ATTACHMENT 2 TO RESOLUTION NO. R8-2012-0001

Proposed Basin Plan Amendments ("clean" version)

(NOTE: Changes to the recreation standards for inland fresh waters within the Santa Ana Region and related explanatory narrative and implementation strategies are proposed to be incorporated in Chapter 3, Beneficial Uses, Chapter 4, Water Quality Objectives, and Chapter 5, Implementation. Certain surface waters not currently listed in the Basin Plan are proposed to be added, changes in reach designations for one of the listed waters are proposed, and two reservoirs no longer in existence are proposed to be removed. Other changes are proposed. If the Basin Plan Amendment is approved, corresponding changes will be made as necessary to the Table of Contents, the List of Tables, page numbers, and page headers in the Plan. Formatting changes, including page numbers, page headers and table and figure identifiers may be modified for the purposes of possible re-publication of the Basin Plan. However, no substantive changes to the text, tables or figures would occur absent a Basin Plan amendment.)

Attachment 1 to Resolution No. R8-2012-0001 shows the proposed amendments using underline/strike-out format.

CHANGES TO CHAPTER 3 – BENEFICIAL USES

Amend CHAPTER 3 – BENEFICIAL USES, INTRODUCTION, second paragraph:

Section 303(d) of the federal Clean Water Act (33 U.S.C**.** § 1313) defines water quality standards as consisting of the uses of the surface (navigable) waters involved, the water quality criteria which are applied to protect those uses and an antidegradation policy. Under the Porter-Cologne Water Quality Control Act (California Water Code, Division 7, Chapter 2 § 13050) the uses of waters and water quality criteria are separately considered as beneficial uses and water quality objectives. Beneficial uses and water quality objectives are to be established for all waters of the state, both surface and subsurface (groundwater).

Amend CHAPTER 3 – BENEFICIAL USES, BENEFICIAL USES section, last sentence of second paragraph, third paragraph and fourth paragraph; add new paragraph:

Shortly thereafter, this revised Beneficial Use table was reviewed again and changes were made, including the addition of the Water Contact Recreation (**REC1**) use for some waterbodies, the revision of some Beneficial Use designations from intermittent (I) to existing or potential (X), and the addition of more waterbodies (RWQCB Resolution No. 89-99).

In the update to the Basin Plan approved by the Regional Board in 1994 (RWQCB Resolution No. 94-1), further changes to the Beneficial Use table were made. Significant waterbodies not previously identified were included and their beneficial uses were designated. Certain of these waters were excepted from the **MUN** designation. The designation **RARE** was added where substantial evidence indicated that the waterbody supports rare, threatened or endangered species (Appendix II). Certain known wetlands in the Region were listed in a new waterbody category (see wetlands discussion below). A revised list of Beneficial Uses was developed as part of a comprehensive statewide update of all Basin Plans. In all, twenty-three beneficial

uses were defined statewide. This list was used to update the list of beneficial use definitions in the Basin Plan. Nineteen of the beneficial uses were recognized. (The four not utilized are Migration of Aquatic Organisms, Freshwater Replenishment, Inland Saline Water Habitat and Aquaculture). One beneficial use specific to the Region, Limited Warm Freshwater Habitat, was added, bringing the total number of beneficial uses recognized in the Santa Ana Region to twenty.

In response to recommendations from the Stormwater Quality Standards Task Force, formed in response to the 2002 triennial review of the Basin Plan, changes to recreation water quality standards were approved by the Regional Board in 2012 (RWQCB Resolution No. R8-2012-0001). These modifications included the addition of "Primary Contact Recreation" as an alternative name for the REC1 beneficial use (see BENEFICIAL USE DEFINITIONS, below) and added narrative clarifying the nature of REC1 activities and the bacteria objectives established to protect them (see RECREATION BENEFICIAL USES, below). The changes also included differentiating inland surface REC1 waters on the basis of frequency of use and other characteristics for the purposes of assigning applicable single sample maximum values (see Chapter 5). The REC1/REC2 designations for specific inland surface waters were revised based on the results of completed Use Attainability Analyses (see RECREATION BENEFICIAL USES, below). Revised water quality objectives to protect the REC1 use of inland freshwaters were also approved (see Chapter 4), and criteria for temporary suspension of recreation use designations and objectives were identified (see RECREATION BENEFICIAL USES , below, and Chapter 5, Implementation, Recreation Water Quality Standards, *High Flow Suspension*). The 2012 Basin Plan revisions to incorporate the changes in recreation standards included the addition of certain waters to the list of the Region's waters in Table 3-1 and the designation of beneficial uses for those waters. Where appropriate, the added waters were excepted from the MUN designation. Laguna and Lambert reservoirs, which no longer exist, were deleted from the list.

The region's beneficial uses are listed and described below.

Amend CHAPTER 3 – BENEFICIAL USES, BENEFICIAL USE DEFINITIONS, Water Contact Recreation (REC 1*):

Water Contact Recreation **(REC 1: Primary Contact Recreation***)

Amend CHAPTER 3 – BENEFICIAL USES, BENEFICIAL USE DEFINITIONS, Non-contact Water Recreation (REC 2*):

Non-contact Water Recreation (**REC2: Secondary Contact Recreation*)**

Amend CHAPTER 3 – BENEFICIAL USES, footnote "*" (associated with REC1 and REC2 (i.e., REC1*, REC2*) beneficial use definitions):

* The **REC 1** and **REC 2** beneficial use designations assigned to surface waterbodies in this Region should not be construed as encouraging or authorizing recreational activities. In some cases, such as Lake Matthews and certain reaches of the Santa Ana River and its tributaries, access to the waterbodies is prohibited by other agencies because of potentially hazardous

conditions and/or because of the need to protect other uses, such as municipal supply or sensitive wildlife habitat. Where **REC 1** or **REC 2** is indicated as a beneficial use in Table 3-1, the designations are only intended to indicate that such uses may occur or that the water quality of the waterbody may be capable of supporting recreational uses unless a Use Attainability Analysis demonstrates otherwise and the Regional Board amends the Basin Plan accordingly.

Amend CHAPTER 3 – BENEFICIAL USES - add the following section after the BENEFICIAL USE DEFINITIONS section:

RECREATION BENEFICIAL USES

As part of the work that led to the adoption of recreation standards amendments in 2012, the Stormwater Quality Standards Task Force considered the merits of and various alternatives for modifying the REC1 definition to improve clarity and precision. This was based on careful consideration of the scientific basis of the 1986 USEPA bacteria criteria for REC1 waters and earlier criteria guidance. Specifically, as discussed in the 1986 criteria document and other USEPA guidance and regulation (see, for example, USEPA 2004), USEPA's recommended bacteria quality criteria were intended to reduce the risk of waterborne illness to acceptable levels for those engaged in swimming or similar recreational activities where immersion and ingestion of water are likely. The Stormwater Quality Standards Task Force documentation, which essentially comprised the administrative record for the 2012 recreation standards amendments, includes a memorandum to the Task Force that was prepared by Camp Dresser and McKee, Inc. (CDM), one of the Task Force consultants ("Scientific Basis for EPA Recommended Water Quality Objectives for Bacteria", CDM, April 10, 2006). This memorandum discusses the scientific basis of the criteria, as well as that of the Basin Plan water quality objectives for fecal coliform in freshwaters that were replaced by the *E. coli* objective in the 2012 Basin Plan amendments. The administrative record also documents the extensive consideration of alternatives appropriate to clarify the REC1 definition to reflect the underlying scientific assumptions of the USEPA criteria, and expectations regarding the likelihood of immersion and ingestion.

In response to State Board staff comments that a consistent statewide definition for REC1 should be maintained absent statewide consideration of revisions to the definition, the specific recommendations developed by the Task Force for refining the definition of that use were not included in the recreation standards amendments adopted by the Regional Board in 2012. These Task Force recommendations should be considered on a statewide basis. Until such time as such statewide consideration occurs, it was thought sufficient for the purposes of the 2012 amendments to add reference to "primary contact recreation" in the name of the REC1 use (see BENEFICIAL USE DEFINITIONS) and to incorporate the following clarifying discussion.

USEPA has provided explicit direction regarding the types of recreational activities to which the USEPA bacteria guidance should be applied. Specifically, USEPA's 1986 criteria (and prior bacteria criteria guidance) are intended for "Bathing (Full Body Contact) Recreational Waters". The 1986 criteria document states:

"In 1986, EPA published Ambient Water Quality Criteria for Bacteria-1986. This document contains EPA's current recommended water quality criteria for bacteria to protect people from gastrointestinal illness in recreational waters, i.e. waters designated for primary contact recreation or similar full body contact uses. States and Territories typically define primary contact recreation to encompass recreational activities that could be expected to result in the ingestion of, or immersion in, water, such as swimming, water skiing, surfing, kayaking or any other recreational activity where ingestion of, or immersion in, the water is likely."

As defined statewide, the REC1 use includes recreational activities involving body contact with water where ingestion of water is reasonably possible including, but not limited to: swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing and use of natural hot springs.

The Regional Board has always considered the REC1 designation as functionally equivalent to USEPA's description of primary contact recreation. In practice, the phrase "reasonably possible" is synonymous with the term "likely" when evaluating the probability of ingestion when persons swim or engage in similar body contact recreation. To reflect this, reference to "primary contact recreation" in the REC1 nomenclature was incorporated as part of the 2012 recreation standards amendments, as noted above.

USEPA's rule promulgating *E. coli* objectives for recreational freshwaters in certain Great Lakes states (USEPA 2004, p. 67222) provides that the pathogen indicator objectives apply "only to those waters designated by a State or Territory for swimming, bathing, surfing or similar water contact recreation activities, not to waters designated for uses that only involve incidental contact." USEPA defines this "secondary contact" recreation as "those activities where most participants would have very little direct contact with the water and where ingestion of water is unlikely. Secondary contact activities may include wading, canoeing, motor boating, fishing, etc." (USEPA 2002, p.39).

The Basin Plan definition of the REC 2 beneficial use is functionally-equivalent to that described by USEPA as "Secondary Contact Recreation." Therefore, the 2012 recreation standards amendments added "Secondary Contact Recreation" to the REC2 nomenclature (see BENEFICIAL USE DEFINITIONS). The Regional Board will rely on federal regulation and guidance to determine which waterbodies should be designated REC 2. Relatively brief incidental or accidental water contact that is limited primarily to the body extremities (e.g., hands or feet) is generally deemed REC 2 because ingestion is not considered reasonably possible.

Some confusion may arise as to whether wading and fishing should be considered primary contact recreation (REC1) activities or secondary contact recreation (REC2) activities. Wading and fishing cover a multitude of activities involving a wide range of potential water contact. To avoid misapplication of the *E. coli* objectives, it is important to apply USEPA's recommended criteria for primary contact recreation only where ingestion of water is reasonably possible. For example, fly-fishing in the middle of a stream or fishing from a float tube would be considered REC-1 activities as it is likely that the person fishing may ingest water. On the other hand, fishing from a riverbank or lake dock is more appropriately deemed REC-2 activity because ingestion, while conceivable, is not considered reasonably possible. Similarly, walking beside or crossing through a shallow creek and getting ones

feet wet is also not considered water contact recreation (REC-1.) This activity is more akin to beachcombing, a recognized "non-contact recreation" (or REC-2) activity. It is not reasonably possible to ingest appreciable quantities of water by merely touching or being splashed by the water. The *E. coli* objectives established in this Basin Plan are not intended or needed to protect this and similar incidental contact. However, a child sitting in the middle of a low flow creek playing in the water represents the sort of activity that is encompassed by the REC-1 use designation. The Basin Plan *E. coli* objectives properly apply to this type of activity. (State Board staff spoke to and confirmed these views in a message to Regional Board staff on April 12, 2012. This message is part of the administrative record for the recreation standards amendments approved in 2012.)

The Regional Board's longstanding approach to determining appropriate recreational use classifications is entirely consistent with federal guidance. A review of historical records indicates that USEPA relied heavily on pre-existing definitions to describe primary and secondary contact recreation:

"The Subcommittee defines primary contact recreation as activities in which there is prolonged and intimate contact with the water involving considerable risk of ingesting water in quantities sufficient to pose a significant health hazard. Examples include wading and dabbling by children, swimming, diving, water skiing, and surfing. Secondary contact sports include those in which contact with the water is either incidental or accidental and the probability of ingesting appreciable quantities of water is minimal." ("Report of the Committee on Water Quality Criteria" (aka "Green Book"), US Department of Interior, Federal Water Pollution Control Administration, 1968, p. 11)

In summary, some forms of wading and fishing are considered REC-1 because immersion is likely and ingestion is reasonably possible. Other forms of wading and fishing, involving only limited incidental or accidental water contact (primarily to hands and feet) are considered REC-2 because immersion is unlikely and ingestion is not reasonably possible.

Acknowledging that California's REC1 definition has always been considered synonymous with the federal definition of Primary Contact Recreation ensures that the *E. coli* objective, adopted as part of the 2012 recreation standards amendments, is applied in a manner that is neither more nor less stringent than the federal Clean Water Act requires.

Pursuant to the federal Clean Water Act and implementing regulation, all defined waters of the United States are presumed to be capable of supporting Primary Contact Recreation and shall be designated REC 1 unless a Use Attainability Analysis (UAA) demonstrates that this use is not an existing use and is not attainable and the Basin Plan is revised accordingly. A suite of factors must be considered when UAAs are conducted to determine whether to downgrade or delete the REC 1 use from any waterbody. The relevant factors are identified in federal and state regulations.

Where the Regional Board determines, through a UAA and requisite public hearing(s), that a waterbody or portion of a waterbody has not supported and cannot support REC 1 or REC1 and REC 2 uses, that waterbody or portion of a waterbody will be identified with table note "u" in Table 3-1, below, and, for clarity, also listed in Table 3-2. Waters designated REC 2 but not REC 1, and waters not designated either REC1 or REC2, will be reassessed as part of the

Basin Plan triennial review process to determine whether conditions have changed sufficiently to warrant one or both of these recreation use designations. This reassessment does not necessitate a new UAA; it is sufficient to determine whether there has been a significant change in the factor or factors on which the Regional Board originally relied to justify reclassifying each waterbody as something other than REC-1. Where such a change has occurred, revision of the recreational use designations will be considered through the Basin Planning process.

Use Attainability Analyses were conducted for several stream segments as part of the work of the Stormwater Quality Standards Task Force. Technical reports to support these UAAs were prepared by CDM and are a part of the administrative record of the 2012 recreation standards amendments. These UAA reports were intended not only to provide the technical and factual data necessary to consider recreation standards changes for the waters evaluated, but also to serve as informal "templates" to guide similar stream assessment studies in the future. In particular, the UAA reports illustrate the type of scientific and technical documentation needed to meet federal and state requirements for subcategorizing or reclassifying a recreational use. Regional Board staff relied heavily on the data and analyses provided in the CDM technical UAA reports in formulating specific recommendations for recreation beneficial use changes for these waters (CRWQCB – Santa Ana Region, "Staff Report, Basin Plan Amendments, Revisions to Recreational Standards for Inland Fresh Waters in the Santa Ana Region", January 12, 2012). The approved changes are summarized in Table 3-2 and reflected in Table 3-1.

Recreational use of certain inland surface waters is precluded under certain flow conditions that make recreational activities unsafe. Recreation use designations (and the applicable pathogen and pathogen indicator objectives) are temporarily suspended when such conditions exist. The criteria for suspension of recreation uses (and objectives), and for termination of the suspension, are described in detail in Chapter 5, Implementation, Recreation Water Quality Standards, *High flow suspension of recreation standards*). Temporary suspensions of recreation standards do not apply to waters other than the inland surface streams identified in Appendix VIII and Appendix IX.

Amend CHAPTER 3 – BENEFICIAL USES, BENEFICIAL USE TABLE, first and second paragraphs; add footnote; add new paragraph after the second paragraph:

Table 3-1 lists the designated beneficial uses for waterbodies within the Santa Ana Region. In this table, an "X" indicates that the waterbody has an existing or potential use[2]. Many of the existing uses are well-known; some are not. Lakes and streams may have potential beneficial uses established because plans already exist to put the water to those uses, or because conditions (*e.g.,* location, demand) make such future use likely. The establishment of a potential beneficial use serves to protect the quality of that water for such eventual use.

> **Add footnote 2:** Water Code Section 13241 identifies the factors that the Regional Board must consider, at a minimum, when establishing water quality objectives to ensure the reasonable protection of beneficial uses and the prevention of nuisance. Among these factors are the "Past, present, and *probable future* beneficial uses of

water. (CWC 13241(a) [italics added] “Potential” beneficial uses are assumed to be the same as “probable future” beneficial uses.

An “I” in Table 3-1 indicates that the waterbody has an intermittent beneficial use. This may be because water conditions do not allow the beneficial use to occur year-round. The most common example of this is an ephemeral stream. Ephemeral streams in this region include, at one extreme, those which flow only while it is raining or for a short time afterward, and at the other extreme, established streams which flow through part of the year but also dry up for part of the year. While such ephemeral streams are flowing, beneficial uses may be made of the water. Because such uses depend on the presence of water, they are intermittent. Waste discharges which could impair intermittent beneficial uses, whether they are made while those uses occur or not, are not permitted.

As described above, Table 3-2 shows inland surface waters for which Use Attainability Analyses demonstrated that the REC1 or REC1 and REC2 uses are neither existing nor attainable. These waters, designated with a “u” in in the REC1 column and also, in some cases, the REC2 column in Table 3-1, will be evaluated at least once every three years to determine whether conditions have changed such that these use designations are applicable to these waters and that the Basin Plan should be amended accordingly.

Amend CHAPTER 3 – BENEFICIAL USES, REFERENCES:

CDM. Memorandum to Stormwater Quality Standards Task Force re “Scientific Basis for EPA Recommended Water Quality Objectives for Bacteria”, April 10, 2006

CRWQCB – Santa Ana Region, “Staff Report, Basin Plan Amendments, Revisions to Recreational Standards for Inland Fresh Waters in the Santa Ana Region”, January 12, 2012.

City of Big Bear Department of Water and Power, “Final Report – Task 4, Revised Water Quality Objectives, Big Bear Ground Water Basins,” April 1993.

United States Department of Interior. Federal Water Pollution Control Administration. Report of the Committee on Water Quality Criteria (aka “Green Book”). 1968.

United States Environmental Protection Agency “Ambient Water Quality Criteria for Bacteria – 1986” EPA 440/5-84-002, January 1986.

United States Environmental Protection Agency. “Implementation Guidance for Ambient Water Quality Criteria for Bacteria [Draft]. May 2002.

United States Environmental Protection Agency “National Guidance-Water Quality Standards for Wetlands,” EPA 440/s-90-011, July 1990.

United States Environmental Protection Agency “Water Quality Standards for Coastal and Great Lakes Recreation Waters; Final Rule” (40 CFR 131.41), November 2004.

Governor Pete Wilson, “California Wetlands Conservation Policy,” August, 1993.

CHAPTER 3 TABLES: Amend CHAPTER 3 – BENEFICIAL USES, TABLE 3-1, as shown in the following pages.

Add Table 3-2 Summary of Approved Use Attainability Analyses (UAAs) to Re-Designate Recreational Beneficial Uses in some Inland Waterbodies

Table 3-1 BENEFICIAL USES

OCEAN WATERS	BENEFICIAL USE																				Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	MAR	SHEL	EST	Primary	Secondary
NEARSHORE ZONE*																						
San Gabriel River to Poppy Street in Corona Del Mar	+		X			X		X	X	X					X	X	X	X	X		801.11	
Poppy Street to Southeast Regional Boundary	+					X		X	X	X				X	X	X	X	X	X		801.11	
OFFSHORE ZONE																						
Waters Between Nearshore Zone and Limit of State Waters	+		X			X		X	X	X					X	X	X	X				

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

* Defined by Ocean Plan Chapter II B-1.: "Within a zone bounded by shoreline and a distance of 1000 feet from shoreline or the 30-foot depth contour, whichever is further from shoreline…"

Table 3-1 BENEFICIAL USES - Continued

BAYS, ESTUARIES, AND TIDAL PRISMS	BENEFICIAL USE																				Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	MAR	SHEL	EST	Primary	Secondary
Los Cerritos Wetlands	+							X	X					X	X	X	X	X			801.11	
Anaheim Bay – Outer Bay	+					X		X	X					X	X	X	X	X			801.11	
Anaheim Bay – Seal Beach National Wildlife Refuge	+							X[1]	X					X	X	X	X	X		X	801.11	
Sunset Bay – Huntington Harbor	+					X		X	X	X					X	X	X	X			801.11	
Bolsa Bay	+							X	X	X				X	X	X	X	X	X		801.11	
Bolsa Chica Ecological Reserve	+							X	X					X	X	X	X	X		X	801.11	
Lower Newport Bay	+					X		X	X	X					X	X	X	X	X		801.11	
Upper Newport Bay	+							X	X	X				X	X	X	X	X	X	X	801.11	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

[1] Access prohibited per agency with jurisdiction

Table 3-1 BENEFICIAL USES - Continued

BAYS, ESTUARIES, AND TIDAL PRISMS	BENEFICIAL USE																				Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	MAR	SHEL	EST	Primary	Secondary
Santa Ana River Salt Marsh	+							X	X					X	X	X		X		X	801.11	
Huntington Beach Wetlands	+							X	X					X	X	X	X	X			801.11	
Tidal Prism of Santa Ana River (to within 1000' of Victoria Street) and Newport Slough	+							X	X	X					X	X		X			801.11	
Tidal Prism of San Gabriel River - River Mouth to Marina Drive	+		X					X	X	X					X	X		X	X	X	845.61	
Tidal Prism of Santa Ana-Delhi Channel – Bicycle Bridge at University Dr. at Upper Newport Bay to 1036 ft. upstream	+							u	X						X	X		X			801.11	
Tidal Prism of Greenville-Banning Channel – Santa Ana River Confluence to Inflatable Diversion Dam^	+							u	X						X	X		X			801.11	
Tidal Prisms of Flood Control Channels Discharging to Coastal or Bay Waters	+							X	X	X					X			X			801.11	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)
^ The diversion dam is 0.23 mile downstream of confluence with the Fairview Channel.

[1] Access prohibited per agency with jurisdiction
u REC 1 and/or REC 2 are not attainable uses as determined by UAA (See Table 3-2 and Chapter 3, Recreation Beneficial Uses)

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
LOWER SANTA ANA RIVER BASIN																				
Santa Ana River																				
Reach 1 – Tidal Prism to 17th Street in Santa Ana	+							X[2]	X		I				I				801.11	
Reach 2 – 17th Street in Santa Ana to Prado Dam	+	X			X			X	X		X				X	X			801.11	801.12
Aliso Creek	X				X			X	X		X				X	X			845.63	
Carbon Canyon Creek	X				X			X	X		X				X	X			845.63	
Santiago Creek Drainage																				
Santiago Creek																				
Reach 1 – below Irvine Lake	X				X			X[2]	X		X				X				801.12	801.11
Reach 2 – Irvine Lake (see Lakes, pg. 3-xx																				
Reach 3 – Irvine Lake to Modjeska Canyon	I				I			I	I		I				I				801.12	
Reach 4 – in Modjeska Canyon	X				X			X	X		X				X				801.12	
Silverado Creek	X				X			X	X		X				X				801.12	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

[2] Access prohibited in all or part per agency with jurisdiction

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
LOWER SANTA ANA RIVER BASIN																				
Santiago Creek Drainage																				
Black Star	I				I			I	I		I				I				801.12	
Ladd Creek	I				I			I	I		I				I	I			801.12	
San Diego Creek Drainage																				
San Diego Creek																				
Reach 1 – below Jeffrey Road	+							X[2]	X		X				X				801.11	
Reach 2 – above Jeffrey Road to Headwaters	+				I			I	I		I				I				801.11	
Other Tributaries: Bonita Creek, Serrano Creek, Peters Canyon Wash, Hicks Canyon Wash, Bee Canyon Wash, Borrego Canyon Wash, Agua Chinon Wash, Laguna Canyon Wash, Rattlesnake Canyon Wash, Sand Canyon Wash*, and other Tributaries to these Creeks	+				I			I	I		I				I				801.11	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

[2] Access prohibited in all or part per agency with jurisdiction
* Sand Canyon Wash also has RARE Beneficial Use

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
San Gabriel River Drainage																				
Coyote Creek (within Santa Ana Regional Boundary)	X							X	X		X				X				845.61	
Santa Ana-Delhi Channel																				
Reach 1 – upper boundary of Tidal Prism to intersection of Sunflower Ave./Flower St.	+							u	u		X				X	X			801.10	
Reach 2 – Sunflower Ave./Flower St. intersection to Warner Avenue	+							u	X		X				X				801.10	
Greenville Banning Channel																				
Reach 1- Inflatable Diversion Dam to California Street	+							u	u		X				X				801.10	
UPPER SANTA RIVER BASIN																				
Santa Ana River																				
Reach 3 – Prado Dam to Mission Blvd. in Riverside	+	X			X			X	X		X				X	X	X		801.21	801.21, 801.25

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

u REC 1 and/or REC 2 are not attainable uses as determined by UAA (See Table 3-2 and Chapter 3, Recreation Beneficial Uses)

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
Reach 4 – Mission Blvd. in Riverside to San Jacinto Fault in San Bernardino	+				X			X[3]	X		X				X	X	X		801.27	801.44
Reach 5 – San Jacinto Fault in Bernardino to Seven Oaks Dam[t]	X*	X			X			X[3]	X		X				X	X			801.52	801.57
Reach 6 – Seven Oaks Dam to Headwaters (see also Individual Tributary Streams)	X	X			X		X	X	X				X		X		X		801.72	
San Bernardino Mountain Streams																				
Mill Creek Drainage:																				
Mill Creek																				
Reach 1 – Confluence with Santa Ana River to Bridge Crossing Route 38 at Upper Powerhouse	I	I			I			I	I				I		I	I			801.58	
Reach 2 – Bridge Crossing Route 38 at Upper Powerhouse to Headwaters	X	X			X		X	X	X				X		X				801.58	

X -Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

* MUN applies upstream of Orange Avenue (Redlands); downstream, water is excepted from MUN
t Reach 5 uses are intermittent upstream of Waterman Avenue
[3] Access prohibited in some portions per agency with jurisdiction

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
Mountain Home Creek	X				X		X	X	X				X		X				801.58	
Mountain Home Creek, East Fork	X				X	X	X	X	X				X		X		X		801.70	
Monkeyface Creek	X				X			X	X				X		X				801.70	
Alger Creek	X				X			X	X				X		X				801.70	
Falls Creek	X				X		X	X	X				X		X		X		801.70	
Vivian Creek	X				X			X	X				X		X				801.70	
High Creek	X				X			X	X				X		X				801.70	
Other Tributaries: Lost, Oak Cove, Green, Skinner, Momyer, Glen Martin, Camp, Hatchery, Rattlesnake, Slide, Snow, Bridal Veil, and Oak Creeks and other Tributaries to these Creeks	I				I			I	I				I		I				801.71	
Bear Creek Drainage:																				
Bear Creek	X	X			X		X	X	X				X		X		X		801.71	
Siberia Creek	X				X			X	X				X		X		X		801.71	
Slide Creek	I				I			I	I				I		I				801.71	
Johnson Creek	I				I			I	I				I		I				801.71	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
All other Tributaries to these Creeks	I				I			I	I				I		I				801.71	
Big Bear Lake (see Lakes, pg. 3-xx)																				
Big Bear Lake Tributaries:																				
North Creek	X				X			X	X				X		X		X		801.71	
Metcalf Creek	X				X			X	X				X		X		X		801.71	
Grout Creek	X				X			X	X				X		X		X		801.71	
Rathbone (Rathbun) Creek	X				X			X	X				X		X				801.71	
Meadow Creek	X				X			X	X				X		X				801.71	
Summit Creek	I				I			I	I				I		I				801.71	
Knickerbocker Creek																				
Reach 1 – concrete channel, the Lake to Village Dr.	I				I			I	I				I		I				801.71	
Reach 2 – natural channel, Village Dr. to headwater	I				I			I	I				I		I				801.71	
Other Tributaries to Big Bear Lake: Minnelusa, Polig̲ue, and Red Ant Creeks and other Tributaries to these Creeks	I				I			I	I				I		I				801.71	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
Baldwin Lake (see Lakes, pg. 3-xx)																				
Baldwin Lake Drainage:																				
Shay Creek	X				X			X	X				X		X	X			801.73	
Other Tributaries to Baldwin Lake: Sawmill, Green, and Caribou Canyons and other Tributaries to these Creeks	I				I			I	I				I		I				801.73	
Other Streams Draining to Santa Ana River (Mountain Reaches‡)																				
Cajon Canyon Creek	X				X			X	X				X		X	X			801.52	801.51
City Creek	X	X			X			X	X				X		X	X	X		801.57	
Devil Canyon Creek	X				X			X	X				X		X				801.57	
East Twin and Strawberry Creeks	X	X			X			X	X				X		X		X		801.57	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use

‡ The division between Mountain and Valley reaches occurs at the base of the foothills of the San Bernardino or San Gabriel Mountains

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
Waterman Canyon Creek	X				X			X	X				X		X				801.57	
Fish Creek	X				X			X	X				X		X		X		801.57	
Forsee Creek	X				X			X	X				X		X		X		801.72	
Plunge Creek	X	X			X			X	X				X		X	X			801.72	
Barton Creek	X	X			X			X	X				X		X				801.72	
Bailey Canyon Creek	I				I			I	I				I		I				801.72	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
Kimbark Canyon, East Fork Kimbark Canyon, Ames Canyon and West Fork Cable Canyon Creeks	X				X			X	X		X		X		X				801.52	
Valley Reaches‡ of Above Streams	I				I			I	I		I				I				801.52	
Other Tributaries (Mountain Reaches‡): Alder, Badger Canyon, Bledsoe Gulch, Borea Canyon, Breakneck, Cable Canyon, Cienaga Seca, Cold, Converse, Coon, Crystal, Deer, Elder, Fredalba, Frog, Government, Hamilton, Heart Bar, Hemlock, Keller, Kilpecker, Little Mill, Little Sand Canyon, Lost, Meyer Canyon, Mile, Monroe Canyon, Oak, Rattlesnake, Round Cienaga, Sand, Schneider, Staircase, Warm Springs Canyon, and Wild Horse Creeks and other Tributaries to these Creeks	I				I			I	I				I		I				801.72	801.71, 801.57

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use

‡ The division between Mountain and Valley reaches occurs at the base of the foothills of the San Bernardino or San Gabriel Mountains

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
San Gabriel Mountain Streams (Mountain Reaches‡)																				
San Antonio Creek	X	X	X	X	X		X	X	X				X		X				801.23	
Lytle Creek (South, Middle, and North Forks) and Coldwater Canyon Creek	X	X	X	X	X		X	X	X				X		X	X			801.41	801.42, 801.52, 801.59
Day Canyon Creek	X			X	X			X	X				X		X				801.21	
East Etiwanda Creek	X			X	X			X	X				X		X	X			801.21	
Valley Reaches ‡ of Above Streams	I				I			I	I		I				I				801.21	
Cucamonga Creek																				
Reach 1 – Confluence with Mill Creek to 23rd St. in Upland	+				X			u[3]	u			X			X				801.21	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

‡ The division between Mountain and Valley reaches occurs at the base of the foothills of the San Bernardino Mountains or San Gabriel Mountains
u REC 1 and/or REC 2 are not attainable as determined by a UAA.(See Table 3-2 and Chapter 3, Recreation Beneficial Uses)
3 Access prohibited in some portions per agency with jurisdiction

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
Reach 2 (Mountain Reach‡) - 23rd St. In Upland to headwaters	X		X	X	X		X	X	X				X		X		X		801.24	
Mill Creek (Prado Area)	+							X	X		X				X	X			801.25	
Other Tributaries (Mountain Reaches ‡): San Sevaine, Deer, Duncan Canyon, Henderson Canyon, Bull, Fan, Demens, Thorpe, Angalls, Telegraph Canyon, Stoddard Canyon, Icehouse Canyon, Cascade Canyon, Cedar, Falling Rock, Kerkhoff, and Cherry Creeks and other Tributaries to these Creeks	I				I			I	I				I		I				801.21	801.23
Valley Reaches‡ of Above Streams	I				I			I	I		I				I				801.21	801.43
San Timoteo Area Streams																				
San Timoteo Creek																				
Reach 1A – Santa Ana River Confluence to Barton Road	+	I						I[3]	I		I				I				801.52	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

‡ The division between Mountain and Valley reaches occurs at the base of the foothills of the San Bernardino Mountains or San Gabriel Mountains
[3] Access prohibited in some portions per agency with jurisdiction

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
Reach 1B – Barton Road to Gage at San Timoteo Canyon Rd.	+	I			I			I[3]	I		I				I				801.52	
Reach 2–Gage at San Timoteo Creek to Confluence with Yucaipa Creek	+				X			X	X		X				X				801.61	
Reach 3 – Confluence with Yucaipa Creek to confluence with little San Gorgonio and Noble Creeks (Headwaters of San Timoteo Creek)	+				X			X	X		X				X				801.61	
Oak Glen, Potato Canyon, and Birch Creeks	X				X			X	X		X				X				801.67	
Little San Gorgonio Creek	X				X			X	X				X		X				801.69	801.62, 801.63
Yucaipa Creek	I				I			I	I		I				I				801.67	801.61, 801.62, 801.64
Other Tributaries to these Creeks-Valley Reaches‡	I				I			I	I		I				I				801.62	801.52, 801.53
Other Tributaries to these Creeks-Mountain Reaches‡	I				I			I	I				I		I				801.69	801.67
Anza Park Drain	X							X	X		X				X		X		801.27	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

‡ The division between Mountain and Valley reaches occurs at the base of the foothills of the San Bernardino or San Gabriel Mountains
[3] Access prohibited in some portions per agency with jurisdiction

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
Sunnyslope Channel	X							X	X		X				X	X	X		801.27	
Tequesquite Arroyo (Sycamore Creek)	+				X			X	X		X				X		X		801.27	
Prado Area Streams																				
Chino Creek																				
Reach 1A – Santa Ana River confluence to downstream of confluence with Mill Creek (Prado Area)	+							X	X		X				X	X			801.21	
Reach 1B – Confluence with Mill Creek (Prado Area) to beginning of concrete-lined channel south of Los Serranos Rd.***	+							X	X		X				X	X			801.21	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

‡ The division between Mountain and Valley reaches occurs at the base of the foothills of the San Bernardino or San Gabriel Mountains
*** The confluence of Mill Creek is in Chino Creek, Reach 1B

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
Reach 2 – Beginning of concrete-lined channel south of Serranos Rd. to confluence with San Antonio Creek	+				X			X[3]	X			X			X				801.21	
Temescal Creek																				
Reach 1a – Lincoln Ave. to Arlington Channel confluence	+							u[3]	X		X				X				801.25	
Reach 1b – Arlington Channel confluence to 1400 ft. upstream of Magnolia Ave.	+							u[3]	u		X				X				801.25	
Reach 2 –1400 ft. upstream of Magnolia Ave. to Lee Lake	+	X	X		X			X	X		X				X				801.25	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

*** The confluence of Mill Creek is in Chino Creek, Reach 1B
[3] Access prohibited in some portions per agency with jurisdiction
u REC 1 and/or REC 2 are not attainable uses as determined by UAA (See Table 3-2 and Chapter 3, Recreation Beneficial Uses)

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
Reach 3 – Lee Lakes (see Lakes, Page 3-xx)																				
Reach 4 – Lee Lake to Mid-Section Line of Section 17 (downstream end of freeway cut)	+	X			X			X	X		X				X	X			801.34	
Reach 5 – Mid-section line of Section 17 (downstream end of freeway cut) to Elsinore Ground-water Subbasin Boundary	+	X			X			X	X		X				X	X			801.35	
Reach 6 – Elsinore Groundwater Subbasin Boundary to Lake Elsinore Outlet	+				I			I	I		I				I				801.35	
Coldwater Canyon Creek	X	X			X			X	X		X				X				801.32	
Bedford Canyon Creek	+				I			I	I		I				I				801.32	
Dawson Canyon Creek	I				I			I	I		I				I				801.32	
Other Tributaries to these Creeks	I				I			I	I		I				I				801.32	
SAN JACINTO RIVER BASIN																				
San Jacinto River																				
Reach 1 – Lake Elsinore to Canyon Lake	I	I			I			I	I		I				I				801.32	802.31
Reach 2 – Canyon Lake (see Lakes Pg. 3-xx)																				

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

Table 3-1 BENEFICIAL USES - Continued

INLAND SURFACE STREAMS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
Reach 3 – Canyon Lake to Nuevo Road	+	I			I			I	I		I				I				802.11	
Reach 4 – Nuevo Road to North-South Mid-Section Line, T4S/R1W-S8	+	I			I			I	I		I				I				802.21	802.21
Reach 5 – North-South Mid-Section Line, T4S/R1 W-S8, to Confluence With Poppet Creek	+	I			I			I	I		I				I				802.21	
Reach 6 – Poppet Creek to Cranston Bridge	I	I			I			I	I		I				I				802.21	
Reach 7 – Cranston Bridge to Lake Hemet	X	X			X			X	X				X		X				801.21	
Bautista Creek – Headwaters to Debris Dam	X	X			X			X	X				X		X				802.21	802.23
Strawberry Creek and San Jacinto River, North Fork	X	X			X			X	X				X		X				801.21	
Fuller Mill Creek	X	X			X			X	X				X		X				802.22	
Stone Creek	X	X			X			X	X				X		X				802.21	
Other Tributaries: Logan, Black Mountain, Juaro Canyon, Indian, Herkey, Poppet, and Potrero Creeks and other Tributaries to these Creeks	I	I			I			I	I		I				I				802.21	802.22
Salt Creek	+							I	I		I				I				802.12	
Goodhart Canyon, St. John's Canyon, and Cactus Valley Creeks	I	I						I	I		I				X				802.15	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

Table 3-1 BENEFICIAL USES - Continued

LAKES AND RESERVOIRS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
UPPER SANTA ANA RIVER BASIN																				
Baldwin Lake	+							I	I		I		I	I	I	I			801.73	
Big Bear Lake	X	X			X			X	X		X		X		X	X			801.71	
Erwin Lake	X							X	X				X	X	X	X			801.73	
Evans, Lake	+							X	X		X		X		X				801.27	
Jenks Lake	X	X			X			X	X				X		X				801.72	
Lee Lake	+	X	X		X			X	X		X				X				802.34	
Mathews, Lake	X	X	X	X	X			X[4]	X		X				X	X			802.33	
Mockingbird Reservoir	+	X						X[4]	X		X				X				802.26	
Norconian, Lake	+							X	X		X				X				802.25	
LOWER SANTA ANA RIVER BASIN																				
Anaheim Lake	+				X			X	X		X				X				801.11	
Irvine Lake (Santiago Reservoir)	X	X						X	X		X		X		X				801.12	
Peters Canyon, Rattlesnake, Sand Canyon, and Siphon Reservoirs	+	X						X[4]	X		X				X				801.11	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

[4] Access prohibited per agency/company with jurisdiction

Table 3-1 BENEFICIAL USES - Continued

LAKES AND RESERVOIRS	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
SAN JACINTO RIVER BASIN																				
Canyon Lake (Railroad Canyon Reservoir)	X	X			X			X	X		X				X				802.11	802.12
Elsinore, Lake	+							X	X		X				X				802.31	
Fulmor, Lake	X	X						X	X		X		X		X				802.21	
Hemet, Lake	X	X			X		X	X	X		X		X		X		X		802.22	
Mystic Lake	I							I	I		I			X	X	X			802.11	
Perris, Lake	X	X	X	X	X			X	X		X		X		X				802.11	

X Existing or Potential Beneficial Use .
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

Table 3-1 BENEFICIAL USES - Continued

WETLANDS (INLAND)	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
San Joaquin Freshwater Marsh**	+							X	X		X			X	X	X			801.11	801.14
Shay Meadows	I							I	I				I		I				801.73	
Stanfield Marsh**	X							X	X				X		X	X			801.71	
Prado Basin Management Zone@	+							X	X		X				X	X			802.21	
San Jacinto Wildlife Preserve**	+							X	X		X			X	X	X			802.21	802.14
Glen Helen	X							X	X		X				X				801.59	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

** This is a created wetland as defined in the wetland discussion
@ The Prado Basin Management Zone includes the Prado Flood Control Basin, a created wetland as defined in the Basin Plan (see Chapter 3, pages 3-4 through 3-7)

Table 3-1 BENEFICIAL USES - Continued

GROUNDWATER MANAGEMENT ZONES	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
UPPER SANTA ANA RIVER BASIN																				
Big Bear Valley	X			X															801.71	801.73
Beaumont	X	X	X	X															801.62	801.63, 801.69
Bunker Hill - A	X	X	X	X															801.52	801.52
Bunker Hill - B	X	X	X	X															802.52	801.53, 801.54, 801.57, 801.58
Colton	X	X	X	X															801.44	801.45
Chino North “maximum benefit”++	X	X	X	X															801.21	481.21, 481.23
Chino 1 – “antidegradation”++	X	X	X	X															801.21	481.21
Chino 2 – “antidegradation”++	X	X	X	X															801.21	
Chino 3 – “antidegradation”++	X	X	X	X															801.21	
Chino East @	X	X	X	X															801.21	801.27
Chino South @	X	X	X	X															801.21	801.25, 801.26
Cucamonga	X	X	X	X															801.24	801.21

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

++ Chino North “maximum benefit” management zone applies unless Regional Board determines that lowering of water quality is not of maximum benefit to the people of the state; in that case, the Chino 1, 2, and 3 “antidegradation” management zones would apply (see also discussion in Chapter 5).

@ Chino East and South are the designations in the Chino Basin Watermaster “maximum benefit” proposal (see Chapter 5) for the management zones identified by Wildermuth Environmental , Inc. (July 2000) as Chino 4 and 5, respectively

Table 3-1 BENEFICIAL USES - Continued

GROUNDWATER MANAGEMENT ZONES	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
Lytle	X	X	X	X															801.59	801.42
Rialto	X	X	X	X															801.44	801.21, 801.43
San Timoteo	X	X	X	X															801.62	801.61
Yucaipa	X	X	X	X															801.61	801.55, 801.63, 801.67
MIDDLE SANTA ANA RIVER BASIN																				
Arlington	X	X	X	X															801.26	
Bedford	X	X	X	X															801.32	481.31
Coldwater	X	X	X	X															801.31	
Elsinore	X	X		X															802.31	
Lee Lake	X	X	X	X															801.34	
Riverside - A	X	X	X	X															801.27	801.44
Riverside – B	X	X	X	X															801.27	801.44
Riverside - C	X	X	X	X															801.27	
Riverside - D	X	X	X	X															801.27	801.26
Riverside - E	X	X	X	X															801.27	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

Table 3-1 BENEFICIAL USES - Continued

GROUNDWATER MANAGEMENT ZONES	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
Riverside - F	X	X	X	X															801.27	
Temescal	X	X	X	X															801.25	
SAN JACINTO RIVER BASIN																				
Garner Valley	X	X																	802.22	
Idyllwild Area	X		X																802.22	802.21
Canyon	X	X	X	X															802.21	
Hemet - South	X	X	X	X															802.15	802.13, 802.21
Lakeview – Hemet North	X	X	X	X															802.14	802.15
Menifee	X	X		X															802.13	
Perris North	X	X	X	X															802.11	
Perris South	X	X																	802.11	802.12, 802.13
San Jacinto - Lower	X	X	X																802.21	802.11
San Jacinto - Upper	X	X	X	X															802.27	802.23

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

Table 3-1 BENEFICIAL USES - Continued

GROUNDWATER MANAGEMENT ZONES	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
LOWER SANTA ANA RIVER BASIN																				
La Habra	X	X																	845.62	
Santiago	X	X	X																801.12	801.11
Orange	X	X	X	X															801.11	801.13, 801.14 845.61, 845.63
Irvine	X	X	X	X															801.11	

X Existing or Potential Beneficial Use
I Intermittent Beneficial Use
+ Excepted from MUN (see text)

Table 3-2 Summary of Approved Use Attainability Analyses (UAAs) to Re-designate Recreational Beneficial Uses in some Inland Waterbodies

Waterbody	Segment/ Reach	Reach Description	REC1	REC2	Agency Approval Dates[1]
Greenville-Banning Channel	Tidal Prism	Santa Ana River Confluence to Inflatable Diversion Dam (0.23 mile downstream of Fairview Channel Confluence) (City of Costa Mesa)	no	X	
	Reach 1	Inflatable Diversion Dam to California Street. (City of Costa Mesa)	no	no	
Santa Ana Delhi Channel	Tidal Prism	Bicycle Bridge at University Dr. at Upper Newport Bay to 1036 ft. upstream (City of Newport Beach)	no	X	
	Reach 1	Upper Boundary of Tidal Prism to immediately upstream of intersection of Sunflower Ave. and Flower Street (City of Santa Ana)	no	no	
	Reach 2	Immediately upstream of intersection of Sunflower Ave. and Flower St. to Warner Ave (City of Santa Ana)	no	X	
Temescal Creek	Reach 1a	Lincoln Avenue to Arlington Channel Confluence (City of Corona)	no	X	
	Reach 1b	Arlington Channel Confluence to 1400 ft. upstream of Magnolia Avenue (City of Corona)	no	no	
Cucamonga Creek	Reach 1	Confluence with Mill Creek in Prado area to near 23rd Street (City of Upland)	no	no	

X Existing or Potential
[1] Date of Regional Board, State Board, USEPA approvals to be added

CHANGES TO CHAPTER 4- WATER QUALITY OBJECTIVES

Amend CHAPTER 4 – WATER QUALITY OBJECTIVES, INTRODUCTION, third paragraph *et seq.*:

The water quality objectives in this Plan are specified according to waterbody type: ocean waters; enclosed bays and estuaries; inland surface waters; and, groundwaters.

The narrative water quality objectives below are arranged alphabetically. They vary in applicability and scope, reflecting the variety of beneficial uses of water that have been identified (Chapter 3). Where numerical objectives are specified, they generally represent the levels that will protect beneficial uses. However, in establishing waste discharge requirements for specific discharges, the Regional Board may find that more stringent levels are necessary to protect beneficial uses. In other cases, an objective may prohibit the discharge of specific substances, may tolerate natural or "background" levels of certain substances or characteristics but no increases over those values, or may express a limit in terms of not impacting other beneficial uses. An adverse effect or impact on a beneficial use occurs where there is an actual or threatened loss or impairment of that beneficial use.

Some of these water quality objectives refer to "controllable sources" or controllable water quality factors." Controllable sources include both point and nonpoint source discharges, such as conventional discharges from pipes and discharges from land areas or other diffuse sources. Controllable sources are predominantly anthropogenic in nature. Controllable water quality factors are those characteristics of the discharge and/or the receiving water that can be controlled by treatment or management methods. Examples of other activities that may not involve waste discharges, but which also constitute controllable water quality factors, include the percolation of storm water, transport/delivery of water via natural stream channels, and stream diversions. Uncontrollable sources of pollutants can occur naturally or as the result of anthropogenic activities. These sources are not readily managed through technological or natural mechanisms.

Amend CHAPTER 4 – WATER QUALITY OBJECTIVES, ENCLOSED BAYS AND ESTUARIES - insert the following between the Oxygen, Dissolved and pH objectives:

Pathogen Indicator Bacteria

Fecal bacteria are part of the intestinal flora of warm-blooded animals. Their presence in bay and estuarine waters is used as an indicator of pollution. Total coliform is measured in terms of the number of coliform organisms per unit volume. Total coliform numbers can include non-fecal bacteria, so additional testing is often done to confirm the presence and numbers of fecal coliform bacteria. Water quality objectives for numbers of total and fecal coliform vary with the uses of the water, as shown below.

Bays and Estuaries

> **REC-1** Fecal coliform: log mean less than 200 organisms/100 mL based on five or more samples/30 day period, and not more than 10% of the samples exceed 400 organisms/100 mL for any 30-day period.

Note: The USEPA promulgated enterococci criteria for coastal recreation waters, including enclosed bays and estuaries, in 2004 (40 CFR 131.41). The established geometric mean enterococci value is 35/100mL. No averaging period was specified, leaving that determination to the state's discretion. USEPA also identified single sample maximum enterococci values, which vary based on the frequency of use of the REC1 waters. The Regional Board intends to consider a Basin Plan amendment in the future to formally recognize the enterococci criteria established for enclosed bays and estuaries, to define an appropriate averaging period for the application of the geometric mean criterion, and to define appropriate application of the single sample maximum values to varying areas within enclosed bays and estuaries in the Region.

SHEL Fecal coliform: median concentration not more than 14 MPN (most probable number)/100 mL and not more than 10% of samples exceed 43 mpn /100 mL.

Amend Chapter 4 – WATER QUALITY OBJECTIVES, INLAND SURFACE WATERS, Metals, as follows:

The SSOs for cadmium and copper are simply the hardness-dependent formulae for calculating the objective (national criteria), corrected by the dissolved-to-total (metal) ratio. The SSO for lead is the recalculated[1] hardness-dependent formula, corrected by the dissolved-to-total ratio.

[1] Recalculation for lead was carried out by EPA-Region IX, using the lowest mean genus acute value (GMAV) as the final acute value (FAV) and an acute-to-chronic ratio (ACR) of 51.29, resulting in a final chronic value (FCV) of 2.78 and the SSO formula already shown.

Amend CHAPTER 4 – WATER QUALITY OBJECTIVES, INLAND SURFACE WATERS - insert the following between the Oxygen, Dissolved and pH objectives:

Pathogen Indicator Bacteria

Bacteria, viruses, protozoa and parasites occur naturally in the environment and may also be present in waste discharges. Some of these organisms, particularly those that originate from human sources, are pathogenic and may cause illness to exposed persons. The main route of exposure to illness-causing organisms during primary water contact recreation is through accidental ingestion of fecally contaminated water. The presence of these pathogens in waterbodies may impair recreational uses and/or municipal water supplies.

Direct measurement of all pathogens is impractical because standard methods have not yet been approved, nor have water quality criteria been established for each and every microorganism that may be harmful. Therefore, the USEPA recommends using surrogate indicators, such as *E. coli* or enterococcus densities, to demonstrate that water quality is adequate to protect human health against excessive risk of illness to those making deliberate recreational contact with the water where ingestion of water is likely[2].

Over time, the recommended surrogate indicators to protect primary contact recreation have changed from total and fecal coliform to *E. coli* or Enterococcus for freshwaters (USEPA, 1986). Ongoing epidemiological studies and laboratory research may someday identify better pathogen

indicators[3] and USEPA may recommend revised numeric criteria based on those new indicators. New and/or improved analytical protocols for direct measurement of pathogens may also become available. This Plan addresses these circumstances as follows. The Plan specifies the following narrative objective and the numeric objectives for surrogate indicators in Table 4-pio – Pathogen Indicator Bacteria Objectives for Fresh Waters. The numeric objectives in Table 4-pio are intended to interpret the narrative objective, based on the best available science. These numeric objectives are based on the water quality criteria recommended by USEPA in 1986. The narrative objective is intended to provide the permitting flexibility needed to accommodate appropriate regulatory actions to assure the protection of beneficial uses as water quality monitoring technology improves or USEPA revises the recommended bacteria criteria[4]. This is consistent with the Regional Board's obligation when establishing waste discharge requirements to impose limitations more stringent than established objectives if such more stringent limitations are necessary to protect beneficial uses.

Lakes and Streams

*Waste discharges shall not cause or contribute to excessive risk of illness from microorganisms pathogenic to human beings. Pathogen indicator concentrations shall not exceed the values specified in Table 4-pio below as a result of controllable water quality factors (*see also Chapter 5, Recreation Water Quality Standards*, Controllable and Uncontrollable Sources of Bacteria*) *unless it is demonstrated to the Regional Board's satisfaction that the elevated indicator concentrations do not result in excessive risk of illness among people recreating in or near the water. In all cases, the level of water quality necessary to protect existing uses must be maintained. Where existing water quality is better than necessary to protect the designated use, the existing high level of water quality must be maintained unless it is demonstrated that existing or potential beneficial uses would be protected and that water quality consistent with maximum benefit to the people of California would be maintained, as specified in the state antidegradation policy (SWRCB Resolution No. 68-16). The Regional Board may also require recycled water discharged to freshwaters designated REC 1 or REC 2 to comply with other limitations recommended by the California Department of Public Health (CDPH).*

Table 4-pio - Pathogen Indicator Bacteria Objectives for Fresh Waters[1]

Recreational Use	Pathogen Indicator Objective (geometric mean of at least 5 samples in a 30-day period (running)[2]
REC1-only or REC1 and REC2	<126 *E. coli* organisms per 100 mL[3]
REC2-only[4]	N/A; see *REC2 Only Freshwaters,* below, and Chapter 5, Recreation Water Quality Standards, *Antidegradation targets for REC2 only freshwaters*

[1] The water quality objectives specified in Table 4-pio (and the alternate Single Sample Maximum values in Table 5-REC1-ssv) do not apply to a river or stream if and when the recreational uses are temporarily suspended due to unsafe flow conditions therein. (See Chapter 5-Implementation, Recreation Water Quality Standards, *High Flow Suspension,* Appendices VIII and IX, and *Application of Single Sample Maximum Values*).

[2] The Regional Board may adopt other alternative averaging periods, such as annual or seasonal averages, through the basin planning process.

[3] Where it is necessary to make public notification and/or beach closure decisions in the absence of sufficient data to calculate a representative geometric mean for *E. coli*, no single sample shall exceed the default value shown in Table 5-REC1-ssv or an alternative value calculated by using the formula shown in Table 5-REC1-ssv, note 2 (see also table note 5). For all other purposes related to implementing the Clean Water Act, if there are insufficient data to calculate a representative geometric mean for *E. coli*, "X%" of the representative sample data collected over a 30 day period (running) shall be less than the applicable Single Sample Maximum value, where X% is the statistical confidence level assigned to a particular waterbody. Where there are sufficient data to calculate a representative geometric mean for *E. coli*, the applicable Single Sample Maximum value shall not be used to assess compliance with the *E. coli* objective in Table 4-pio. The intent of Single Sample Maximum values is to inform public notification decisions and to trigger additional follow-up monitoring (see Chapter 5, Recreation Water Quality Standards, A*pplication of Single Sample Maximum Values in REC1 Freshwaters*).

[4] Waterbodies designated REC2 but not designated REC1.

As discussed in Chapter 3 (RECREATION BENEFICIAL USES) and Chapter 5 (RECREATION WATER QUALITY STANDARDS, *High Flow Suspension)* of this Plan, recreational standards are temporarily suspended in certain fresh surface waters during specific high flow conditions. This includes the temporary suspension of the pathogen indicator objectives established in Table 4-pio, and alternative Single Sample Maximum values, which apply under specified circumstances (See Chapter 5 RECREATION WATER QUALITY STANDARDS, *Application of Single Sample Maximum values in REC1* freshwaters.)

REC2 Only Freshwaters

Designation of a waterbody as REC2 but not REC1 requires a demonstration that the REC1 use has not been attained and is not attainable, based on one or more of the Use Attainability Analysis (UAA) factors identified in federal regulations (40 CFR 131.10(g)(1-6)). Where water quality consistently meets the REC1 (or REC1 and REC2) pathogen indicator objectives in Table 4-pio, then it is unlikely that a UAA would successfully demonstrate that the REC1 use

is not attainable. Accordingly, the waterbody would likely be designated REC1 (and REC2), and the objectives in Table 4-pio would apply.

REC2 activities involve proximity to water but not normally body contact such that the ingestion of water is reasonably possible. Water contact is incidental or accidental, relatively brief and limited primarily to body extremities. There is no scientific basis to establish pathogen indicator objectives intended to protect human health as the result of such contact.

While water quality objectives for REC2 only waters are not specified in this Plan, it is appropriate to take steps to assure that water quality conditions in these waters are not degraded as the result of controllable water quality factors, consistent with antidegradation policy requirements. Accordingly, bacteria quality targets for REC2 only waters have been identified (See Chapter 5, Recreation Water Quality Standards, *Antidegradation targets for REC2 only freshwaters*).

Add the following footnotes and re-number subsequent footnotes in Chapter 4 accordingly:

[Footnote 2 is found above in "**Pathogen Indicator Bacteria**", end of 2nd paragraph, p. 37 of 79]

[2] As discussed in detail in USEPA's 1986 bacteria criteria document ("Ambient Water Quality Criteria for Bacteria – 1986"), USEPA's recommended *E. coli* criteria are based on the long-accepted rate of 8 gastrointestinal illness per 1000 swimmers in freshwaters. USEPA believes that this illness rate is comparable to the estimated illness rate associated with the fecal coliform objectives that were used historically by states, and previously in this Basin Plan. Epidemiological studies were used to develop the 1986 criteria. The swimming-associated "excess" illness rate was determined by subtracting the gastrointestinal illness rate in nonswimmers from that for swimmers. Swimmers and nonswimmers were differentiated on the basis of exposure and the likelihood of ingestion of water. Swimmers were those who swam or otherwise got their head or face wet. Nonswimmers were those who did not go into the water, went into the water but did not get their head or face wet (waders), or were in the water for less than 10 minutes, whether or not they got their head or face wet. In short, the 1986 criteria were developed based on exposures during swimming with head immersion, where the ingestion of water was considered likely. Consistent with USEPA's intent and the underlying science, the *E. coli* objectives specified in this Basin Plan (Table 4-pio – Pathogen Indicator Bacteria Objectives for Fresh Waters), are intended to protect primary contact recreation.

[Footnote 3 is found above in "**Pathogen Indicator Bacteria**", first sentence, p. 38 of 79]

[3] See, for example, U.S. EPA. Report of the Experts Scientific Workshop on Critical Research Needs for the Development of New or Revised Recreational Water Quality Criteria. June 15, 2007 (EPA 823-R-07-006)

[Footnote 4 is found above in "**Pathogen Indicator Bacteria**", first paragraph, end of 2nd to last sentence, p. 38 of 79]

[4] See, for example, U.S. EPA. Criteria Development Plan and Schedule for Recreational Water Quality Criteria. August 31, 2007. (EPA 823-R-003)

Amend CHAPTER 4 – WATER QUALITY OBJECTIVES, GROUNDWATERS, Bacteria, Coliform, as follows:

Fecal bacteria are part of the intestinal flora of warm-blooded animals. Their presence groundwater is used as an indicator of pollution.

Amend CHAPTER 4 – Table 4-1 WATER QUALITY OBJECTIVES, add and delete waters as shown in the following pages:

Table 4-1 WATER QUALITY OBJECTIVES - Continued

BAYS, ESTUARIES, AND TIDAL PRISMS	WATER QUALITY OBJECTIVES (mg/L)							Hydrologic Unit	
	Total Dissolved Solid	**Hardness**	**Sodium**	**Chloride**	**Total Inorganic Nitrogen**	**Sulfate**	**Chemical Oxygen Demand**		
Los Cerritos Wetlands+	---	---	---	---	---	---	---	801.11	
Anaheim Bay – Outer Bay+	---	---	---	---	---	---	---	801.11	
Anaheim Bay – Seal Beach National Wildlife Refuge+	---	---	---	---	---	---	---	801.11	
Sunset Bay – Huntington Harbour+	---	---	---	---	---	---	---	801.11	
Bolsa Bay+	---	---	---	---	---	---	---	801.11	
Bolsa Chica Ecological Reserve+	---	---	---	---	---	---	---	801.11	
Lower Newport Bay+	---	---	---	---	---	---	---	801.11	
Upper Newport Bay+	---	---	---	---	---	---	---	801.11	

+ Numeric objectives have not been established; narrative objectives apply.

Table 4-1 WATER QUALITY OBJECTIVES - Continued

BAYS, ESTUARIES, AND TIDAL PRISMS	WATER QUALITY OBJECTIVES (mg/L)							Hydrologic Unit	
	Total Dissolved Solid	**Hardness**	**Sodium**	**Chloride**	**Total Inorganic Nitrogen**	**Sulfate**	**Chemical Oxygen Demand**		
Santa Ana River Salt Marsh+	---	---	---	---	---	---	---	801.11	
Huntington Beach Wetlands+	---	---	---	---	---	---	---	801.11	
Tidal Prism of Santa Ana River (to within 1000' of Victoria Street) and Newport Slough+	---	---	---	---	---	---	---	801.11	
Tidal Prism of San Gabriel River – River Mouth to Marina Drive+	---	---	---	---	---	---	---	845.61	
Tidal Prism of Santa Ana-Delhi Channel – Bicycle Bridge at University Dr. at Upper Newport Bay to 1036 ft. upstream+	---	---	---	---	---	---	---	801.11	
Tidal Prism of Greenville-Banning Channel – Santa Ana River Confluence to Inflatable diversion dam^+	---	---	---	---	---	---	---	801.11	
Tidal Prisms of Flood Control Channels Discharging to Coastal or Bay Waters+	---	---	---	---	---	---	---	801.11	

^ The Inflatable Diversion Dam is ~0.23 mile downstream of confluence with the Fairview Channel.
+ Numeric objectives have not been established; narrative objectives apply.

Table 4-1 WATER QUALITY OBJECTIVES - Continued

INLAND SURFACE STREAMS	WATER QUALITY OBJECTIVES (mg/L)							Hydrologic Unit	
	Total Dissolved Solids	**Hardness**	**Sodium**	**Chloride**	**Total Inorganic Nitrogen**	**Sulfate**	**Chemical Oxygen Demand**		
Santa Ana-Delhi Channel									
Reach 1 – upper boundary of Tidal Prism to intersection of Sunflower Ave./Flower St. Intersection to Warner Avenue+	---	---	---	---	---	---	---	801.11	
Reach 2 – above Sunflower Avenue to Warner Avenue+	---	---	---	---	---	---	---	801.11	
Greenville Banning Channel									
Reach 1 – Inflatable diversion dam to California Street+	---	---	---	---	---	---	---	801.11	

+ Numeric objectives have not been established; narrative objectives apply.

Table 4-1 WATER QUALITY OBJECTIVES - Continued

INLAND SURFACE STREAMS	WATER QUALITY OBJECTIVES (mg/L)							Hydrologic Unit	
	Total Dissolved Solids	**Hardness**	**Sodium**	**Chloride**	**Total Inorganic Nitrogen**	**Sulfate**	**Chemical Oxygen Demand**	Primary	Secondary
Mountain Home Creek	200	100	30	10	1	20	5	801.58	
Mountain Home Creek, East Fork	200	---	---	---	---	---	---	801.70	
Monkeyface Creek	200	100	30	10	1	20	5	801.70	
Alger Creek	200	---	---	---	---	---	---	801.70	
Falls Creek	200	100	30	10	1	20	5	801.70	
Vivian Creek	200	---	---	---	---	---	---	801.70	
High Creek	200	---	---	---	---	---	---	801.70	
Other Tributaries: Lost, Oak Cove, Green, Skinner, Momyer, Glen Martin, Camp, Hatchery, Rattlesnake, Slide, Snow, Bridal Veil, and Oak Creeks, and other Tributaries to these Creeks	200	---	---	---	---	---	---	801.70	
Bear Creek Drainage:									
Bear Creek	175	115	10	10	1	4	5	801.71	
Siberia Creek	200	---	---	---	---	---	---	801.71	
Slide Creek	175	---	---	---	---	---	---	801.71	
Johnson Creek	175	---	---	---	---	---	---	801.71	
All other Tributaries to these Creeks+	---	---	---	---	---	---	---	801.71	
Big Bear Lake (see Lakes, pg. 4-…									

+ Numeric objectives have not been established; narrative objectives apply.

Table 4-1 WATER QUALITY OBJECTIVES - Continued

INLAND SURFACE STREAMS	WATER QUALITY OBJECTIVES (mg/L)							Hydrologic Unit	
	Total Dissolved Solids	**Hardness**	**Sodium**	**Chloride**	**Total Inorganic Nitrogen**	**Sulfate**	**Chemical Oxygen Demand**	Primary	Secondary
Big Bear Lake Tributaries:									
North Creek	175	---	---	---	---	---	---	801.71	
Metcalf Creek	175	---	---	---	---	---	---	801.71	
Grout Creek	150	---	---	---	---	---	---	801.71	
Rathbone (Rathbun) Creek	300	---	---	---	---	---	---	801.71	
Meadow Creek+	---	---	---	---	---	---	---	801.71	
Summit Creek+	---	---	---	---	---	---	---	801.71	
Knickerbocker Creek									
Reach 1- concrete channel; the Lake to Village Dr.	175	---	---	---	---	---	---	801.71	
Reach 2- natural channel, Village Dr. to headwater	175	---	---	---	---	---	---	801.71	
Other Tributaries to Big Bear Lake: Minnelusa, Poligue, and Red Ant Creeks, and other Tributaries to these Creeks	175	---	---	---	---	---	---	801.71	
Baldwin Lake (see Lakes, pg. 4-xx)									
Baldwin Lake Drainage:									
Shay Creek+	---	---	---	---	---	---	---	801.73	
Other Tributaries to Baldwin Lake: Sawmill, Green, and Caribou Canyons and other Tributaries to these Creeks+	---	---	---	---	---	---	---	801.73	

\+ Numeric objectives have not been established; narrative objectives apply.

Table 4-1 WATER QUALITY OBJECTIVES - Continued

INLAND SURFACE STREAMS	WATER QUALITY OBJECTIVES (mg/L)							Hydrologic Unit	
	Total Dissolved Solids	**Hardness**	**Sodium**	**Chloride**	**Total Inorganic Nitrogen**	**Sulfate**	**Chemical Oxygen Demand**	Primary	Secondary
Other Streams Draining to Santa Ana River (Mountain Reaches‡)									
Cajon Canyon Creek	200	100	30	10	1	20	5	801.51	
City Creek	200	115	30	10	1	20	5	801.57	
Devil Canyon Creek	275	125	35	20	1	25	5	801.57	
East Twin and Strawberry Creeks	475	---	---	---	---	---	---	801.57	
Waterman Canyon Creek	250	---	---	---	---	---	---	801.57	
Fish Creek	200	100	30	10	1	20	5	801.57	
Forsee Creek	200	100	30	10	1	20	5	801.72	
Plunge Creek	200	100	30	10	1	20	5	801.72	
Barton Creek	200	100	30	10	1	20	5	801.72	
Bailey Canyon Creek	200	---	---	---	---	---	---	801.72	
Kimbark Canyon, East Fork Kimbark Canyon, Ames Canyon And West Fork Cable Canyon Creeks	325	---	---	---	---	---	---	801.52	
Valley Reaches‡ of Above Streams	(Water Quality Objectives Correspond to Underlying GW Basin Objectives)							801.52	

‡ The division between Mountain and Valley reaches occurs at the base of the foothills of the San Bernardino or San Gabriel Mountains.

Table 4-1 WATER QUALITY OBJECTIVES - Continued

INLAND SURFACE STREAMS	WATER QUALITY OBJECTIVES (mg/L)							Hydrologic Unit	
	Total Dissolved Solids	**Hardness**	**Sodium**	**Chloride**	**Total Inorganic Nitrogen**	**Sulfate**	**Chemical Oxygen Demand**	Primary	Secondary
Other Tributaries (Mountain Reaches[1]): Alder, Badger Canyon, Bledsoe Gulch, Borea Canyon, Breakneck, Cable Canyon, Cienaga Seca, Cold, Converse, Coon, Crystal, Deer, Elder, Fredalba, Frog, Government, Hamilton, Heart Bar, Hemlock, Keller, Kilpecker, Little Mill, Little Sand Canyon, Lost, Meyer Canyon, Mile, Monroe Canyon, Oak, Rattlesnake, Round Cienaga, Sand, Schneider, Staircase, Warm Springs Canyon And Wild Horse Creeks, and other tributaries to those Creeks	200	100	30	10	1	20	5	801.72	801.71, 801.57
San Gabriel Mountain Streams (Mountain Reaches[‡])									
San Antonio Creek	225	150	20	6	4	25	5	801.23	
Lytle Creek (South, Middle, and North Forks) and Coldwater Canyon Creek	200	100	15	4	4	25	5	801.41	801.42, 801.52, 801.59
Day Canyon Creek	200	100	15	4	4	25	5	801.21	
East Etiwanda Creek	200	100	15	4	4	25	5	801.21	
Valley Reaches[‡] of Above Streams	(Water Quality Objectives Correspond to Underlying GW Basin Objectives)							801.21	

‡ The division between Mountain and Valley reaches occurs at the base of the foothills of the San Bernardino or San Gabriel Mountains.

Table 4-1 WATER QUALITY OBJECTIVES - Continued

INLAND SURFACE STREAMS	WATER QUALITY OBJECTIVES (mg/L)							Hydrologic Unit	
	Total Dissolved Solids	**Hardness**	**Sodium**	**Chloride**	**Total Inorganic Nitrogen**	**Sulfate**	**Chemical Oxygen Demand**	Primary	Secondary
Cucamonga Creek									
Reach 1 – Confluence with Mill Creek to 23rd St. in Upland+	---	---	---	---	---	---	---	801.21	
Reach 2 (Mountain Reach‡) – 23rd St. in Upland to headwaters	200	100	15	4	4	25	5	801.24	
Mill Creek (Prado Area)+	---	---	---	---	---	---	---	801.25	
Other Tributaries (Mountain Reaches):San Sevaine, Deer, Duncan Canyon, Henderson Canyon, Bull, Fan, Demens, Thorpe, Angalls, Telegraph Canyon, Stoddard Canyon, Icehouse Canyon, Cascade Canyon, Cedar, Failing Rock, Kerkhoff and Cherry Creeks, and other Tributaries to these Creeks	200	---	---	---	---	---	---	801.21	801.23
Valley Reaches of Above Streams‡	---	---	---	---	---	---	---	801.21	
San Timoteo Area Streams									
San Timoteo Creek									
Reach 1A – Santa Ana River Confluence to Barton Road**	---	---	---	---	---	---	---	801.52	801.53
Reach 1B – Barton Road to Gage at San Timoteo Canyon Rd. u/s of Yucaipa Valley WD discharge**	---	---	---	---	---	---	---	801.52	801.53

\+ Numeric objectives have not been established; narrative objectives apply

‡ The Division between Mountain and Valley reaches occurs at the base of the foothills of the San Bernardino or San Gabriel Mountains

** Surface water objectives not established; underlying Management Zone objectives apply. Biological quality protected by narrative objectives

Table 4-1 WATER QUALITY OBJECTIVES - Continued

INLAND SURFACE STREAMS	WATER QUALITY OBJECTIVES (mg/L)							Hydrologic Unit	
	Total Dissolved Solids	**Hardness**	**Sodium**	**Chloride**	**Total Inorganic Nitrogen**	**Sulfate**	**Chemical Oxygen Demand**	Primary	Secondary
Prado Area Streams									
Chino Creek									
Reach 1A – Santa Ana River confluence to downstream of confluence with Mill Creek (Prado Area) – Base Flow*	700	350	110	140	10**	150	30	801.21	
Reach 1B – Confluence of Mill Creek (Prado Area) to beginning of concrete-lined channel south of Los Serranos Rd.	550	240	75	75	8	60	15	801.21	
Reach 2 – Beginning of concrete-lined channel south of Los Serranos Road to confluence with San Antonio Creek+	---	---	---	---	---	---	---	801.21	
Temescal Creek									
Reach 1a – Lincoln Avenue to Arlington Channel confluence	---	---	---	---	---	---	---	801.27	
Reach 1b – Arlington Channel confluence to 1400 ft. upstream upstream of Magnolia Avenue+	---	---	---	---	---	---	---	801.27	
Reach 2 – 1400 ft. upstream of Magnolia Avenue to Lee Lakes+	---	---	---	---	---	---	---	801.27	
Reach 3– Lee Lake, (see Lakes, Pg. 4-xx)									

* Additional objective: Boron 0.75 mg/l
** Total nitrogen, filtered sample
\+ Numeric objectives have not been established; narrative objectives apply

Table 4-1 WATER QUALITY OBJECTIVES - Continued

INLAND SURFACE STREAMS	WATER QUALITY OBJECTIVES (mg/L)							Hydrologic Unit	
	Total Dissolved Solids	**Hardness**	**Sodium**	**Chloride**	**Total Inorganic Nitrogen**	**Sulfate**	**Chemical Oxygen Demand**	Primary	Secondary
Fuller Mill Creek	150	100	10	15	1	20	5	802.22	
Stone Creek	150	100	10	15	1	20	5	802.21	
Other Tributaries: Logan, Black Mountain, Juaro Canyon, Indian, Herkey, Poppet and Potrero Creeks, and other Tributaries to these Creeks	150	70	10	12	1	15	5	802.12	802.22
Salt Creek+	---	---	---	---	---	---	---	802.12	
Goodhart Canyon, St. John's Canyon, and Cactus Valley Creeks+	---	---	---	---	---	---	---	802.15	

+ Numeric objectives have not been established; narrative objectives apply.

Table 4-1 WATER QUALITY OBJECTIVES - Continued

LAKES AND RESERVOIRS	WATER QUALITY OBJECTIVES (mg/L)							Hydrologic Unit	
	Total Dissolved Solids	**Hardness**	**Sodium**	**Chloride**	**Total Inorganic Nitrogen**	**Sulfate**	**Chemical Oxygen Demand**	Primary	Secondary
UPPER SANTA ANA RIVER BASIN									
Baldwin Lake*+	---	---	---	---	---	---	---	801.73	
Big Bear Lake**	175	125	20	10	0.15	10	---	801.71	
Erwin Lake+	---	---	---	---	---	---	---	801.73	
Evans, Lake	490	---	---	---	---	---	---	801.27	
Jenks Lake	200	100	30	10	1	20	---	801.72	
Lee Lake+	---	---	---	---	---	---	---	801.34	
Mathews, Lake	700	325	100	90	---	290	---	801.33	
Mockingbird Reservoir	650	---	---	---	---	---	---	801.26	
Norconian, Lake	1050	---	---	---	---	---	---	801.25	
LOWER SANTA ANA RIVER BASIN									
Anaheim Lake	600	---	---	---	---	---	---	801.11	
Irvine Lake (Santiago Reservoir)	730	360	110	130	6	310	---	801.12	
Peters Canyon, Rattlesnake,Sand Canyon, and Siphon Reservoirs	720	---	---	---	---	---	---	801.11	

* Fills occasionally with storm flows; may evaporate completely
** Additional Objective: 0.15 mg/l Phosphorus
\+ Numeric objectives have not been established; narrative objectives apply.

Table 4-1 WATER QUALITY OBJECTIVES - Continued

LAKES AND RESERVOIRS	WATER QUALITY OBJECTIVES (mg/L)							Hydrologic Unit	
	Total Dissolved Solids	**Hardness**	**Sodium**	**Chloride**	**Total Inorganic Nitrogen**	**Sulfate**	**Chemical Oxygen Demand**	Primary	Secondary
SAN JACINTO RIVER BASIN									
Canyon Lake (Railroad Canyon Reservoir)***	700	325	100	90	8	290	---	802.11	802.12
Elsinore, Lake****	2000	---	---	---	1.5	---	---	802.31	
Fulmor, Lake	150	70	10	12	1	15	---	802.21	
Hemet, Lake	135	---	25	20	1	10	---	802.22	
Mystic Lake+	---	---	---	---	---	---	---	802.21	
Perris, Lake	220	110	50	55	1	45	---	802.11	

*** Note: The quality objectives for Canyon Lake are not intended to preclude transport of water supplies or delivery to the Lake.
**** Lake volume and quality highly variable
+ Numeric objectives have not been established; narrative objectives apply.

Amend CHAPTER 4 – WATER QUALITY OBJECTIVES, add REFERENCES:

REFERENCES

State Water Resources Control Board , "Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List, September 2004.

United States Environmental Protection Agency "Ambient Water Quality Criteria for Bacteria – 1986" EPA 440/5-84-002, January 1986.

United States Environmental Protection Agency "Water Quality Standards for Coastal and Great Lakes Recreation Waters; Final Rule" (40 CFR 131.41), November 2004.

United States Environmental Protection Agency "Report of the Experts Scientific Workshop on Critical Research Needs for the Development of New or Revised Recreational Water Quality Criteria". June 15, 2007 (EPA 823-R-07-006)

United States Environmental Protection Agency "Criteria Development Plan and Schedule for Recreational Water Quality Criteria" August 31, 2007. (EPA 823-R-003)

CHANGES TO CHAPTER 5- IMPLEMENTATION

Amend CHAPTER 5 – IMPLEMENTATION – insert the following between TOTAL DISSOLVED SOLIDS and NITROGEN MANAGEMENT and NONPOINT SOURCE PROGRAM

Recreation Water Quality Standards

Since the early 1970's, this Basin Plan has specified recreation water quality standards for surface waters in the Region, including REC1 and/or REC2 beneficial use designations and water quality objectives intended to protect those uses. Because of analytical constraints that make routine direct measurement of pathogens impractical, these objectives have been and continue to be based on levels of surrogate bacteria indicators. As noted in Chapter 4, the USEPA's recommendations for surrogate indicators to protect primary contact recreation have changed from total and fecal coliform to *E. coli* or enterococcus for freshwaters, and to enterococcus for marine waters (USEPA 1986). Epidemiological and laboratory investigations are ongoing and may lead to revised recommendations regarding the appropriate water quality criteria to protect recreation uses.

In 2012, the Regional Board adopted changes to the recreation standards, based on the work and recommendations of the Stormwater Quality Standards Task Force (Resolution No. R8-2012-0001). These changes included revised bacteria quality objectives applicable to freshwaters (see Chapter 4) and changes to the recreation use designations for specific fresh waters. Specific implementation strategies pertaining to the revised standards for freshwaters were also approved. This section describes those implementation strategies, which include the following:

- Intended application of Single Sample Maximum values in REC1 freshwaters
- Antidegradation targets for REC2 only freshwaters

- Controllable and uncontrollable sources of bacteria
- High flow suspension of recreation standards
- Monitoring plan for pathogen indicator bacteria in freshwaters
- POTW discharge requirements and implementation of recreational standards

Application of Single Sample Maximum values in REC1 freshwaters

It is recognized that a variety of factors affect the suitability of a water body for primary contact recreation, including the morphology of stream channels, the depth, velocity and aesthetic quality of the flows, access to the site by the public, and the extent to which recreational activity is actively encouraged by local authorities by providing parking, access, restrooms and other amenities. Federal guidance and regulation [United States Environmental Protection Agency, "Ambient Water Quality Criteria for Bacteria", January 1986, and "Water Quality Standards for Coastal and Great Lakes Recreation Waters; Final Rule" (the so-called "BEACH Act Rule"), Federal Register, Vol. 69, No. 200, November 16, 2004, pp.67217 *et seq.*] directs states to differentiate primary contact waters on the basis of the intensity of use, and other conditions as states deem appropriate, for the purposes of assigning Single Sample Maximum pathogen indicator values. These Single Sample Maximum values are statistical constructs, designed to be used as an indicator of whether established pathogen objectives (typically expressed as geometric means, as in this Plan (see Chapter 4)) are being met when insufficient data are available to calculate a geomean. The Single Sample values are derived from the formula included in the USEPA criteria document and shown in Table 5-REC1-ssv, note 2 (also see note 5). The Single Sample Maximum values are intended to provide a timely measure of the apparent quality of the water for primary contact recreation for public notification (posting) and, where necessary, closure purposes. States have discretion to employ the Single Sample Maximum values in the context of Clean Water Act programs, apart from their use for beach notification and closure purposes.

This Plan includes Single Sample Maximum provisions that apply to the REC1 freshwaters in the Region and that are consistent with federal guidance and regulation. These provisions are described below.

First, based on the analyses and recommendations of the Stormwater Quality Standards Task Force, REC1 freshwater lakes and streams within the Region are identified as "Tier A", "B", "C" or "D", based on the known or estimated actual or potential intensity of primary contact recreational use by the public, and other factors. These Tiers are defined as follows:

Tier A REC1 Waters: includes freshwater lakes and streams that are or may be heavily-used by the public for primary contact recreational activities, relative to other freshwater bodies in the Santa Ana Region. Typical examples of Tier A waters include, but are not limited to: Big Bear Lake, Canyon Lake, Lake Elsinore, Lake Perris, Reach 3 of the Santa Ana River, Reach 2 of Mill Creek (near Redlands) and Lytle Creek (Middle and North Forks). Single Sample Maximum (SSM) values for Tier A waters are calculated using a 75% statistical confidence factor. (See Table 5-REC1-ssv, below).

Tier B REC1 Waters: includes freshwater lakes and streams that are or may be moderately-used by the public for primary contact recreational activities. Moderate use occurs where the number of people accessing the waterbody is approximately half that

which generally occurs in Tier A waters. Typical examples of Tier B waters include, but are not limited to: Jenks Lake, Santiago Reservoir, Cucamonga Creek Reach 2, and Reaches 4 and 6 of the Santa Ana River. Single Sample Maximum values for Tier B waters are calculated using an 82% statistical confidence factor. (See Table 5-REC1-ssv, below)

Tier C REC1 Waters: includes freshwater lakes and streams that are or may be lightly-used by the public for primary contact recreational activities. Light use occurs where the number of people accessing the waterbody is less than half that which generally occurs in Tier A waters. Typical examples of Tier C waters include, but are not limited to: Reach 2 of the Santa Ana River, Bear Creek, Chino Creek Reach 1B, Anza Park Drain, and Sunnyslope Channel. Single Sample Maximum values for Tier C waters are calculated using a 90% statistical confidence factor. (See Table 5-REC1-ssv, below)

Tier D REC1 Waters: includes freshwater lakes and streams that are infrequently used by the public for primary contact recreational activities. Infrequent use occurs where people only access the waterbody rarely or occasionally. Typical examples of Tier D waters include, but are not limited to: most concrete-lined storm water channels in the urbanized areas of the watershed and many of the ephemeral streams located in the undeveloped areas of the watershed. Single Sample Maximum values for Tier D waters are calculated using a 95% statistical confidence factor. (See Table 5-REC1-ssv, below).

Tier A, B, C and D waters are listed in Table 5-REC1-Tiers. Table 5-REC1-Tiers includes a "Comments" column that provides information regarding factors considered in making Tier assignments. An additional, qualifying notation, "N", is also included in this table for certain waters assigned to Tier A, B, C, or D based on the known or anticipated frequency of use. It is recognized that there are waters within the Region that are in undeveloped areas and are expected to have low natural bacteria levels. While use of these waters for primary contact recreation may or may not occur or may be limited due to difficulties in access, channel characteristics, flow conditions and the like, as reflected in the Tier assignments, it is also necessary and appropriate to assure the protection of the high quality of these waters. Accordingly, these "N" listed waters are assigned Single Sample Maximum values using the 75% confidence factor in the calculation, which is the same approach utilized with Tier A, heavily-used waters. "N" listed waters are defined as follows:

Natural Conditions (N): includes freshwater lakes and streams located in largely undeveloped areas where ambient water quality is expected to be better than necessary to protect primary contact recreational activities regardless of whether such activities actually occur in these waterbodies. Single Sample Maximum values for "N" waters are calculated using a 75% statistical confidence factor. (See Table 5-REC1-ssv, below).

Use of the different statistical confidence factors (75%, 82%, 90% and 95%) to calculate SSM values results in a range in conservatism regarding the likelihood that the geometric mean is being met. A more conservative SSM value, based on the 75% confidence factor, is appropriate for waters that are heavily-used for primary contact recreation (Tier A). More people are likely to become ill if the bacteria quality of heavily-used waters is poor, so a higher degree of caution in evaluating quality conditions is appropriate. The more conservative SSM value is also appropriate where it is necessary to assure that existing high quality waters are protected ("N" waters). Progressively less conservative SSM values, calculated using the 82, 90 and 95% confidence

factors, are appropriate where there is declining frequency of existing or potential primary contact recreation (Tier B, C and D.)

Table 5- REC 1-Tiers[x]

INLAND SURFACE STREAMS	TIER A, B, C, OR D	Rationale for Tier Assignment
LOWER SANTA ANA RIVER		
Santa Ana River		
Reach 1	D	Intermittent, low flow[1] limited access[2]
Reach 2	C	Low flows, limited access
Aliso Creek	D (N)	Natural condition, limited access
Carbon Canyon Creek	D	Low, intermittent flow, limited access
Santiago Creek Drainage		
Santiago Creek		
Reach 1	D	Intermittent flow
Reach 2 – Irvine Lake (see Lakes)		
Reach 3 -	D (N)	Low flow
Reach 4 -	D (N)	Low flow
Silverado Creek	D (N)	Low flow
Black Star Creek	D (N)	Low flow
Ladd Creek	D (N)	Low flow, limited access
San Diego Creek Drainage		
San Diego Creek		
Reach 1	C	Low flow, no observed REC1 use[3]; however fishing and children observed near water
Reach 2	D	Low flow, limited access
Tributaries: Bonita Creek, Serrano Creek, Peters Canyon Wash, Hicks Canyon Wash, Bee Canyon Wash, Borrego Canyon Wash, Agua Chinon Wash, Laguna Canyon Wash, Rattlesnake Canyon, Sand Canyon Wash and other tributaries to these creeks.	D	Low flow, limited access
San Gabriel River Drainage		
Coyote Creek	D	Low flow/access prohibited
Upper Santa Ana River		

[x] Tiers based on USEPA's "Ambient Water Quality Criteria for Bacteria – 1986" and "Water Quality Standards for Coastal and Great Lakes Recreation Waters, Final Rule" (40 CFR 131.41), November 2004. Natural (N) refers to waters, typically in largely natural condition, that are expected to have good ambient bacterial quality. N waters will be assigned SSMs based on the 75% confidence level, like Tier A waters, even if designated Tier B, C, or D based on the intensity of REC1 use.

[1] Low, intermittent or ephemeral flows limit opportunity for REC1 use.

[2] Access limited or precluded by prohibitions by agency/party with jurisdiction and/or physical constraints (fencing and signage, riprap/concrete/natural steep slopes, impenetrable vegetation in/adjacent to the fresh water body, remote location, and the like)

[3] Photographic survey showed no REC1 use. (See CDM Recreation Use Survey Reports)

Table 5- REC 1-Tiers[x] (Continued)

INLAND SURFACE STREAMS	Tier A, B, C, OR D	Rationale for Tier Assignment
Reach 3	A	High use, wading and soaking, **Reference condition for Tier A waters**
Reach 4	B	Access restricted, some water contact REC use observed
Reach 5	D	Low/intermittent flow
Reach 6	B (N)	Natural condition, fishing stream
San Bernardino Mountain Streams		
Mill Creek Drainage		
Mill Creek		
Reach 1	A	High use, wading and soaking
Reach 2	A (N)	Natural condition, wading and soaking
Mountain Home Creek	D (N)	Natural condition, infrequent water contact REC use
Mountain Home Creek, East Fork	D (N)	Natural condition, remote
Monkeyface Creek	D (N)	Natural condition, remote/low flow, light to infrequent water contact REC use
Alger Creek	D (N)	
Falls Creek	D (N)	
Vivan Creek	D (N)	
High Creek	D (N)	
Other Tributaries: Lost, Oak, Cove, Green, Skinner, Hatchery, Rattlesnake, Slide, Snow, Bridal Veil, and Oak Creeks and tributaries to these Creeks	D (N)	
Bear Creek Drainage	C (N)	Natural condition, remote, light to infrequent water contact REC use. Fishing streams
Bear Creek		
Siberia Creek		
Slide Creek		
Johnson Creek		
All other tributaries to these Creeks		
Big Bear Lake Tributaries		
North Creek	D (N)	Natural condition/low flows, infrequent water contact REC activities
Metcalf Creek		
Grout Creek		
Rathbone Creek		
Meadow Creek		
Summit Creek		
Knickerbocker Creek /Reach 1	D	Access prohibited, low flow, no REC 1 use observed[4]
Reach 2	D (N)	Natural condition, low flow
Other tributaries: Minnelusa Canyon, Poligue, Red Ant Creeks and Tributaries to these Creeks	D (N)	Natural condition, low flow

[x] Tiers based on USEPA's "Ambient Water Quality Criteria for Bacteria – 1986" and "Water Quality Standards for Coastal and Great Lakes Recreation Waters, Final Rule" (40 CFR 131.41), November 2004. Natural (N) refers to waters, typically in largely natural condition, that are expected to have good ambient bacterial quality. N waters will be assigned SSMs based on the 75% confidence level, like Tier A waters, even if designated Tier B, C, or D based on the intensity of REC1 use.

[4] Photographic survey for one year period showed no REC1 use.

Table 5- REC 1-Tiers[x]
(Continued)

INLAND SURFACE STREAMS	Tier A, B, C, OR D	Rationale for Tier Assignment
Other Tributaries to Baldwin Lake: Sawmill, Green, and Caribou Canyon Creeks and other Tributaries to these Creeks	D (N)	Natural condition, low flow, remote
Other Streams Draining to Santa Ana River (Mountain Reaches)		
Cajon Canyon Creek	C (N)	Natural condition, low flow
City Creek	D (N)	Natural condition, low flow, limited access, remote
Devil Canyon Creek	D (N)	Natural condition, low flow, limited access, remote
East Twin and Strawberry Creeks	D (N)	Natural condition, low flow, limited access, remote
Waterman Canyon Creek	D (N)	Natural condition, low flow, limited access, remote
Fish Creek	D (N)	Natural condition, low flow, limited access, remote
Forsee Creek	D (N)	Natural condition, low flow, limited access, remote
Plunge Creek	D (N)	Natural condition, low flow, limited access, remote
Barton Creek	D (N)	Natural condition, low flow, limited access, remote
Bailey Creek	D (N)	Natural condition, low flow, limited access, remote
Kimbark Canyon, East Fork Kimbark Canyon, Ames Canyon and West Fork Cable Canyon Creeks	D (N)	Natural condition, low flow, limited access, remote
Valley Reaches of Above Streams	D (N)	Natural condition, low, flow, limited access
Other Tributaries (Mountain Reaches): Alder, Badger Canyon, Bledsoe Gulch, Borea Canyon, Breakneck, Cable Canyon, Cienaga Seca, Cold, Converse, Coon, Crystal, Deer, elder, Fredalba, Frog, Government, Hamilton, Heart Bar, Hemlock, Keller, Kilpecker, Little Mill, Little Sand Canyon, Lost, Meyer Canyon, Mile, Monroe Canyon, Oak, Rattlesnake, Round Cienaga, Sand, Schneider, Staircase, Warm Springs Canyon and Wild Horse Creeks, and other tributaries to those Creeks.	D (N)	Natural condition, low flow, limited access, remote
San Gabriel Mountain Streams		
San Antonio Creek	A (N)	Natural condition, wading and soaking in summer months

[x] Tiers based on USEPA's "Ambient Water Quality Criteria for Bacteria – 1986" and "Water Quality Standards for Coastal and Great Lakes Recreation Waters, Final Rule" (40 CFR 131.41), November 2004. Natural (N) refers to waters, typically in largely natural condition, that are expected to have good ambient bacterial quality. N waters will be assigned SSMs based on the 75% confidence level, like Tier A waters, even if designated Tier B, C, or D based on the intensity of REC1 use.

Table 5- REC 1-Tiers[X] (Continued)

INLAND SURFACE STREAMS	Tier A, B, C, OR D	Rationale for Tier Assignment
Lytle Creek (Middle and North Forks)	A (N)	Natural condition, wading and soaking in summer months, fishing streams
Tributaries to Lytle Creek (South Fork and Coldwater Canyon Creek)	D (N)	Natural condition, low flow
Day Canyon Creek	D (N)	Natural condition, low flow, remote, limited access
East Etiwanda Creek	D (N)	Natural condition, low flow, limited access, remote
Valley Reaches of Above Streams	D (N)	Natural condition, low flow, limited access
Cucamonga Creek / Reach 2 (Mountain Reach) – 23rd St. in Upland to headwaters	B (N)	Natural condition, limited access
Mill Creek (Prado Area)	C	limited access, low flow
Other Tributaries (Mountain Reaches) San Sevaine, Deer Canyon, Duncan Canyon, Henderson Canyon, Bull, Fan, Demens, Thorpe, Angalls, Telegraph Canyon, Stoddard Canyon, Icehouse Canyon, Cascade Canyon, Cedar, Falling Rock, Kerkhoff, and Cherry Creeks and other Tributaries to these Creeks	C (N)	Natural condition, low flow, limited access, most creeks in remote areas
Valley Reaches of Above Streams	D	Low flow, limited access
San Timoteo Creek		
Reach 1A – Santa Ana River Confluence to Barton Road	D	Low flow, limited access
Reach 1B – Barton Road to Gage at San Timoteo Canyon Rd.	D	Low flow, limited access
Reach 2 – gage at San Timoteo to confluence with Yucaipa Creek	C	Low flow, limited access
Reach 3 – Confluence with Yucaipa Creek to confluence with little San Gorgonio and Noble Creeks	C	Low flow, limited access
Oak Glen, Potato Canyon, and Birch Creeks	D (N)	Natural condition, low flow, limited access
Little San Gorgonio Creeks	C (N)	Natural condition, low flow, limited access, remote
Yucaipa Creek	D	Low flow, limited access
Other Tributaries to these Creeks-Valley Reaches	D	Low flow, limited access

[X] Tiers based on USEPA's "Ambient Water Quality Criteria for Bacteria – 1986" and "Water Quality Standards for Coastal and Great Lakes Recreation Waters, Final Rule" (40 CFR 131.41), November 2004. Natural (N) refers to waters, typically in largely natural condition, that are expected to have good ambient bacterial quality. N waters will be assigned SSMs based on the 75% confidence level, like Tier A waters, even if designated Tier B, C, or D based on the intensity of REC1 use.

Table 5- REC 1-Tiers[x]
(Continued)

INLAND SURFACE STREAMS	Tier A, B, C, OR D	Rationale for Tier Assignment
Other Tributaries to these Creeks (Mountain Reaches)	C (N)	Natural condition
Anza Park Drain	C	Low flow
Sunnyslope Channel	C	Low flow, limited access, Santa Ana sucker habitat
Tequesquite Arroyo (Sycamore Creek)	C	Low flow, limited access
Prado Area Streams		
Chino Creek		
Reach 1A – Santa Ana River confluence to downstream of confluence with Mill Creek (Prado Area)	D	Low flow, limited access
Reach 1B – Confluence with Mill Creek (Prado Area) to beginning of concrete lined channel south of Los Serranos Rd.	C	Low flow, limited access
Reach 2 – Beginning of concrete-lined channel south of Los Serranos Rd. to confluence with San Antonio Creek	D	Low flow, limited access
Temescal Creek[5]		
Reach 2 – 1400 ft. upstream of Magnolia Ave. to Lee Lake	D	Low flow, limited access
Reach 3 – Lee Lakes (see Lakes)		
Reach 4 – Lee Lake to Mid-section Line of Section 17	D	Low flow, limited access
Reach 5 – Mid-section line of Section 17 to Elsinore Groundwater Management Zone Boundary	D	Low flow, limited access
Reach 6 – Elsinore Groundwater Management Zone Boundary to Lake Elsinore Outlet	D	Low flow
Coldwater Canyon Creek	C N)	Natural condition, limited access, remote
Bedford Canyon Creek	C (N)	Natural condition, limited access, remote
Dawson Canyon Creek	C N)	Natural condition, limited access, remote

[x] Tiers based on USEPA's "Ambient Water Quality Criteria for Bacteria – 1986" and "Water Quality Standards for Coastal and Great Lakes Recreation Waters, Final Rule" (40 CFR 131.41), November 2004. Natural (N) refers to waters, typically in largely natural condition, that are expected to have good ambient bacterial quality. N waters will be assigned SSMs based on the 75% confidence level, like Tier A waters, even if designated Tier B, C, or D based on the intensity of REC1 use.

[5] Reach 1a and 1b not designated REC1 as determined through the UAA process.

Table 5- REC 1-Tiers[x]
(Continued)

INLAND SURFACE STREAMS	Tier A, B, C, OR D	Rationale for Tier Assignment
Other Tributaries to these Creeks	C (N)	Natural condition, limited access
San Jacinto River		
Reach 1 – Lake Elsinore to Canyon Lake	C	Low flow
Reach 2 – Canyon Lake (see Lakes)		
Reach 3 – Canyon Lake to Nuevo Road	D	Low / ephemeral flow, limited access
Reach 4 – Nuevo Road to North-South Mid-Section Line, T4S/R1W-S8	D	Low / ephemeral flow, limited access
Reach 5 – North-South Mid-Section Line, T4S/R1W-S8, to Confluence with Poppet Creek	D	Low / ephemeral flow, limited access
Reach 6 – Poppet Creek to Cranston Bridge	C	Low flow
Reach 7 – Cranston Bridge to Lake Hemet	C (N)	Natural condition, limited access, remote
Bautista Creek - Headwaters to Debris Dam	D (N)	Low flow, agricultural lands in lower section
Strawberry Creek and San Jacinto River, North Fork	C (N)	Low flow, limited access, some areas remote
Fuller Mill Creek	C (N)	Low flow, limited access, remote
Stone Creek	C (N)	Low flow, limited access, remote
Other Tributaries: Logan, Black Mountain, Juaro Canyon, Indian, Herkey, Poppet, and Potrero Creeks and other Tribuarties to these Creeks	D (N)	Low flow, limited access, remote
Salt Creek	D	Low / ephemeral flow
Goodhart Canyon Creek, St. John's Canyon, and Cactus Valley Creeks	D	Low / ephemeral flow, remote
Lakes and Reservoirs		
Baldwin Lake	D (N)	Ephemeral / intermittent
Big Bear Lake	A	Designated swimming areas
Erwin Lake	D	Ephemeral / intermittent
Evans Lake	D	Swimming prohibited by City Park officials
Jenks Lake	B (N)	Mt. fishing lake, REC body contact activities discouraged
Lee Lake	C	Swimming prohibited, float tube fishing allowed
Lake Mathews	D	Drinking water reservoir, access prohibited

[x] Tiers based on USEPA's "Ambient Water Quality Criteria for Bacteria – 1986" and "Water Quality Standards for Coastal and Great Lakes Recreation Waters, Final Rule" (40 CFR 131.41), November 2004. Natural (N) refers to waters, typically in largely natural condition, that are expected to have good ambient bacterial quality. N waters will be assigned SSMs based on the 75% confidence level, like Tier A waters, even if designated Tier B, C, or D based on the intensity of REC1 use.

Table 5- REC 1-Tiers[X]
(Continued)

LAKES AND RESERVOIRS	Tier A, B, C, OR D	Rationale for Tier Assignment
Mockingbird Reservoir	D	Limited access/ fenced and locked
Lake Norconian	D	Access prohibited by U.S. Navy, no water contact REC activities allowed
Anaheim Lake	C	Fishing, GW recharge basin, water contact REC activities prohibited
Irvine Lake	B	Fishing Lake, water contact REC activities prohibited. Float tube fishing allowed.
Peters Canyon, Rattlesnake, Sand Canyon and Siphon Reservoirs	D	Water contact REC activities and/or access prohibited
Canyon Lake	A	Water contact activities allowed
Lake Elsinore	A	Water contact activities allowed
Lake Fulmor	C	Fishing allowed
Lake Hemet	C	Fishing Lake, float tube fishing and water contact REC activities prohibited.
Mystic Lake	C	Ephemeral lake, water fowl hunting allowed
Lake Perris	A	Water contact activities allowed, designated swimming areas
WETLANDS (INLAND)		
San Joaquin Freshwater Marsh	D	Access prohibited
Shay Meadows	D (N)	Natural conditions, low flows
Stanfield Marsh	D	Access prohibited
Prado Basin Management Zone	C	Access prohibited, thick vegetation limits accessibility
San Jacinto Wildlife Preserve	C	Hunting ponds filled with treated effluent
Glen Helen	C	Low flow, County Park

[X] Tiers based on USEPA's "Ambient Water Quality Criteria for Bacteria – 1986" and "Water Quality Standards for Coastal and Great Lakes Recreation Waters, Final Rule" (40 CFR 131.41), November 2004. Natural (N) refers to waters, typically in largely natural condition, that are expected to have good ambient bacterial quality. N waters will be assigned SSMs based on the 75% confidence level, like Tier A waters, even if designated Tier B, C, or D based on the intensity of REC1 use.

It is important to note that the freshwaters listed in Table 5-REC1-Tiers were not assessed comprehensively in detail to determine whether primary contact recreation actually takes place or has taken place in the past, and at what intensity. The assignments to different Tiers are based on Board staff and stakeholder knowledge of the characteristics of these waters, evidence regarding existing or probable future primary contact recreational activity, and anecdotal information, all compiled by the Stormwater Quality Standards Task Force and during public review of the recreation standards amendments in 2012. Therefore, if and as knowledge of each of these waters is obtained in the future, the Tier assignments are subject to change. Further, Use Attainability Analyses may be conducted in the future for one or more of these waters, which may lead to changes in REC1 designations (see Chapter 3, Recreation Beneficial Uses). Inclusion of a waterbody in Table 5- REC1-Tiers does not denote a determination that REC1 is, in fact, an existing use for that waterbody.

In accordance with federal regulation (the “BEACH Act Rule”), an heavily used primary contact freshwater (Reach 3 of the Santa Ana River) was used as the baseline for identifying other Tier A waters within the Region. Then, Reach 3 and other Tier A waters were used to categorize other freshwaters in the Region based on their relative known or estimated intensity of primary contact use.

Table 5-REC1-ssv shows maximum expected Single Sample values for *E. coli* for Tier A, B, C and D freshwaters. The values shown are based on a default log standard deviation, derived from the epidemiological studies USEPA used to formulate the 1986 national criteria, and on alternative log standard deviations. The equation used to calculate these Single Sample Maximum values is included in the Table and may be used to derive site-specific SSMs, under certain conditions (see table notes 2 and 5). As stated above, these Single Sample Maximum values were derived from USEPA’s recommended bacteria criteria (USEPA 1986). Again as stated previously, the Single Sample values for waters denoted as “N” in Table 5-REC1-Tiers are calculated using the 75% confidence factor, like Tier A waters.

As specified in Table 4-pio (note 3) and Table 5-REC1-ssv (note 1), where there are sufficient data to calculate a representative geometric mean for *E. coli*, the Single Sample Maximum values specified in Table 5-REC1-ssv shall not be used to assess compliance with the geometric mean *E. coli* objective specified in Table 4-pio. Geometric mean objectives are the more reliable measure of long-term water body conditions and are thus strongly preferred for use in water body assessment decisions, including the development of the Clean Water Act section 303(d) list of impaired waters. The use of only Single Sample Maximum bacterial data is generally inappropriate for such assessments unless there is a limited data set, the water is subject to short-term spikes in bacteria concentrations, or there are other circumstances that justify the use of only single sample maximum data. The expected principal use of Single Sample Maximum values for the freshwaters of this Region is to implement public notification programs and/or to trigger additional monitoring and investigation to determine whether there are controllable sources of pathogen input that pose a public health concern. Where it is necessary to make public notification and/or beach closure decisions in the absence of sufficient data to calculate a representative geometric mean for *E. coli*, no single sample shall exceed the default value shown in Table 5-REC1-ssv or an alternative value calculated by using the formula shown in table note 2 (see also table note 5). For all other purposes related to implementing the Clean Water Act, if there are insufficient data to calculate a representative geometric mean for *E. coli*, “X%” of the representative sample data collected over a

30 day period (running) shall be less than the default value specified in this Table or the alternative calculated value, where X% is the statistical confidence level assigned to a particular waterbody.

A monitoring program designed to assure that sufficient data are collected to determine geometric means and/or to provide sufficient data necessary to assess trends in bacteria water quality will be implemented. The expected elements of that program, which is subject to approval by the Regional Board through the normal public participation process, are described below (*Monitoring plan for pathogen indicator bacteria in freshwaters*).

Table 5-REC1-ssv: Alternative Method for Assessing Probable Compliance with the *E. coli* Objective in Freshwaters Designated REC1 when Insufficient Data are Available to Calculate a Geometric Mean[1]

	Maximum Expected Single Value for *E. coli*[2] (assuming true geometric mean is = 126 organism/mL			
Standard Deviation of Log-transformed *E. coli* data	**Tier A[3]: 75% C.L[4].**	**Tier B[3]: 82% C.L.**	**Tier C[3]: 90% C.L.**	**Tier D[3]: 95% C.L.**
0.10	147	156	169	184
0.20	172	194	227	269
0.30	201	240	305	394
0.40(default)[5]	235	298	409	575
0.50	274	370	550	842
0.60	320	459	739	1,231
0.70	374	569	992	1,801
0.80	437	705	1,332	2,633
0.90	510	875	1,788	3,849
1.00	596	1,085	2,401	5,629
1.10	696	1,346	3,224	8,230
1.20	814	1,669	4,329	12,034

[1] This table shows single sample values calculated using the formula identified in table note 2. Default values for each Tier are calculated using 0.4 as the log standard deviation (LSD). Alternative values calculated using different LSD values are also shown. See table note 5 for discussion of these alternative LSD values. Where it is necessary to make public notification and/or beach closure decisions in the absence of sufficient data to calculate a representative geometric mean for *E. coli*, no single sample shall exceed the default value shown in this table or an alternative value calculated by using the formula shown in table note 2 (see also table note 5). For all other purposes related to implementing the Clean Water Act, if there are insufficient data to calculate a representative geometric mean for *E. coli*, "X%" of the representative sample data collected over a 30 day period (running) shall be less than the default value specified in this Table or the alternative calculated value, where X% is the statistical confidence level assigned to a particular waterbody. Where there are sufficient data to calculate a representative geometric mean for *E. coli*, the default or calculated single sample maximum value shall not be used to assess compliance with the *E. coli* objective in Table 4-pio. The intent of single sample maximum values is to inform public notification decisions and to trigger additional follow-up monitoring.

[2] EPA's recommended formula for calculating the maximum expected single sample value is:

$$\mathbf{SSM = ECO * 10^{(SCF * LSD)}}$$, where…

ECO = *E. coli* Objective expressed as geometric mean of a minimum number of samples; Assumed ECO=126 based on a minimum of 5 samples over a 30-day period (rolling average) (see Table 4-pio).
SCF = the appropriate Statistical Confidence Level Factor for the given waterbody; SCF=0.675 corresponds with the 75% confidence level; SCF=0.935 corresponds with the 82% confidence level; SCF=1.28 corresponds with the 90% confidence level; SCF=1.65 corresponds with the 95% confidence level.
LSD = the Log Standard Deviation of measured *E. coli* densities.

[3] Single Sample Maximum values for Tier A, B, C or D waters that are also denoted with an "N" in Table 5-REC1-Tiers shall be calculated as for Tier A waters.

[4] **C.L.** = Confidence Level

[5] Variability is calculated as the standard deviation of the log-transformed *E. coli* data. In the absence of adequate representative data to estimate *E. coli* variability, the maximum expected single sample value will be calculated based on the assumption that the LSD = 0.4, as recommended by EPA [40 CFR 131.41 (69 Fed. Reg. 220, 67242; Nov. 16, 2004 ("BEACH Act Rule"))]. Application of an alternative LSD value(s) must be approved by the Regional Board through the normal public notice and comment process. Per USEPA requirements identified in the BEACH Act Rule (69 Fed. Reg. 220, 67227), at least 30 samples must be

collected in a single recreation season to calculate a statistically valid site-specific log standard deviation that can be used to calculate a corresponding single sample maximum . Data acceptability shall generally be determined using the guidelines described in the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List [Sept., 2004].

Antidegradation targets for REC2 only freshwaters

As discussed in Chapter 4 (Pathogen Indicator Bacteria, *REC2 Only Freshwaters*), this Plan does not specify bacteria quality objectives for freshwaters designated REC2 only. However, it is appropriate to take steps to assure that bacteria quality conditions in these waters do not degrade as the result of controllable water quality factors, consistent with antidegradation policy requirements.

For waters designated REC2 only pursuant to approved Use Attainability Analyses (UAAs; see discussion in Chapter 3 and Table 3-1), bacteria quality targets will be calculated and used to provide a baseline for expected water quality conditions in these waters. If future monitoring provides credible evidence that these targets are being exceeded and that quality conditions may have declined, then additional monitoring and investigation will be initiated and corrective action taken if and as appropriate. Requirements pertaining to monitoring and follow-up investigation and action are identified below (*Monitoring Plan for Pathogen Indicator Bacteria in Freshwaters*).

The baseline condition (antidegradation target) for each REC2 only water will be established through a comprehensive statistical analysis of ambient bacteria quality data that is conducted as part of the UAA used to justify the REC2 only designation. The statistical analysis must be designed to characterize the entire distribution of the dataset. This includes determination of the geometric mean, median, standard deviation, coefficient-of-variation, maximum value, upper 75th percentile value and sample size for the dataset. The upper 75th percentile density will serve as the antidegradation target, that is, the trigger threshold for further investigation and possible corrective action. As new data become available pursuant to requisite monitoring, they will be compared to this antidegradation target to determine whether further investigation or action is needed. The additional monitoring results must be sufficiently robust to assess whether a lowering of water quality has occurred.

In general, the following method will be used to estimate the upper 75th percentile densities:

Step 1)	Log-transform the existing data
Step 2)	Calculate the mean of the log-transformed data
Step 3)	Calculate the standard deviation of the log-transformed data
Step 4)	Multiply the standard deviation of log-transformed data by 0.675
Step 5)	Add result from Step 4 to the mean value calculated in Step 2
Step 6)	Calculate the anti-log for the value derived in Step 5; this is the 75% Upper Confidence Level.

Using the 75th percentile to assess water quality trends and as a trigger for further monitoring is conceptually similar to U.S. EPA's recommended approach for using Single Sample Maximums (see *Application of Single Sample Maximum values in REC1 freshwaters,* above), and to the approach used to characterize ambient TDS and nitrogen quality in the groundwater management zones throughout the Santa Ana Region (see Chapter 4, Management Zone TDS and Nitrate-nitrogen Water Quality Objectives).

Where 75% of the new data is less than or equal to the antidegradation target, no degradation will be inferred. However, if more than 25% of the samples exceed the target, additional samples must

be collected and analyzed to determine whether the elevated values are anomalous (verified by formal outlier analysis) or if there is a true trend toward water quality degradation.

Use Attainability Analyses have been completed to justify the designation as REC2- only the specific freshwater stream segments listed in Table 5-REC2 Only Targets-FW. For each of these waters, this Table shows the antidegradation indicator bacteria targets, based on the 75% upper confidence level of data obtained as part of the UAAs:

Table 5-REC2 Only Targets-FW[1]

REC2 Only Waterbody	*E. coli* Densities (cfu/100 mL)				
	Geometric Mean	Std. Dev.	N	Max. Observed	75% UCL[3]
Temescal Creek, Reach 1b	198	34	119	9,200[2]	374
Santa Ana Delhi Channel, Reach 2	448	110	63	12,590	1231

UCL= Upper Confidence Level; **75% upper confidence level is the antidegradation target**

[1] CDM, Inc. Technical Memorandum. Calculation of Antidegradation Targets for REC2 Only Freshwaters. April 24, 2012.
[2] A value of 1,800,000 cfu/100 mL, from the sample collected on 9/8/2007, was excluded as an outlier.
[3] Targets calculated for dry weather baseflow conditions only; do not apply to samples collected during wet weather conditions.

Use Attainability Analyses have also been completed for two tidal prisms (Santa Ana Delhi and Greenville-Banning channels). Antidegradation targets for these waters, though not freshwater bodies, are shown in Table 5-REC2 Only Targets-Other Waters, below.

Table 5-REC2 Only Targets- Other Waters[1]

REC2 Only Waterbody	Enterococcus Densities (cfu/100 mL)				
	Geometric Mean	Std. Dev.	N	Max. Observed	75% UCL
Greenville-Banning Channel, Tidal Prism	44	2041	116	22,000	133
Santa Ana-Delhi Channel, Tidal Prism	439	4852	65	28,600	1320

UCL= Upper Confidence Level; **75% upper confidence level is the antidegradation target**

[1] California Regional Water Quality Control Board, Santa Ana Region. Memorandum prepared by David Woelfel, Calculation of Antidegradation Targets for REC2 Only Waters-Tidal Prisms. April 24, 2012.
[2] Targets calculated for dry weather baseflow conditions only; do not apply to samples collected during wet weather conditions.

Controllable and Uncontrollable Sources of Bacteria

As described in Chapter 4, certain water quality objectives established in this Basin Plan refer to “controllable sources” or “controllable water quality factors”. Whether or not sources are “controllable” affects the ability of the Regional Board and dischargers to assure that waste

discharges are regulated and controlled so as to assure the reasonable protection of beneficial uses.

Uncontrollable bacteria sources refer to contributions of bacteria within the watershed from nonpoint sources that are not readily managed through technological or natural mechanisms or through source control and that may result in exceedances of water quality objectives for indicator bacteria. Specific uncontrollable indicator bacteria sources within the Santa Ana Region may include:

- Wildlife activity and waste
- Bacterial regrowth within sediment or biofilm
- Resuspension from disturbed sediment
- Marine vegetation (wrack) along high tide line
- Concentrations (flocks) of semi-wild waterfowl
- Shedding during swimming

Controllable bacteria sources refer to any bacteria indicator source that can be controlled by treatment or management methods. Requirements for the application of Best Available Treatment technology (BAT) and Best Conventional Treatment technology (BCT) apply to some of these sources (e.g., POTWs) ; in other cases, such as discharges regulated under the areawide municipal separate storm system permits (“MS4” permits), reasonable actions to reduce or eliminate the contribution of these sources to the maximum extent practicable are required. These include the implementation of best management practices or other mechanisms. Controllable sources are predominantly anthropogenic in nature and can be reduced in varying degrees.

Specific anthropogenic controllable indicator bacteria sources within the Santa Ana Region may include:

- Improper use of fertilizers on residential and commercial properties and agricultural lands
- Improper handling of pet waste
- Cross-connections between the sanitary and storm sewer systems
- Leaky sanitary sewer conveyances
- Discharges from POTWs
- Improper handling and disposal of food waste
- Improper management of CAFO waste and washwater
- Runoff from yards containing fertilizers, pet waste, and lawn trimmings
- Homeless encampments

Certain techniques are available to identify human sources; when practical, those techniques should be used in areas where persistent exceedances of bacteria objectives occur.

These source definitions and categories may be further refined as more science becomes available.

High flow suspension of recreation standards

In semi-arid areas like much of the Santa Ana Region, intermittent but sometimes intense rains pose a serious risk of flash flooding. Stormwater runoff significantly increases the volume and velocity of local stream flows. Dam releases and other irregular sources, such as imported water transfers, can also result in dramatic, though transitory, increases in stream flow and velocity. Such flows create a severe hazard to public safety and temporarily preclude attainment of recreational uses in or near the water.

These hazards are exacerbated in urban streams that have been engineered or heavily modified to provide essential flood protection during and immediately following storm events. Channel straightening, bank stabilization, substantial vegetation removal and flow diversions are all intended to convey stormwater runoff to a suitable discharge location as rapidly as possible while minimizing the risk of flooding and erosion. However, these common flood control construction practices and maintenance procedures significantly increase the volume and velocity of flow in urban channels during wet weather conditions. The danger inherent in recreating under such conditions is well-recognized by other Regional Boards and reflected in the suspension of recreational beneficial uses and applicable bacteria quality objectives during specific high flow conditions in other urban areas (see, for example, Resolution No. 2003-010 of the Los Angeles Regional Board, subsequently affirmed by State Board Resolution No. 2003-0071).

This Plan recognizes these circumstances and specifies that the recreational use designations (REC1 and REC2), the narrative pathogen objective and the numeric pathogen indicator objectives shown in Table 4-pio are temporarily suspended when high flows preclude safe recreation in or near freshwater stream channels that have been engineered, heavily modified or maintained to serve as temporary flood control facilities. Temporary suspensions of recreation standards do not apply to freshwater lakes or ocean beaches.

Definition of Unsafe Flows. Flow conditions in freshwater streams in the Santa Ana watershed are presumptively unsafe if either of the following conditions occurs: (1) stream velocity is greater than 8 feet-per-second (fps); or, (2) the product of stream depth (feet) and stream velocity (fps) (the depth-velocity product) is greater than 10 ft^2/s[+]. Where representative stream gauge data are not available, unsafe flows are presumed to exist in stream channels that have been engineered or heavily modified for flood control purposes when rainfall in the area tributary to the stream is greater than or equal to 0.5 inches in 24 hours. Rainfall measurements may be estimated using gauges, Doppler radar data, or other scientifically defensible methods.

It is recognized that, because of channel morphology, substrate type or other conditions, it may be unsafe to engage in recreational activities under lower flow conditions in stream channels. The fact that recreational standards may be suspended under some but not all flow conditions does not imply that it is safe to recreate in or near a waterbody when the high flow suspension is not in force (see, for example, discussion of reaches 2 and 3 of the Santa Ana River, below).

[+] The depth-velocity product criterion is not intended to apply to normal dry weather flows contained within low-flow pilot channels within engineered or heavily modified channels.

Termination of Temporary Suspension. Stream flows will be presumed to return to safe conditions and the temporary suspension of recreation standards will cease 24-hours after the end of the storm event, unless actual flow data demonstrate that the suspension should terminate sooner or later than the default period. In such cases, the suspension terminates once stream flows (measured as cubic-feet/second or (cfs) have returned to the range of normal pre-storm conditions (cfs<98th percentile as calculated from a calibrated hydrograph for the stream).

Site-Specific Flow Triggers. The hydrology of individual freshwater streams varies greatly. Therefore, the thresholds and presumptions related to rainfall and stream flow identified above may be adjusted based on site-specific data analysis and/or runoff models, subject to approval by the Regional Board through the normal public participation process.

Definition of Engineered or Heavily Modified Channels. The temporary suspension of recreational uses and related water quality objectives during unsafe flow conditions applies only to streams that have been engineered or heavily modified to enhance flood control protection. Engineered streams include all man-made flood control facilities with a box-shaped, V-shaped or trapezoidal configuration that have been lined on the side(s) and/or bottom with concrete or similar channel-hardening materials. Heavily modified channels include once natural streams that have been substantially re-engineered, using levees, bank stabilization (rip-rap), channel straightening, vegetation removal and other similar practices, to facilitate rapid evacuation of increased urban runoff during storm events.

Delineation of Engineered or Modified Channels. The very large number of engineered and modified flood control facilities in the Santa Ana Region makes it difficult to individually identify all such channels by name. Therefore, Appendix VIII provides maps of the waterbody segments that have been engineered or modified in the manner described above and that, therefore, qualify for the temporary suspension of recreational standards under specific high flow conditions.[1] Appendix IX contains ARC-GIS files that identify each of these same waterbodies in a more precise, high-resolution format. The engineered flood control channels identified in these Appendices will be updated annually via the annual report submitted by the MS4 permittees for each county in the Region. Additions or deletions to the list of waters identified in these Appendices will also be considered during the triennial review process or on a case-by-case basis upon request by an interested party to do so. Any such request must be supported by substantial evidence.

It is important to recognize that while these channels have been engineered or modified for flood control purposed, these changes do not necessarily preclude the support of habitat in and adjacent to the channels, or the use of that habitat by aquatic, avian and terrestrial wildlife. There may be opportunities for habitat and/or species restoration projects in or adjacent to these channels. The temporary suspension of recreation standards in these channels would have no effect on the ability to implement such projects.

[1] U.S. EPA. Water Quality Standards Handbook. Sept. 15, 1993. Section 2.9: "States may also conduct generic use attainability analyses for groups of water body segments provided that the circumstances relating to the segments in question are sufficiently similar to make the results of the generic analyses reasonably applicable to each segment." (pg. 2-9).

Site-Specific Eligibility for Temporary Suspension. The Regional Board may determine that it is appropriate to apply the temporary suspension to additional waters that may not be engineered or modified. Such waters may be added provided that it is demonstrated that high hazardous flow conditions preclude attainment of the use and that such recreational uses are not "existing" uses during high flow conditions. Such a demonstration will require that a Use Attainability Analysis (UAA) be performed in accordance with federal regulations. The Regional Board may also determine that recreation standards should *not* be suspended in some specific streams if it is demonstrated that stream channel conditions or flow controls effectively eliminate any safety hazard to the public.

Special Case: Santa Ana River- Reach 2. Reach 2 of the Santa Ana River extends from Prado Dam near Corona downstream to 17th Street in Santa Ana. This segment of the river has been heavily modified and re-engineered to provide greater flood control protection to the residents of Orange County. Although flow control at Prado Dam minimizes the risk of flash flooding in Reach 2, the volume of water passing through the deep and narrow channel near Featherly Park, just downstream of the Dam, often exceeds the default threshold that triggers application of the high flow suspension.[2] The temporary high flow suspension is intended to apply on a limited basis to transient conditions. It is not intended to de-designate recreational uses where elevated flows represent the normal baseline condition even during dry weather conditions. Consequently, the flow-based threshold will not be used to trigger application of the high flow suspension in Reach 2 of the Santa Ana River. Instead, the temporary high flow suspension will only be applied using the rainfall criteria described above or when the Army Corps of Engineers is releasing excess flows stored behind Prado Dam in response to previous rain events as described in their Standard Operating Procedures.[3]

Special Case: Santa Ana River- Reach 3. Reach 3 of the Santa Ana River extends upstream from Prado Dam to Mission Avenue in Riverside. While the upper half of this segment has been channelized with reinforced levees armored by rip-rap, the lower half of Reach 3 (below Van Buren Avenue) remains largely natural. Nevertheless, the construction of Prado Dam and significant urbanization in the area tributary to Reach 3 have fundamentally altered the natural hydrology of the entire segment. Nearly all of the stormwater runoff in the developed areas of San Bernardino and Riverside counties eventually makes its way to Reach 3 of the Santa Ana River. As such, the baseflow will swell from an average of approximately 90 cfs to over 10,000 cfs during extreme wet weather conditions.[4] The historical record contains several accounts of accidental death and injury to persons trapped by such flows in the Santa Ana River.[5]

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[2] Wildermuth Environmental Inc., 2008 Santa Ana River Wasteload Allocation Model Report. Prepared for the Santa Ana Watershed Project Authority's (SAWPA) Basin Monitoring Program Task Force. May, 2009 (Historical flows below Prado Dam are charted in Fig. 2-16 of the Report).

[3] United States Army Corps of Engineers. Water Control Manual: Prado Dam and Reservoir, Santa Ana River, California. 1994.

[4] Wildermuth Environmental Inc., 2008 Santa Ana River Wasteload Allocation Model Report. Prepared for the Santa Ana Watershed Project Authority's (SAWPA) Basin Monitoring Program Task Force. May, 2009 (Historical flows for Reach 3 are charted in Fig. 2-12 of the Report).

[5] See the Administrative Record for the recreation standards amendments adopted pursuant to Resolution No. R8-2012-0001.

As with Reach 2, the baseflow in Reach 3 may exceed the default high flow suspension trigger even during dry weather conditions. However, it would be inappropriate to suspend recreational uses and related pathogen objectives at such times because the ambient flow spreads out over a sufficiently wide area to minimize the force exerted on persons recreating in the water. But, it remains appropriate to apply the high flow suspension during wet weather conditions when elevated stormwater runoff in Reach 3 precludes safe recreation in or near the river. REC1 and REC2 uses will be temporarily suspended in Reach 3 when rainfall exceeds 0.5" in a 24-hour period or when flows at MWD crossing are greater than 100 cfs (measured at the USGS gauge). The 100 cfs threshold provides an objective metric to distinguish between reasonably safe dry weather flows and the more hazardous high flow conditions that arise during wet weather events.[6]

Limitations of the Temporary High Flow Suspension. It is important to emphasize that temporary suspensions of recreation standards in specific waters do not nullify the obligation to meet downstream standards, unless the recreation standards have also been suspended for those waters at the same time. Further, temporary suspensions of recreation standards do not relieve Publicly Owned Treatment Works (POTWs) of the obligation to continue to comply with effluent limitations established to assure the protection of recreation beneficial uses in the receiving waters. These effluent limitations take into account the dilution that may be made available by stormwater flows. (See also *POTW Discharge Requirements and Implementation of Recreational Standards*, below).

Monitoring Plan for Pathogen Indicator Bacteria in Freshwaters

Monitoring of pathogen indicator bacteria in fresh surface waters in the Region is conducted by a variety of agencies in response to statutory and regulatory requirements. This includes monitoring of stormwater at selected locations within Orange, Riverside and San Bernardino counties, as required by the areawide urban stormwater permits. Monitoring is also conducted to address pathogen indicator TMDL requirements (e.g, the Middle Santa Ana River TMDL) and to support the assessment of surface waters, which may lead to the listing or delisting of these waters on the Clean Water Section 303(d) list of impaired waters. These monitoring efforts have been conducted independently to a large degree to respond to individual agency needs.

Some of these monitoring programs have evolved from focus on fecal and total coliform bacteria, on which bacteria quality objectives have been based historically, to include other pathogen indicators, such as E. coli and enterococcus. Measurement of these other indicators was prompted by changes in USEPA's recommended bacteria quality criteria for recreation waters, published in 1986. These criteria changes also led to the modification of the Basin Plan in 2012 to incorporate revised pathogen indicator objectives and implementation triggers (single sample maximum values), all based on E. coli, to protect recreation uses in inland surface waters (see Chapter 4 WATER QUALITY OBJECTIVES; CHAPTER 5 IMPLEMENTATION, Application of Single Sample Maximum Values in REC1 freshwaters).

[6] Wildermuth Environmental Inc., 2008 Santa Ana River Wasteload Allocation Model Report. Prepared for the Santa Ana Watershed Project Authority's (SAWPA) Basin Monitoring Program Task Force. May, 2009 (Historical flows for Reach 3 are charted in Fig. 2-12 of the Report).

The *E. coli* objectives and single sample maximum values that are specified in this Basin Plan implement the public health risk management approach employed in USEPA's 1986 national criteria. Pathogen indicator monitoring should also reflect this risk-based approach. Because monitoring resources are limited, the highest priority should be given to REC1 waters where primary contact recreation is most likely to occur, i.e. Tier A REC1 waters. Lower priority should be assigned to waters where primary contact recreation occurs infrequently or not at all.

As part of the Stormwater Quality Standards Task Force efforts that led to the adoption of the E. coli objectives for inland fresh surface waters, the three principal funding members, i.e., the Orange, Riverside and San Bernardino county stormwater agencies, committed to participate in the development and implementation of a comprehensive, watershed-wide bacteria quality monitoring program. Other dischargers who contribute or may contribute to pathogen indicator bacteria inputs to surface waters will be required to conduct bacteria quality monitoring, individually or in concert with this comprehensive program. It is expected that participation in the comprehensive effort would result in cost savings to individual dischargers and would be the most effective way to collect data necessary to assess the receiving water quality effects of discharges.

A proposed comprehensive monitoring program is to be submitted by the Orange, Riverside and San Bernardino county stormwater agencies no later than [*1 year from the date of Regional Board approval of the new E. coli objectives – insert date certain once amendment is approved by Regional Board*], except that the Quality Assurance Project Plan (QAPP) shall be submitted no later than [*90 days after EPA approval of the new E. coli objectives – insert date certain once amendment is approved*]. The proposed program shall meet the following: (1) all water quality monitoring for pathogen indicator bacteria must be conducted in accordance with a QAPP that has been approved by the Regional Board's Quality Assurance Officer; (2) bacteria monitoring data must be compatible with the state's Surface Water Ambient Monitoring Program (SWAMP); (3) waterbodies proposed as a high priority for monitoring shall be identified and the rationale for their selection documented; (4) each identified high priority waterbody must be sampled for pathogen indicator bacteria sufficient to provide a minimum of 5 samples per 30 day period, year-round, unless documented waterbody conditions (e.g,. water temperature, ice on the surface of lakes, high risk of flash flooding, etc.) exist that justify a reduced frequency; (5) the designated sampling locations must be selected so as to characterize bacteria concentrations immediately upstream of areas where the greatest level of recreational activity normally occurs; (6) the monitoring plan must identify the latitude and longitude of routine sampling location(s), the rationale for selecting each location, other locations considered but rejected, and the agency responsible for collecting and analyzing the sample from each high priority location; (7) the monitoring plan must describe the sampling locations and frequency for collecting pathogen indicator bacteria data in lakes and streams designated REC-1 but where recreational activities are far less likely to occur (i.e., Tier B, C or D waterbodies); (8) the monitoring plan must include a proposal for periodic bacteria monitoring of waters designated REC2 in order to confirm that there is no significant degradation of the quality of these waters; (9) results from the comprehensive bacteria monitoring program must be submitted annually. The agencies implementing the program may submit the report collectively or on an individual basis; and, (10) the data must be put into the CEDEN (SWAMP) database and/or the database maintained by the Santa Ana Watershed Project Authority.

The comprehensive program is to be implemented upon the approval of the Regional Board. The program will be reviewed and may be revised at least once every three years. This includes consideration of the waterbodies deemed high and low priority for monitoring purposes. Monitoring

programs specified as part of NPDES permits, Waste Discharge Requirements and other orders of the Regional Board will be considered in light of the comprehensive program being implemented. As appropriate, dischargers in addition to the stormwater agencies will be required to conduct bacteria quality monitoring of the receiving waters. Such monitoring may be conducted independently by these other dischargers, but participation in and coordination with the comprehensive program will be strongly encouraged. The goal is to integrate all monitoring efforts to the extent feasible and reasonable to reduce or eliminate redundancy and maximize the efficacy of the monitoring effort. Requirements pertaining to data quality assurance, SWAMP compatibility, reporting and database entry will also be specified in individual requirements issued by the Regional Board.

Where water quality monitoring data indicate significant non-compliance with the applicable pathogen indicator objective, agencies discharging to that waterbody must submit a plan to the Regional Board to identify the pollutant source(s) unless monitoring data show that their particular discharge is not causing or contributing to the exceedance. The source evaluation plan must be implemented upon approval by the Executive Officer.

Where water quality monitoring data, collected through the approved comprehensive monitoring program or by interested agencies, organizations or individuals, indicate that a single sample maximum value assigned to a Tier B, C or D REC1 water, or the bacteria target assigned to a REC2 only water, is being exceeded, then the Regional Board will require agencies discharging to that waterbody to submit a plan for investigation into the bacteria quality of that waterbody, including monitoring. Where the investigation shows that the bacteria quality of the waterbody is adversely affected by a controllable source, then a corrective action plan and schedule will be required. Both the investigation plan and, as necessary, corrective action plan, must be implemented upon approval by the Regional Board's Executive Officer. Such follow-up investigation and corrective action will be triggered only upon the demonstration of credible evidence documenting a potential bacterial quality problem. Credible evidence shall consist of at least two consecutive samples that exceed the SSM/REC2 target. It is expected that the proposed schedule for any needed corrective action will be as soon as practicable but no longer than two years from the date that the controllable source(s) is identified.

The Regional Board acknowledges that the obligation to gather, analyze and report water quality data does not, by itself, establish any specific liability for pollutant remediation. That responsibility depends on identifying the source(s) of bacterial contamination. The Regional Board strongly supports proactive voluntary efforts organized through local Task Forces to accomplish these objectives. However, where necessary, the Regional Board will continue to impose monitoring and remediation requirements through the permitting, enforcement and TMDL processes in order to protect water quality for recreational uses.

To begin the development of a comprehensive bacteria quality monitoring program, the Stormwater Quality Standards Task Force considered the waterbodies that should be considered high priority for monitoring and identified a tentative list, shown in Table 5-REC-Potential High Priority Waters, below. The waterbodies identified in Table 5- REC-Potential High Priority Waters should be considered in the development of the proposed comprehensive monitoring program.

Table 5-REC-Potential High Priority Waters for Monitoring of Pathogen Indicator Bacteria in Freshwaters

LAKES	STREAMS
Big Bear Lake	Lytle Creek – Middle and North Forks
Lake Perris	Mill Creek – Reach 2
Lake Elsinore	Santa Ana River – Reach 3
Canyon Lake	San Antonio Creek

POTW discharge requirements and implementation of recreation standards

As discussed in Chapter 4 – WATER QUALITY OBJECTIVES, this Basin Plan establishes water quality objectives that are intended to protect beneficial uses. These include the narrative pathogen objective and numeric pathogen indicator objectives for freshwaters (Table 4-pio) that are specified for the protection of primary contact recreation in surface waters. However, in issuing waste discharge requirements that assure beneficial use protection, the Regional Board must consider not only the established objectives but also whether case-specific circumstances warrant the application of limitations more stringent than those necessary to implement the objectives. Such special consideration applies to discharges of treated sewage to surface waters by Publicly Owned Treatment Works (POTWs) or other entities and the protection of public health and primary contact recreation in those receiving waters.

The California Department of Public Health (CDPH) has found that in most instances, in order to protect the health of members of the public who engage in primary contact recreation in surface waters that receive treated sewage discharges, treatment of the discharges must be provided so as to achieve an approximate 5 log reduction in the virus content of the wastewater. The efficacy of the treatment process in achieving this reduction is reflected, in part, by measurements of total coliform bacteria.

Based on these recommendations and relevant regulations established by CDPH in the California Code of Regulations (Title 22, Division 4, Chapter 3, Section 60301 *et seq.*), waste discharge requirements issued by the Regional Board to POTWs and other entities for discharges of treated sewage to surface waters include stringent total coliform limitations. The Fact Sheets accompanying these waste discharge requirements provide detailed explanation of the rationale for these effluent limitations and related discharge specifications. The salient point here is that these waste discharge requirements do not include effluent limitations based on the numeric objectives for *E. coli* that are specified in Table 4-pio. The Regional Board has found that the total coliform limitations are necessary to assure adequate treatment of sewage before discharge to surface waters and thereby, to assure protection of public health and primary contact recreation uses.

The temporary suspension of recreation standards in certain surface waters (see *High flow suspension of recreation standards, above*) under high flow conditions does not obviate the need for POTWs and other entities discharging treated sewage (recycled water) to surface

waters to continue to meet the coliform limitations specified in their waste discharge requirements. To implement the narrative pathogen objective (see Chapter 4, WATER QUALITY OBJECTIVES, INLAND SURFACE WATERS, Pathogen Indicator Bacteria), the Regional Board may also require recycled water discharged to freshwaters designated REC1 or REC2 to comply with other limitations, including those recommended by CDPH.

Amend CHAPTER 5 – IMPLEMENTATION – add references

33. United States Environmental Protection Agency, “Water Quality Standards for Coastal and Great Lakes Recreation Waters; Final Rule”, 40 CFR 131.41. Federal Register, Vol. 69, No. 200, November 16, 2004, pp.67217 *et seq*

34. CDM, Inc. Technical Memorandum. Calculation of Antidegradation Targets for REC2 Only Freshwaters. December 30, 2011.

35. California Regional Water Quality Control Board, Santa Ana Region. Memorandum prepared by David Woelfel. Calculation of Antidegradation Targets for REC2 Only Waters-Tidal Prisms. December 30, 2011

36. U.S. EPA. Water Quality Standards Handbook. Sept. 15, 1993.

37. United States Army Corps of Engineers. Water Control Manual: Prado Dam and Reservoir, Santa Ana River, California. 1994.

38. Wildermuth Environmental Inc., 2008 Santa Ana River Wasteload Allocation Model Report. Prepared for the Santa Ana Watershed Project Authority's (SAWPA) Basin Monitoring Program Task Force. May, 2009

39. State Water Resources Control Board.. “Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List”. September 2004