

Response G.1:
Comment noted.

H. Commenter: Riverside County Flood Control and Water Conservation District

The Riverside County Flood Control and Water Conservation District submitted joint comments with the County of Orange Copermittees. Responses to the joint comments are included above in the Orange County Copermittees section F.

I. Commenter: County of San Diego Copermittees

Comment I.1: Staff from the cities of Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Marcos, Santee, Solana Beach and Vista; the County of San Diego; the San Diego Regional Airport Authority; and the San Diego Unified Port District (Copermittees) appreciate the opportunity to provide comments on the Basin Plan Amendment to the Water Quality Control Plan for the San Diego Basin (Basin Plan) to Incorporate Biological Objectives (Proposed Biological Objectives).

The Copermittees support the use of in-stream biology as a holistic way to measure aquatic life beneficial use attainment through the assessment of benthic macroinvertebrate community health. We appreciate the modifications San Diego Water Quality Control Board (San Diego Water Board) staff made in response to our previous comments. This comment letter outlines areas we feel need additional clarification,

exploration, or consideration prior to adoption of the Proposed Biological Objectives. As required by the State Water Board Public Notice, only comments that were not adequately responded to can be addressed in this letter. Due to time constraints during the San Diego Water Board adoption process in Fall 2020, adequate responses were not provided to all comments. The Copermittees request additional stakeholder engagement to:

1. Improve stakeholder understanding of the potential impacts of the regulation once implemented. This engagement may result in modifications to improve the Proposed Biological Objectives.
2. Discuss and justify the proposal to apply the Proposed Biological Objectives to modified (but not fully hardened) stream segments. Copermittees and other municipalities have cited scientific studies and data analyses that raise significant questions about the assumption that modified streams can consistently comply with the proposed Biological Objectives.
3. Better understand the impact of the Proposed Biological Objectives on the ability of the Copermittees to provide adequate flood control.
4. Understand the definition of ephemeral waterbodies since changes to the definition in the Proposed Biological Objectives only addressed portions of the Copermittees' previous comments.

Response I.2: Please see the discussion in the Introduction, General Response 1, regarding the scientific and legal basis for applying the objective to modified (but not hardened streambed segments), and General Response 3 of the Introduction regarding the public process and stakeholder involvement.

Comment I.3: The Copermittees are committed to conducting studies to help resolve some of the outstanding scientific questions underlying the decision to apply the Proposed Biological Objectives to all modified channels. The Southern California Stormwater Monitoring Coalition (SMC) is launching a 2- to 3-year study in July 2022. Goals of the study are to evaluate the range of expected biological conditions for modified channels, and development of tools for stormwater managers to identify sites with the greatest potential for biological restoration, including information about which restoration efforts – physical habitat, flow, or water quality either alone or in combination – will be most successful. This outcome should provide stormwater managers the tools they need to support healthy streams and to target their restoration, water quality improvement, and flow management activities in locations with the greatest likelihood of success. Flood protection benefits as well as water quality improvements through implementation of best management practices will be addressed. Additionally, the State Water Board's Biostimulatory Substances Objective and Program to Implement Biological Integrity (Program for Biological Integrity) has developed and is continuing to develop additional information that will address outstanding questions.

As a result, the Copermittees request that the State Water Board not act on the Proposed Biological Objectives at this time. This will allow time for the studies to be

conducted and for the Program for Biological Integrity to move into the next stage of translating the science into potential policy approaches. This will result in improvements to the Proposed Biological Objectives and better alignment of proposed local policy with statewide policy.

Response I.3: Please see prior responses to comments regarding SMC studies planned (Response A.8). Please see General Response 2 of the Introduction for a discussion of the state-wide efforts relative to Regional Board Basin Planning.

Comment I.4: Though not preferred, if the State Water Board decides to act on the Proposed Biological Objectives project, we would respectfully request the matter be remanded with specific direction to the San Diego Water Board to:

a. Hold additional, facilitated stakeholder meetings/workshops to address the issues raised as a result of the State Water Board Public Notice. It is further recommended that State Water Board staff involved in the Program for Biological Integrity participate in these meetings/workshops.

b. Remove Modified Streambed Segments from the applicable waterbodies until the abovementioned studies are completed, the results are analyzed, and a stakeholder process is used to inform the policy approach.

i. Modify Chapter 3 to include “Modified Streambed Segments” in Table TBD1. Inland Surface Waters with COLD or WARM Beneficial Uses to Which the Stream Biological Objective Does Not Apply.

ii. Define Modified Streambed Segments within Table TBD1 as “Stream segments which have channel improvements consisting of modified sides and/or bottoms that have been graded, lined with concrete, riprap or other materials and/or have been straightened as shown by as-built drawings or similar evidence”.

iii. Make other conforming edits as necessary to Chapter 4 and the Fact Sheet identifying that the objectives are not applicable to Modified Streambed Segments at this time.

c. Modify the definition of ephemeral in Table TBD-1 as follows:
Stream segments that exhibit only ephemeral flow, which is flow that occurs only during or immediately following rainfall events. Ephemeral stream segments do not include stream segments that exhibit six or more consecutive weeks of continuous flow during the period February 1 and October 31 for at least three of the previous 10 years.

The remainder of this comment letter provides additional detail and support for proceeding together in a stakeholder process to inform completion of a successful Biological Objectives project. Per the notice, this comment letter focuses on “why and in what manner the commenter believes each of the responses provided by the San Diego Water Board to each comment was inadequate or incorrect.” Each of the comments provided in this letter were raised in a timely manner before the San Diego Water Board, either in a comment letter or during the adoption hearing, and all comments address the December 8, 2020 version of the Basin Plan Amendment.

Response I.4: Please see Response E.5. Commenters will also have the opportunity to provide oral comment at the State Water Board's public meeting to consider approval of the San Diego Water Board's Basin Plan amendment. Please see comment response below for more specific responses to comments.

Comment I.5: Comment #1. The adoption process did not provide enough opportunity to fully discuss and vet the Proposed Biological Objectives with stakeholders
The Copermittees do appreciate that the San Diego Water Board held some meetings and provide opportunities for comment on the Proposed Biological Objectives. The Copermittees took advantage of these opportunities and provided comments throughout the adoption process. However, several aspects of the process made it challenging for the Copermittees to effectively understand and provide feedback on the Proposed Biological Objectives. A timeline of the process and the engagement by the Copermittees in that process is shown in Table 1.

(State Water Board note: a table is included in the original comment letter).

While the opportunities provided for engagement were important and productive, several aspects of the process impacted the ability of the Copermittees to effectively review and engage in the development of the Proposed Biological Objectives.

1. Key documents were not available in time to review and consider them in developing our comments:

a. The Response to Comments (RTC) on the Draft BPA Response to Comments was released on October 16, 2020, after the deadline to provide comments on the Revised Draft BPA (September 4, 2020). It was challenging to review the changes to the Draft BPA and provide thoughtful comments without understanding the rationale for recommended changes that were not accepted.

b. The RTC for the Revised Draft BPA was released on November 9, 2020, just nine days before the adoption hearing, and the bulk of the response to comments on the Revised Draft BPA occurred during the adoption hearing. As will be discussed in Comment #2, this timing made it challenging for the Copermittees to respond to specific technical justifications for not making the requested changes.

2. Requests by Copermittees for a facilitated stakeholder process to provide more opportunities for engagement and discussion of the Proposed Biological Objectives were not acted upon by San Diego Water Board staff. The Copermittees provided verbal requests for this process and included this request in their Draft BPA and Revised Draft BPA Comment Letters. In response to the requests, San Diego Water Board staff referenced the stakeholder meetings shown in Table 1, but did not directly respond as to why the request for a facilitated stakeholder process was not considered.

3. The ability to answer questions from and inform the San Diego Water Board members about remaining concerns was disrupted during the adoption hearing by a technical issue and the closure of the public hearing prior to adoption of the Proposed Biological Objectives. A technical issue occurred while the San Diego Water Board members were asking questions to MS4 agency representatives related to the Adoption Hearing Presentation. Due to this technical issue, the questions were interrupted and when the public hearing resumed, rather than returning to the questions, the next speaker was called. As a result, the Copermittees were not able to fully address Board member questions or to hear input from other Board members. The public hearing was closed at the end of the meeting on November 18, 2020. Therefore, on December 8, 2020, when the Proposed Biological Objectives were approved, the Copermittees and other municipal agencies did not have the opportunity to further respond to questions or interact with the San Diego Water Board members.

Adoption of first-of-their-kind biological objectives in California should involve significant conversation and input from the various stakeholders that will be required to implement and comply with the objectives. While we appreciate that the San Diego Water Board and staff provided numerous opportunities to engage on the development of the objectives, most of the opportunities came at the tail end of the process. Between the submittal of comments on the Draft BPA and the release of the Revised Draft BPA, the Copermittees and San Diego Water Board staff did not have any discussions regarding the substance of our comments or our concerns. Given the importance of the Proposed Biological Objectives and the numerous questions regarding the best policy approaches to implement the available science, the Copermittees had hoped for a more robust stakeholder process that evaluated potential alternatives and policy approaches that could both protect the environment and address identified questions and concerns. The lack of engagement with stakeholders between the submittal of comments on the Draft BPA and the Revised Draft BPA compressed timeframe for providing comments on the Revised Draft BPA. Moreover, the delay in providing RTC led to adoption of a Final BPA that did not adequately address comments provided by the Copermittees.
Our primary concern was the lack of engagement between the Draft and Revised Draft BPA. As noted in our comment letter, the Copermittees were willing to commit time and resources to engaging with San Diego Water Board staff to address the concerns outlined in this letter in a joint effort with other stakeholders. Instead, we had a limited window immediately before the adoption hearing to try to address numerous confusing or unresolved issues that remained in the Revised Draft BPA. Additionally, there was a significant shift in approach between the Draft and the Revised Draft BPA.

Given these process challenges, the Copermittees feel there was not adequate opportunity to fully review and respond to information provided to justify not addressing the comments provided on the Revised Draft BPA. Comments #2, #3 and #4 below further explain how the responses to comments provided in our Revised Draft BPA comment letter either in writing or during the adoption hearing did not fully address the comments.

Response I.5: Please see the Overview and General Response 3 of the Introduction for a discussion of the public participation process as well as General Response 2 of the Introduction for a discussion of existing biological objectives. Please see General Response 4 of the Introduction regarding Procedural Concerns with the Public Hearing.

Comment I.6: Comment #2. Technical concerns regarding the application of the Proposed Biological Objectives to modified channels were not adequately addressed.

The Copermittees provided multiple written comments and oral testimony regarding the lack of sufficient scientific evidence in the record to validate statements made that improvements in water quality alone would be sufficient to attain the Proposed Biological Objectives in modified stream segments.

In response to the comments in our Draft BPA comment letter, the Revised Draft BPA included Table TBD1 and additional language excluding fully hardened stream

segments until additional information could be developed regarding the timeline for restoring these stream segments. The rationale for excluding fully hardened stream segments provided in the Staff Report included:

1. Restoration of the physical habitat by removing channel engineering would be needed to attain the Proposed Biological Objectives in fully hardened stream segments.
2. There is insufficient data concerning timetables by which the physical habitat in the stream segments could be restored to achieve the Proposed Biological Objective

Per the Staff Report, other types of modified stream segments were not excluded because these modified channels can meet the Proposed Biological Objectives solely through improvements in water quality. Therefore, physical habitat modifications would not be necessary. The Staff Report justified this statement by pointing to two example waterbodies and citing three articles. In our comment letter on the Revised Draft BPA and during the Adoption Hearing Presentation, the Copermittees provided evidence that other types of modified channels would also likely not be able to attain the Proposed Biological Objectives without removing the modifications. We also noted that insufficient evidence was provided in the Staff Report to demonstrate that water quality improvements alone would result in attainment of the Proposed Biological Objectives in modified stream segments. Following is a summary of the information provided in previous comment letters and during the adoption hearing.

- Channelization is one of the major factors in both urbanized and unurbanized areas causing degradation of biological resources within streams (Petersen et al., 1987[FN1]; Allan and Flecker, 1993[FN2]). Many characteristics of a stream are changed as a result of channelization, including loss of structural complexity, simplified flow patterns, and decreased availability of microhabitats for a wide array of benthic organisms (Petersen et al., 1987).
- Two studies have been conducted by the SMC and SCCWRP that evaluate the biological condition of modified channels. The Staff Report uses the 2015 Report on the SMC Stream Survey (SMC, 2017)[FN3] to demonstrate that all fully hardened channels fall below the 0.79 threshold, but that some partially hardened and earthen channels were able to attain the proposed CSCI threshold (page 59). However, the 2015 SMC Stream Survey (SMC, 2017) identified that only 14% of the waterbodies had scores above 0.79. The 2018-2019 Report on the SMC Stream Survey, published in 2020, provided a more detailed assessment of the CSCI scores in modified channels.[FN3]] The 2020 report distinguished between different types of modifications and demonstrated that several types of modifications other than fully hardened did not have any sites that met the proposed 0.79 threshold. Additionally, the report identified that the modified channels that did meet the threshold were typically mountain streams. Both SMC reports acknowledge that a variety of types of stream modifications, not just entirely hardened waterbodies, can impact biological integrity, independently of pollutant concentrations, indicating that the proposed CSCI threshold may not be able to be attained even if pollutant discharges are addressed.
- As noted in one of the other studies cited in the Staff Report to support the decision to only include fully hardened stream segments, waterbodies that meet the objective are typically in less developed, open space areas. The six streams cited in the 2013 Stein et al. study are located in sparsely populated areas.

• Lower benthic community health for modified channels (not entirely hardened) has been reported in numerous other studies. Horsak et al. (2009)[FN4] found that benthic macroinvertebrates in Central European streams with soft bottoms were progressively impacted as the level of channelization (i.e., bank stabilization) increased and that the degree of riverbank modification was found to be the most important factor explaining the variation in species composition. Many metrics, including decreased species richness, total abundance, proportion of individual functional feeding groups, pattern of distribution of current preference groups, and values of several biotic indexes, all corresponded to the degree of channel modification, while no significant differences in organic pollution were noted across sites. In a study along a segment of the Rio Grande River in New Mexico (Kennedy and Turner, 2011 [FN5]), channelized reaches contained 48% lower density of macroinvertebrates and 47% lower average taxonomic richness than non-channelized reaches. Kairo et al. (2017[FN6]) observed that richness of sensitive taxa, Shannon diversity, mean sensitivity of taxa in the sample, and multi-metric indices were all significantly lower for modified streams than natural sites. In an Illinois study spanning 1995 to 2014, with 3021 sampling events across 567 streams, Blake and Rhanor (2020[FN7]) found significantly lower taxonomic richness, EPT taxa richness, and multi-metric index scores in channelized sites, with these indicators likely impacted by increased siltation and lower availability of quality habitat. Similarly, decreases in overall abundance and species richness in channelized streams relative to natural channels were also observed by Moyle (1976[FN8]), Quinn et al. (1992[FN9]), and Negishi et al. (2002[FN10]).
• The Staff Report includes two examples of waterbodies with modifications that meet the proposed CSCI threshold as the rationale for applying the Revised Biological Objectives to modified stream segments that are not entirely hardened. The two example waterbodies are located in less developed areas and primarily drain open space. These sites are not representative of the majority of modified stream segments in the San Diego Region.
• Analysis of the available CSCI data for waterbodies in the San Diego Region where channel characteristic information exists demonstrates that most modified channels are not currently attaining the biological objectives, while natural waterbodies, both in reference reaches and urbanized areas, were significantly more likely to attain the biological objectives than any type of modified channel (see Figure 1 from the Adoption Hearing Presentation).
• Finally, significant technical questions remain about the ability of modified stream segments to be restored to reference conditions. As noted in the Draft BPA comment letter, restoration of streams has had limited success in highly urbanized settings. A recent meta-analysis of 18 stream restorations in Maryland (which has a higher density of reference sites than southern California) found that biological uplift at locations buried in a landscape of degraded stream habitats is unlikely to occur as there is no opportunity for species adapted to natural environments to reach this location, and that if it does occur, this uplift would occur in a decadal scale rather than the typical 5-year term designated under most permit follow-up monitoring programs Southerland et al., 2017[FN11]). Many other studies have found similar results in terms of both the quality of recovery and time-scale predictions (e.g. Smith et al., 2009[FN12], Parkyn and Smith, 2011[FN13]).

The San Diego Water Board staff provided two sets of responses to these comments. The first was in a written document received on November 9, 2020 (Revised Draft BPA RTC), and verbally during the hearing on November 18, 2020 (Adoption Hearing Responses).

The Revised Draft BPA RTC (pages 6 and 7) includes the following responses to the evidence summarized above:
"No changes to the proposed BPA were made in response to these comments. The revised Staff Report provides the rationale for the revision and why the exclusion for hardened streams was limited to hardened streambed segments as opposed to streams with other types of channel alteration."
Additionally, general statements summarizing the information already in the revised Staff Report were provided, but no additional responses were provided to address the numerous additional studies and information included in the comment letters.
"Hardened streambed segments have been excluded from the Stream Biological Objective to allow development of additional information on the timeframes and associated mechanisms for restoration. In addition, as indicated in the August Revisions to the draft Staff Report, it is not reasonable to expect that hardened streambed segments will be restored to meet the Stream Biological Objective until the substrate hardening the streambed is removed. Because there is no existing regulatory permit framework for the removal of the substrate, additional information is needed on the estimated timeframe and mechanisms to address removal of concrete or other impervious materials (See, CWC section 13242, subd. (b).). Thus, at this time it is appropriate to exclude hardened streambed segments from the proposed Stream Biological Objective."

"Such otherwise modified streams are included in the proposed objective because, in contrast to hardened streambed segments, otherwise modified streams do have timeframes within the existing regulatory permit framework that can be applied through specific permitting actions to address pollutants and flows that are precluding attainment of the Stream Biological Objective. Using the CSCI to restore biological integrity was supported by Scientific Peer Review as a scientifically sound approach. The draft Staff Report identifies prior research in areas with low anthropogenic flow and pollutant impacts, but where the streams are otherwise modified, that had CSCI scores that meet the proposed Stream Biological Objective. This was done to illustrate the appropriateness of this approach and some language has been added to clarify this intent."

Additional responses were provided by San Diego Water Board staff during the adoption hearing in response to San Diego Water Board member comments and the Adoption Hearing Presentation. In summary, the responses included in the following key points (see transcript page 44, lines 4-16, page 46, lines 23-25, page 47, lines 1-10)
1. When waterbodies have a soft bottom and good water quality, good CSCI scores can be attained. However few examples in the Region because waterbodies have poor water quality.

2. Using a map that shows the CSCI scores of waterbodies in the region, several waterbodies with good CSCI scores were cited (Aliso Creek, Buena Vista, Agua Hedionda, lower San Marcos Creek, portions of Escondido Creek, Los Penasquitos, Los Coches Creek, Trabuco Creek, and Rose Canyon Creek).
3. A general statement was made that there are site-specific modifications on a reach scale in waterbodies, but examples specific to the cited waterbodies were not provided. When asked by the San Diego Water Board members if there were “quite a few examples” of modified channels being able to attain the Proposed Biological Objectives, San Diego Water Board staff responded “Yes”.

Given that the majority of the responses were provided verbally during the Adoption Hearing, the Copermittees were not able to fully review the responses or engage with the San Diego Water Board staff or members regarding the responses. Subsequent to the adoption hearing, the Copermittees have had an opportunity to further investigate the responses provided at the adoption hearing and have concluded that the responses were inadequate for the following reasons:
1. The responses do not address the numerous studies cited in comment letters that contradict the assertion that improvements to water quality alone will result in modified stream segments attaining the Proposed Biological Objectives.
2. Of the nine waterbodies cited in the Adoption Hearing as having modified stream segments that met the Proposed Biological Objectives, only three of the cited waterbodies were found to have sites that met the Proposed Biological Objectives and were also described as being located in a modified stream segment. For those waterbodies, only three of the twenty nine samples collected in modified stream segments met the Proposed Biological Objectives. The three sites that met the Proposed Biological Objectives had either a natural shape or less than 5 meters of modifications and are not representative of the majority of modified streams in San Diego County. The Copermittees agree that some modified stream segments can attain the Proposed Biological Objectives; however, studies are needed to determine what types of modified stream segments may be able to attain the Proposed Biological Objectives without removing the modifications. The few cited examples do not provide substantial evidence needed to determine that all modified channels can attain the Proposed Biological Objectives just through water quality improvements.
3. When reviewed in the aggregate, modified channels have CSCI scores that are similar to fully hardened channels. These scores are statistically lower than natural waterbodies, regardless of water quality (See Figure 1).

In addition, both the Revised Draft BPA RTC and the Adoption Hearing Responses from San Diego Water Board staff indicated that the Peer Review supported the application of the Proposed Biological Objectives to modified stream segments. However, because the Draft BPA that was reviewed by the Peer Reviewers did not include this distinction between fully hardened and modified stream segments, the Peer Reviewers were not asked to consider this question.

(State Water Board note: a figure is included in the original comment letter).

The data analysis and cited articles demonstrate that there is not sufficient evidence at this time that improvements in water quality without corresponding channel restoration will result in attainment of the Proposed Biological Objectives in modified stream segments. Information does not exist right now to support determining where the control of pollutants may or may not attain the objectives and where restoration may be necessary to attain the objectives. The uncertainty in timing and the need for restoration to attain the objectives cited in the Staff Report as the primary reasons for excluding fully hardened stream segments apply equally to modified stream segments.

The Copermittees are requesting that additional time be provided to answer questions about whether restoration of modified stream segments is needed to attain the Proposed Biological Objectives. We are aware of at least two efforts that will help answer this question. The State Water Board has funded SCCWRP to evaluate the biological potential of modified channels. Additionally, in response to San Diego Water Board member questions regarding whether municipalities would be willing to fund the necessary studies to answer the questions posed in the various comment letters, municipal members of the Southern California Monitoring Coalition have been spearheading efforts to fund the requested study. The goal is to start the study in 2022.

Response I.6: Please see the Introduction for a discussion of modified streams and the Basin Plan amendment. Please also see the Introduction for a discussion of modified streams and CWC section 13241 and 13242 in General Response 1. Please see General Response 3 of the Introduction for an overview of the public process, including response to comments at the November 2020 Board Hearing. Additionally, please see responses to the County of Orange Copermittees for a discussion regarding similar comments, including for further studies planned and prior referenced studies regarding water quality.

In regard to the statement regarding San Diego Water Board questions about funding studies, a review of the oral comments from the Public Hearing found that board members did not, as the comment states, ask about the willingness to fund a study alone. San Diego Water Board Chair Abarbanel asked the representative of the Phase I Copermittees about their willingness to also include funding for the removal of concrete in streams if the San Diego Water Board postponed consideration of the Basin Plan amendment to wait for such studies (see November 18, 2020 hearing Tr. pp. 96-98). The City of Escondido representative did not make a commitment in response to the board member question but proffered a willingness to study the long-term evolution of hardbottom channels in the landscape, and referred to supporting prior bioassessment efforts in hardened channels as showing this willingness. The representative also identified soft-bottomed streams as a first priority.

Comment I.7: Technical concerns regarding conflicts between flood control requirements and the Proposed Biological Objectives.

In addition to our stormwater quality management requirements, the Copermittees have various obligations to provide adequate flood control. As noted in the previous comment, it is likely that attaining the Proposed Biological Objectives will require a significant amount of waterbody restoration and removal or modification of existing flood control facilities.

However, as noted in the Revised Draft BPA, restoration can potentially conflict with fulfillment of certain flood control obligations. Flood control facilities have been legally funded and constructed consistent with all required federal, state, and local regulatory authorizations and permits, and can include concrete and other structural materials that were not designed to support a biological community. These flood control facilities are not limited to entirely hardened stream segments. In order to ensure hydraulic capacity and flood protection, such engineered and hardened conveyances also require regular maintenance. Such maintenance requires the removal of excess sediment and plant materials that interfere with hydraulic function and capacity. Therefore, the establishment of a biological community within many of these systems can conflict with the intended, essential, and legally authorized purpose of these facilities. These constraints lead to a conflict between the protection of life and property from flooding and attainment of biological objectives. As noted in SMC, 2017 on page 5, “These preliminary results suggest that tradeoffs between ecological health and flood protection may be unavoidable.”

In many cases, engineered features of a waterbody segment cannot be modified without increasing the risk of flooding. The Federal Emergency Management Agency (FEMA) has minimum floodplain management standards for communities participating in the National Flood Insurance Program (NFIP). Floodplain management plans are developed to meet these requirements and are utilized to define flood risks. These plans also drive development of floodplain ordinances and requirements that impact development. The plans are developed based on existing flood control structures and the assumption that the structures will be maintained to prevent the loss of life and property. As a result, it is not a simple exercise to plan to remove flood control structures to achieve the Proposed Biological Objectives.

The Draft BPA RTC addressed the maintenance discussion in the comment but did not address the substance of the comments regarding the conflict between flood control obligations and attaining the Proposed Biological Objectives.

“Please see Response #1 regarding clarifications of applicability of the proposed Stream Biological Objective. The maintenance activities described in the comment are subject to obtaining CWA Section 401 Water Quality Certifications and/or Waste Discharge Requirements (WDRs) under Porter-Cologne. The 401 Certification (generally issued by the Executive Officer) and/or WDRs (issued by the San Diego Water Board), will ensure that proposed discharges of dredge and fill material protect existing beneficial uses, regardless of the adoption of the Stream Biological Objective. While the scope of the proposed Stream Biological Objective has been modified as described in Response #1, it should be noted that biological objectives can be used to

more accurately assess the potential impacts associated with proposed dredge and fill activities, and thus more accurately prescribe compensatory mitigation requirements." In response to the comments related to a conflict between flood control requirements and the Proposed Biological Objectives and questions raised by the San Diego Water Board members, during the November 18, 2021, hearing, San Diego Water Board staff responded that the hydromodification and new development requirements in the MS4 permit would be sufficient to address these concerns (transcript page 49, lines 2-15).

While the Copermittees agree that hydromodification and new development requirements will assist with reducing peak flows in waterbodies in the region, they will not be sufficient to address flood control requirements in areas that are already developed because they typically address smaller, more common storm volumes (e.g., 85th percentile flow), whereas flood control structures are sized to address larger, infrequent storms (e.g., 100-year storm).

There is a need to reconcile the reality of the need to provide flood control with the impacts of these flood control facilities on the ability of waterbodies to attain the Proposed Biological Objectives prior to approval of the Final BPA.

Response I.7: Please see response to comments from the County of Orange Copermittees (Response F.13), which provided similar comments regarding flood control and hydrology. Please also see General Response 1 of the Introduction.

Comment I.8: Comment #4. Technical concerns regarding the definition of ephemeral streams included in the Proposed Biological Objectives

The Proposed Biological Objectives do not apply to ephemeral streams but do apply to seasonal streams. The rationale for including seasonal streams is based on studies verifying that the sampling protocols and CSCI scores could be appropriately applied in these waterbodies. However, the definition that is used to distinguish between these two types of waterbodies is problematic for effective monitoring and interpretation of data collected in some waterbodies. Copermittees requested a different definition that provides more certainty that waterbodies meeting the definition are truly seasonal, not ephemeral, and can be appropriately sampled.

The December 8th Proposed Biological Objective applies to perennial and seasonal streams and Table TBD1 of Chapter 3 provides definitions of waterbodies that are excluded from the Proposed Biological Objectives. The currently proposed definition of "ephemeral" includes waterbodies that flow for four weeks or less during the index period. Ephemeral waterbodies have been excluded from the Biological Objectives because the sampling methods and CSCI are not applicable to ephemeral waterbodies (Staff Report, page 54). Waterbodies that only flow for four weeks between February 1 and October 31 would likely not be able to be sampled three to four weeks after a storm event and before the end of their hydrological cycle, making collection of representative samples from these waterbodies challenging, if not impossible. A four-week flow period is too short to collect a representative sample to compare to the proposed CSCI

threshold. While research has shown that dried streams can recolonize quickly upon resumption of flow in terms of total macroinvertebrate abundance and richness (Churchel and Batzer[FN14], 2006, Gore, 1979[FN15]; Malmqvist et al., 1991[FN16]), studies have also shown that the full complement of community composition often takes more than four weeks to develop. Churchel and Batzer (2006) found that the community composition of streams sampled 15 days after flow had started was significantly different than those same streams sampled at 45 days. In every stream they sampled, a large increase in the number of colonizing taxa was observed from 15 to 45 days post-wetting, with 14 to 21 new taxa being found per stream. This short-term evolution of the community composition at the beginning of a flow cycle can have a significant impact on the magnitude of a stream's multi-metric score (i.e., CSCI score).

The Copermittees requested a modification of the San Diego Water Board's definition of a seasonal stream to reflect this research by altering the minimum continuous flow period from a minimum of 4 weeks to a "minimum of 6 weeks of continuous flow between Feb 1 and Oct 1". The 6-week flow period is also supported by studies that show great variation in the period of time required for the process of recolonization to be complete (Williams and Hynes, 1977a[FN17]; Gore, 1979; Minshall et al., 1983[FN18]; Malmqvist et al., 1991; Feminella, 1996[FN19]; Wood and Petts, 1999[FN20]; Shivoga, 2001[FN21]). Concomitant with the change in the definition of seasonal streams being narrowed, the Copermittees request that the definition of ephemeral streams as it is currently presented in Chapter 3, Table TBD1 of the Proposed Biological Objectives be expanded such that ephemeral stream segments do not include stream segments that exhibit six (instead of four) or more consecutive weeks of continuous flow during the period of February 1 to October 1. The Copermittees also request that the time period for determining whether or not a waterbody is defined as ephemeral be modified. Waterbody flow regimes may change over time due to climate change, changes in land use, and implementation of control measures. Using flow measurements from any single year since 1999 will keep waterbodies that transition from seasonal to ephemeral from meeting the definition if they had any years with sufficient flow since 1999. There are likely circumstances where a stream that is better defined as an ephemeral stream would fall into the seasonal category based on the current definition, such as an ephemeral stream that very rarely has sustained flow but could meet the criteria of 4 weeks of continual flow after February 1 in a year with strong late-season storms (e.g., a once-a-decade El Niño condition). Streams of this nature are unlikely to develop a robust and diverse BMI community if they are in small subwatersheds and are isolated from more perennial upstream colonization sources. Instead, the Copermittees request that the definition of ephemeral in Chapter 3, TBD1 for the Proposed Biological Objectives also be modified from "in any year beginning in 1999" to a "minimum of three years within the previous 10-year period".

The requested modifications were not accepted by the San Diego Water Board staff. The rationale was provided in the Revised Draft BPA RTC. However, the responses focused on the rationale for not excluding seasonal streams and the concerns regarding sampling these streams. However, the responses did not specifically address the substance of the comments or provide additional support to justify the ephemeral

definition. Per the Revised Draft BPA RTC, the definition comes from Mazor et. al 2015. While Mazor et. al 2015 discusses the four-week threshold for monitoring seasonal streams that is included in the sampling protocols for bioassessment monitoring, the report does not provide a definition for ephemeral streams and in fact supports the Copermittees' comments that decreased flow can negatively impact CSCI scores.

Given that a study does not exist to clearly identify the definition of ephemeral that should be used for the Proposed Biological Objectives, the Copermittees are requesting the change to clarify the definition.

Response I.8: The comment requests that the definition of ephemeral (for stream exclusion) be modified from a minimum of 4 to 6 weeks of flow, and that the time period for the determination of ephemeral be modified to include those that exhibit flow for at least 3 of the last 10 years.

The record for development of the Amendment shows that the San Diego Water Board considered the commenter's prior request to extend the minimum flow period from 4 to 6 weeks in defining seasonal stream segments in the proposed objective but declined to do so. The San Diego Water Board explained that it based use of 4 weeks minimum flow period on regional-specific studies and the four-week period was included in the scope of the request for scientific peer review for evaluation of the use of the CSCI in seasonal streams. Peer reviewers did not identify the use of a 4 week period as inappropriate. (See San Diego Water Board Response to Peer Review Comments document, September 2020, p. 16, Comment of Dr. Patrick Edwards, ":
"I agree with the findings of the Mazor et al 2015 report; which states that the CSSI [sic] methods are not likely to be affected will not be affected by seasonal drying of stream if certain sampling conditions are met including adequate flow at the time of the sample and a at least 4 weeks since the last drying event.")

The commenter reiterates a prior request to the San Diego Water Board to change the determination period from "be modified from "in any year beginning in 1999" to a "minimum of three years within the previous 10-year period." A change was made to the definition of "ephemeral stream segments" and is included in the Biological Objective adopted by the San Diego Water Board. The Biological Objective defines ephemeral stream segments as follows:

"Ephemeral stream segments do not include stream segments that exhibit four or more consecutive weeks of continuous flow during the period February 1 and October 31 in any year within the previous 10 years."

The commenter's concerns about the practical ability to sample streams meeting only the minimum four weeks continuous flow during the period February 1 and October in any year within the previous 10 years are addressed by changes made in response to prior comments on implementation and site-specific applicability (see Chapter 4 of the BPA, section I.B).

Comment I.9: Conclusions
As discussed in this comment letter, the Copermittees request additional stakeholder engagement to discuss the key issues identified in this letter prior to further consideration of the Proposed Biological Objectives. Additionally, the Copermittees have identified several comments that were not adequately or were inaccurately addressed by San Diego Water Board staff during adoption of the Proposed Biological Objectives. The unaddressed comments will create significant challenges for implementing and interpreting the objectives.

Many of the technical comments discussed in this comment letter are issues that the State Water Board's Program of Biological Integrity has been working to address. The Program of Biological Integrity is being developed using a structured and facilitated stakeholder process, similar to the one requested by the Copermittees for the Proposed Biological Objectives. Additionally, many of the unresolved issues are items that have been discussed and are still being resolved at the state level in the development of the Program of Biological Integrity.

The Copermittees highlighted several items in our Draft BPA comment letter where the Program of Biological Integrity was considering ideas and approaches that were not being considered in the Proposed Biological Objectives. We also highlighted areas that were challenging for a single Regional Water Board to address that would be better addressed at the State level. While no one can predict the approach that will ultimately arise from the Statewide Program of Biological Integrity, the State process is likely to address the comments outlined in this letter. Adopting the Proposed Biological Objectives now without resolving the issues will result in challenges for the Copermittees who will need to implement these objectives ahead of others in the State.

Response I.9: Please see General Responses 2 and 3 of the Introduction as well as the discussion of overall comments in the Introduction Overview Section. The San Diego Water Board adequately responded to the comments during the regional water board process.

J. Commenter: Mr. John Odermatt

Note: Mr. Odermatt submitted 2 separate email comments. These have been combined here for brevity.

Comment J.1: Biological objectives seem like good supporting information for watershed planning. It is not clear how the Water code provides the boards with authority to do administrative enforcement for conditions without clear violations of "water quality objectives ". It seems like the courts will rule against enforcement actions based solely on biological objectives without water quality objectives and creation of a condition of pollution or nuisance.

If the role of biological objectives are to be effective, the State Board should adopt the process for statewide application. Watersheds often cross regional boundaries.

Response J.1:
Comment noted. Please see the Introduction section for a discussion of the statewide effort relative to the San Diego Water Board BPA in General Response 2.

Comment J.2: How can the public be assured that metrics used to assess biological objectives will be accurately representing “water quality”?

The metrics need to be free from effects of predation, seasonal and annual cycles of invertebrate communities. How is this accomplished and what level of certainty can you assign to the result?

Response J.2: The metric used by the BPA is the California Stream Condition Index (CSCI), which is a peer-reviewed and scientifically published index of biological condition that uses stream benthic macroinvertebrates and incorporates natural variability. The use of the CSCI to develop the objective in the Basin Plan amendment was supported by scientific peer review for the project (see San Diego Water Board Response to Peer Review Comments, September 2020).

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