State of California
Regional Water Quality Control Board
Santa Ana Region

Staff Report

October 16, 2020

Item:

Subject: Basin Plan Amendment to Incorporate Antidegradation Objectives and Salt and Nutrient Management Plan for the Upper Temescal Valley Groundwater Management Zone, Resolution 2020-0038

DRAFT

Executive Summary

The federal Clean Water Act requires states to implement pollution control standards for wastewater discharges and water quality standards for all surface waterbodies within the state's jurisdiction. Each state must set surface water quality standards comprised of three components: 1) beneficial uses for the waterbody; 2) water quality criteria to protect the beneficial uses of the respective waterbody; and 3) antidegradation requirements to maintain and protect the integrity of the waterbody. In California, the Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) sets similar requirements to the federal water quality standards for surface water and groundwater. The Santa Ana Regional Water Quality Control Board (Santa Ana Water Board) establishes beneficial uses and water quality objectives in the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan).

In 2004, the Santa Ana Water Board amended the Basin Plan, in part, to incorporate revised: groundwater management zone (GMZ) boundaries, beneficial use designations, total dissolved solids (TDS) and nitrate groundwater quality objectives, and an associated salt and nutrient management implementation plan. Revised groundwater TDS and nitrate objectives were adopted only for GMZs where sufficient spatial and temporal historical data existed to define aquifer storage properties and compute ambient water quality for the antidegradation time period of 1954-1973. For GMZs that lacked sufficient data, the Santa Ana Water Board determined that water quality objectives would be established on a case-by-case basis when it becomes necessary to do so. There was insufficient data to establish objectives for the following GMZs: Bedford, Lee Lake, La Habra, Santiago, and Warm Springs Valley.

Santa Ana Water Board staff determined that it was necessary to establish groundwater antidegradation objectives for the Bedford, Lee Lake, and Warm Springs Valley GMZs within the Upper Temescal Valley watershed in order to continue to permit recycled water discharge and reuse activities that impact these GMZs. More specifically, Santa Ana Water Board staff required the Elsinore Valley Municipal Water District and the Eastern Municipal Water District to prepare a Salt and Nutrient Management Plan (SNMP) to support their recycled water discharge and reuse activities in the Upper Temescal Valley. The objectives of the SNMP were to develop and apply a technical methodology to establish antidegradation objectives and compute current and projected future ambient water quality, identify the current and future regulatory compliance challenges that arise from the implementation of recycled water discharge and reuse plans, and define an SNMP that addresses current and future TDS and nitrate challenges, including a monitoring and reporting plan.

DRAFT

The purpose of the Basin Plan amendment described in this Staff Report is to establish TDS and nitrate antidegradation objectives for the groundwater resources in the Upper Temescal Valley Watershed, specifically to:

- Amend Tables 3-1 and 4-1 of the Basin Plan to remove the Bedford, Lee Lake, Warm Springs Valley GMZs and replace them with the Upper Temescal Valley GMZ.
- Establish beneficial uses and TDS and nitrate antidegradation objectives for the Upper Temescal Valley GMZ.
- Incorporate the Upper Temescal Valley SNMP into *Chapter 5 – Implementation*

DRAFT

Table of Contents

Executive Summary i

1. Introduction and Background 1
2. Proposed Upper Temescal Valley Groundwater Management Zone Boundary and Beneficial Uses 7
3. Proposed Antidegradation TDS and Nitrate Objectives for the Upper Temescal Valley GMZ 11
4. Current Ambient Water Quality, Assimilative Capacity, and Projections of Future Ambient Water Quality 13
5. Consistency with California Water Code 13241 14
6. Proposed Modification to the Basin Plan Implementation Plan 22
7. California Environmental Quality Act 25
8. Scientific Peer Review 30
9. Staff Recommendation 30

References 32

DRAFT

List of Tables

1	Beneficial Uses of the Bedford, Lee Lake, and Warm Springs GMZs	Page 10
2	Historical Ambient Water Quality of the Upper Temescal Valley GMZ	Page 13
3	Proposed Antidegradation Objectives for TDS and Nitrate	Page 13
4	Current Ambient Water Quality of the Upper Temescal Valley GMZ	Page 14
5	Assimilative Capacity for TDS and Nitrate in the Upper Temescal Valley GMZ	Page 14
6	Beneficial Uses and Water Quality Thresholds	Page 16
7	Estimated TDS and Nitrate Concentrations of Source Waters Used in Upper Temescal Valley from 1900-1975	Page 18
8	Estimated TDS and Nitrate Concentrations of Source Waters Currently Used in Upper Temescal Valley	Page 20
9	Elsinore Valley TDS Liabilities That Would Have Accrued in the Absence of the Offset Allowed for the Development of the Upper Temescal Valley SNMP	Page 27
10	Eastern TDS Liabilities That Would Have Accrued in the Absence of the Offset Allowed for the Development of the Upper Temescal Valley SNMP	Page 28
11	Cost of Potential Salt Offset Facilities for the Upper Temescal Valley	Page 29

List of Figures

1	Upper Temescal Valley SNMP – Study Area	Page 6

DRAFT

1. Introduction and Background

The federal Clean Water Act requires states to implement pollution control standards for wastewater discharges and water quality standards for all surface waterbodies within the state's jurisdiction. Each state must set surface water quality standards comprised of three components: 1) beneficial uses for the waterbody; 2) water quality criteria to protect the beneficial uses of the respective waterbody; and 3) antidegradation requirements to maintain and protect the integrity of the waterbody.[1]

In California, the Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) sets similar requirements to the federal water quality standards for surface water and groundwater. The state's water quality standards are regulated by the nine Regional Water Quality Control Boards. Each Regional Board identifies waterbodies within its jurisdiction, determines beneficial uses, and establishes water quality criteria or objectives for each waterbody in the Basin Plan. The federal Clean Water Act and the state's Porter-Cologne Water Quality Control Act mandate the Regional Boards to review and update, as appropriate, their Basin Plans every three years to ensure that the water quality standards are established using the latest and best available science and data.

The Santa Ana Regional Water Quality Control Board (hereafter, Santa Ana Water Board) establishes beneficial uses and water quality objectives for the waterbodies of the Santa Ana River Basin (hereafter, the Basin) in the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan).

<u>2004 Basin Plan Amendment to Revise the Salt and Nutrient Management Plan for the Basin</u>

The 1995 Basin Plan contained nitrate-nitrogen (hereafter, nitrate) and Total Dissolved Solids (TDS) objectives that were lower than the ambient nitrate and TDS concentrations over a significant portion of the Basin, which meant no assimilative capacity existed for the Basin. Several watershed stakeholders questioned the validity of the groundwater quality objectives for TDS and nitrate and the Santa Ana Water Board's salt and nutrient management plan that implemented those objectives. Specifically, since wastewaters are high in TDS and nitrate, in part due to high TDS and nitrate concentrations in the source water, the 1995 Basin Plan objectives restricted the use of reclaimed wastewater (hereafter, recycled water), which comprised a major component of many water agencies' plans to conserve potable water and meet rapidly growing water demands and populations. Watershed stakeholders voiced these concerns during the 1995 update of the Basin Plan and the Santa Ana Water Board agreed to prioritize the review of the objectives as part of its triennial review process.

A coalition of 22 water supply and wastewater agencies in the Santa Ana Watershed formed the Nitrogen-Total Dissolved Solids Task Force (now called the Basin

[1] 40 Code of Federal Regulations (CFR) 131

Monitoring Program Task Force, hereafter, the Task Force) to devise a new TDS and nitrate management plan for the Basin, specifically to conduct scientific studies regarding the TDS and nitrate objectives and other components of the TDS and nitrate management plan. The Task Force contracted with two consulting firms to guide the process. Wildermuth Environmental, Inc. (WEI) was responsible for performing and documenting the technical analyses and Risk Sciences was responsible for facilitating the regulatory review and developing consensus among the Task Force participants. The technical work was documented in *TIN/TDS Study – Phase 2A Development of Groundwater Management Zones – Estimation of Historical and Current TDS and Nitrogen Concentrations in Groundwater* (WEI, 2000) and *TIN/TDS Study – Phase 2B Santa Ana Watershed Wasteload Allocation Investigation* (WEI, 2002). The Task Force's work culminated in the Santa Ana Water Board's adoption of the Basin Plan amendments on January 2004 (Santa Ana Water Board, 2004) which included revised:

- groundwater subbasin boundaries (now termed "groundwater management zones" or GMZs), based on the hydrology of the groundwater basins;
- TDS and nitrate objectives for the GMZs;
- TDS and nitrate wasteload allocations for wastewater discharges to the Santa Ana River and its tributaries;
- surface water reach designations for selected waterbodies in the Santa Ana River;
- TDS and nitrate objectives and beneficial uses for specific surface waterbodies; and
- implementation plans, including monitoring and reporting programs and standard analytical methodologies for periodically evaluating compliance with the new water quality objectives.

The above-mentioned amendments to the TDS and nitrate concentration objectives for groundwater were adopted only for GMZs where sufficient spatial and temporal historical data existed to define aquifer storage properties and compute antidegradation water quality objectives. For GMZs that lacked sufficient data, the Santa Ana Water Board determined that water quality objectives would be established on a case-by-case basis when it becomes necessary to do so. There was insufficient data to establish objectives for the following GMZs: Bedford, Lee Lake, La Habra, Santiago, and Warm Springs Valley.

<u>Regulatory Problem Statement</u>

The Elsinore Valley Municipal Water District (Elsinore Valley) and the Eastern Municipal Water District (Eastern) discharge and/or reuse recycled water in the Upper Temescal Valley watershed pursuant to waste discharge requirements issued by the Santa Ana Water Board. Both agencies were issued mandatory minimum penalties for discharging recycled water to Temescal Wash in excess of the discharge limitations established for their respective waste discharge requirements.

Elsinore Valley. Elsinore Valley's Regional Water Reclamation Facility (Regional WRF) discharges recycled water to Lake Elsinore in the Elsinore Basin and to the Temescal Wash in the Upper Temescal Valley watershed. In 2011, the Santa Ana Water Board assessed mandatory penalties to Elsinore Valley for discharging recycled water to the Temescal Wash from the Regional WRF with TDS concentrations in excess of the permitted discharge limit of 700 milligrams per liter (mg/L) as established in the then-current permit, R8-2005-0003. As part of the process to renew the discharge permit, the Santa Ana Water Board required Elsinore Valley to:

(1) quantify the impact of its recycled water discharges in excess of the discharge limit on the water quality of Reach 2 of the Santa Ana River and the underlying GMZs of Bedford, Lee Lake, and Warm Springs; and

(2) propose a mitigation program to offset the mass of TDS discharged to the Temescal Wash in excess of the discharge limitation.

Elsinore Valley submitted a draft offset plan to the Santa Ana Water Board on October 30, 2012 (MWH, 2012). The following are some of the key conclusions of the draft report:

- The total offset required for recycled water discharges to the Temescal Wash with TDS concentrations in excess of 700 mg/L between 2005 and 2011 is 446.5 tons of TDS.
- Recycled water discharges in excess of 700 mg/L resulted in no impact to the TDS concentration of the Santa Ana River at Below Prado Dam, as modeled by the wasteload allocation model (WLAM).
- The impact of recycled water discharges in excess of 700 mg/L on the water quality of the Warm Springs, Lee Lake, and Bedford GMZs could not be determined due to insufficient data: there are no historical or current ambient water quality concentrations for these GMZs to compare to the recycled water discharge concentrations or to evaluate impacts.
- There are no cost-effective, beneficial mitigation facilities to remove 446.5 tons of TDS from the Warm Springs, Lee Lake, and Bedford GMZs.

Eastern. Eastern owns and operates four active regional water reclamation facilities (RWRFs) for the treatment of wastewater generated in its service area: the San Jacinto Valley RWRF, the Moreno Valley RWRF, the Perris Valley RWRF, and the Temecula Valley RWRF. Recycled water from the RWRFs is reused in Eastern's service area for a variety of non-potable uses, including agriculture, landscape irrigation, and industrial use. During peak outdoor water demand months (the warmer summer months), when recycled water demand exceeds recycled water production, recycled water production is supplemented from storage facilities. During the cooler, wetter times of year when recycled water demands decrease, surplus recycled water is stored in recycled water storage ponds, either on-site at the RWRFs or off-site throughout Eastern's service area. When the volume of recycled water generated is in excess of Eastern's recycled

DRAFT

water demand and storage capacity, recycled water is conveyed via pipeline to the Upper Temescal Valley and discharged to the Temescal Wash. The discharge to the Temescal Wash is typically a blend of recycled water from multiple RWRFs. From 2008 to 2013, Eastern discharged recycled water to Temescal Wash with TDS concentrations in excess of the discharge limit of 650 mg/L, as established in the then-current permit R8-2009-0014. Eastern requested that the Santa Ana Water Board increase the TDS limitation for its discharges to Temescal Wash. To support this request, the Santa Ana Water Board requested Eastern to evaluate the impact of its recycled water discharges on Reach 2 of the Sana Ana River for:

(1) historical recycled water discharges in excess of the discharge limit and

(2) future recycled water discharges at increased TDS limits.

The results indicated that the historical recycled water discharges in excess of the discharge limits had no measurable impact to the TDS concentrations of Reach 2 (WEI, 2013). As was the case with the Elsinore Valley study, due to insufficient data, the impact of Eastern's recycled water discharges on the Bedford, Lee Lake, and Warm Spring GMZs could not be determined.

Proposed Regulatory Solution

Given that the engineering work performed by Elsinore Valley indicated that there were no cost-effective, beneficial mitigation facilities to mitigate the small historic and projected future salt liabilities that would accrue due to occasional discharges of recycled water that exceed permit limitations, Elsinore Valley and Eastern contracted with WEI to develop an alternative regulatory compliance strategy that would resolve their historic TDS liabilities and ensure the long-term protection of the beneficial uses of surface and groundwater in the Upper Temescal Valley. The regulatory strategy included a plan to:

(1) develop, apply, and document an alternative methodology to compute historical ambient TDS and nitrate concentrations for the Upper Temescal Valley GMZ, including recommendations for defining the Basin Plan antidegradation objectives for TDS and nitrate;

(2) modify as appropriate, apply, and document the alternative methodology to estimate current ambient TDS and nitrate concentrations for the Upper Temescal Valley GMZ;

(3) apply and document the alternative methodology to project future ambient TDS and nitrate concentrations in the Upper Temescal Valley GMZ, based on the range of possible recycled water discharge and reuse plans in the watershed;

(4) identify the regulatory compliance challenges that arise from the implementation of recycled water discharge and reuse plans; and

(5) define a salt and nutrient management plan that addresses current and future TDS and nitrate challenges, including a monitoring and reporting plan.

The development of the salt and nutrient management plan would serve as a salt offset for the historical Elsinore Valley and Eastern exceedances of their discharge limitations (through completion of the study) and the SNMP implementation plan would include actions to address future exceedances.

In a letter dated July 23, 2013 the Executive Officer of the Santa Ana Water Board approved the proposed plan to develop an SNMP for the Upper Temescal Valley. The final draft of the *Salt and Nutrient Management Plan for the Upper Temescal Valley* (hereafter, SNMP) was submitted to the Santa Ana Water Board on October 9, 2017 and was accepted by the Executive Officer on November 7, 2017.

To ensure that the technical work and final recommendations of the Upper Temescal Valley SNMP would meet the requirements of the Santa Ana Water Board, Elsinore Valley and Eastern implemented a process to meet with the Santa Ana Water Board to present interim results, discuss comments and concerns, and subsequently refine the scope of work, methods and/or proposed management actions, as appropriate. Following the approval of the scope of work in July 2013, eight meetings were held at the Santa Ana Water Board between November 2013 through August 2017.

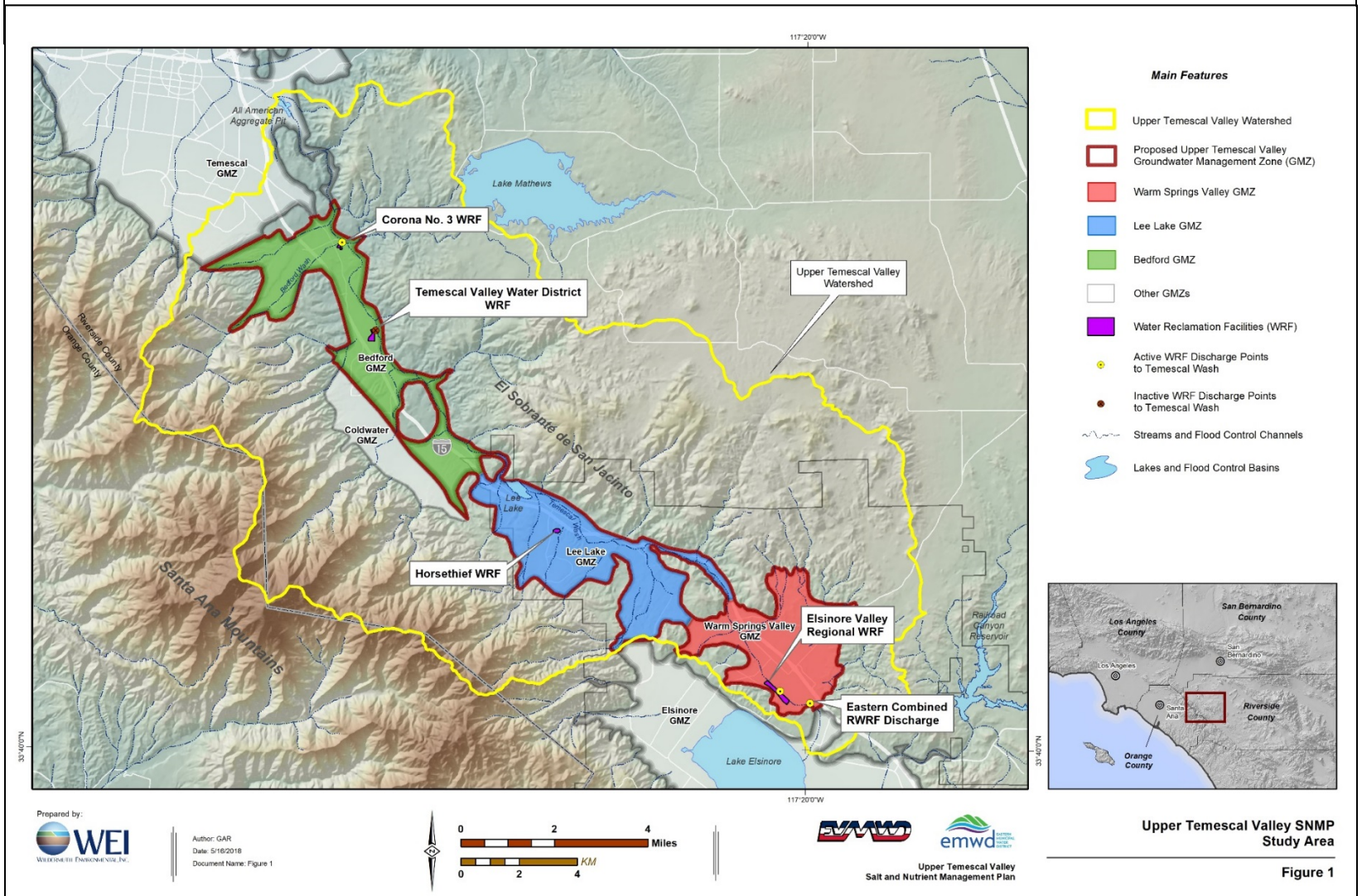
Additionally, Elsinore Valley and Eastern conducted stakeholder outreach to present the goals, results, and recommendations of the SNMP as they were being developed. One meeting was held with other POTW dischargers in the Upper Temescal Valley Watershed on March 30, 2015. The invitees included the City of Corona and the Temescal Valley Water District. These agencies were not required by the Santa Ana Water Board to participate in the development of the SNMP, but provided data for inclusion in the analyses and were invited to learn about the project and how the outcomes could impact the agencies. Two presentations were made to the Santa Ana Region Basin Monitoring Program Task Force on November 17, 2014 and October 27, 2015. These presentations focused on the results of the technical work and the draft recommended SNMP action items. A final regional stakeholder outreach meeting was held as part of the Substitute Environmental Document (SED) scoping meeting on June 20, 2018.

<u>Purpose of the Proposed Basin Plan Amendment</u>

The purpose of the Basin Plan amendment described in this Staff Report is to establish TDS and nitrate antidegradation objectives for the groundwater resources in the Upper Temescal Valley Watershed, specifically to:

- Amend Tables 3-1 and 4-1 of the Basin Plan to remove the Bedford, Lee Lake, Warm Springs Valley GMZs and replace them with the Upper Temescal Valley GMZ.
- Establish beneficial uses and TDS and nitrate antidegradation objectives for the Upper Temescal Valley GMZ.
- Incorporate the Upper Temescal Valley Salt and Nutrient Management Plan (SNMP) into *Chapter 5 – Implementation*

Figure 1. Upper Temescal Valley SNMP - Study Area



2. Proposed Upper Temescal Valley Groundwater Management Zone Boundary and Beneficial Uses

Figure 1 is a location map of the Upper Temescal Valley watershed, which is located in the western portion of Riverside County, California. There is an approximately 20-mile long, narrow alluvial basin that is drained by the Temescal Wash, which is an unlined stream channel from the headwaters at the outlet of Lake Elsinore to the Temescal Gravel Pit in the Temescal GMZ in the City of Corona. The Upper Temescal Valley Watershed is the watershed tributary to the unlined section of Temescal Wash.

There are three water supply agencies that overly and provide water supply services to residences and businesses within the Upper Temescal Valley GMZ: the City of Corona, the Temescal Valley Water District (TVWD; formerly known as the Lee Lake Water District), and Elsinore Valley. All three agencies also own and operate water reclamation facilities to treat wastewater generated in their service areas to tertiary standards before the water is either discharged to Temescal Wash or to percolation ponds or reused for irrigation. Eastern also discharges tertiary treated wastewater generated in its service area to the Temescal Wash. **Figure 1** shows the treatment plant locations and discharge points in the Upper Temescal Valley.

In the current Basin Plan, the groundwater aquifer underlying the Temescal Wash is divided into the Bedford, Lee Lake and Warm Springs GMZs.

<u>Rationale for Establishing the Upper Temescal Valley GMZ</u>

As a first step in the development of the Upper Temescal Valley SNMP, Elsinore Valley and Eastern proposed to combine the existing Bedford, Lee Lake, and Warm Springs GMZs into a single GMZ: the Upper Temescal Valley GMZ. Per the request of Santa Ana Water Board staff, a written rationale for the GMZ boundary modification was submitted on September 8, 2014 (WEI, 2014). Santa Ana Water Board staff verbally approved the use of a single GMZ boundary as the unit of study for the Upper Temescal Valley SNMP at a progress meeting held on September 30, 2014. The rationale for managing the groundwater resources in the Upper Temescal Valley watershed as a single GMZ is summarized as follows.

The 2004 Basin Plan delineated the Basin GMZs based on hydrology and groundwater quality. In the technical work that supported the GMZ delineation (Phase 2A Report - WEI, 2000), the following criteria were defined to delineate new GMZ boundaries:

- impermeable rock formation that prevent subsurface flow from one area to another;
- natural gradients that caus groundwater to flow in one direction and not another; and

DRAFT

- significant differences in TDS and nitrate concentrations to protect areas with high-quality groundwater.

The delineation of the Warm Springs, Lee Lake, and Bedford GMZs in the Phase 2A report and the current Basin Plan were based on the limited data and published reports available to the Nitrogen/TDS Task Force and limited funding to conduct research in this area. No bedrock contours could be developed, or aquifer properties assigned. The feature used to separate the Upper Temescal Valley into three GMZs are the narrow gaps where the bedrock is shallow and the alluvium is thin.

The aquifer underlying the Temescal Wash has a small area of effective storage and is restricted to a narrow band of saturated alluvium along the Temescal Wash, the unlined stream channel that crosses the entire GMZ from south to north. The alluvial sediments along Temescal Wash generally range from 40 to 120 feet deep and are horizontally confined by the impermeable rock of the mountain ranges on both sides of the wash. The wash thalweg (deepest point of the channel) provides a vertical control on the effective width and depth of the groundwater system. On average, the aquifer thickness at the thalweg is no more than 100 feet and the valley floor ranges in width from 50 to 12,000 feet, averaging about 1,400 feet. Based on these characteristics, the Upper Temescal Valley has limited groundwater resources, estimated to range from 25,000 to 75,000 acre-feet.

The primary sources of groundwater recharge are streambed infiltration from stormwater, recycled water discharges, and the deep infiltration precipitation and water applied outdoors for irrigation. Groundwater flows northwest from the Temescal Wash headwaters in Warm Springs. As groundwater flows northwest, it is forced to the surface by high groundwater levels and/or bedrock constrictions (shallow bedrock, bedrock bank constrictions, or both). Thus, rising groundwater in Warm Springs contributes to streambed infiltration in Lee Lake, and rising groundwater in Lee Lake contributes to streambed infiltration in Bedford. More generally stated, groundwater and surface water continuously interact from the headwaters of Temescal Wash at the Lake Elsinore discharge point down to the Temescal Gravel Pit in Corona.

Given that these units are all subject to the same recharge sources and are all impacted by recycled water discharge by Elsinore Valley and Eastern, staff recommends that the groundwater resources underlying the Temescal Wash should be managed as one hydrologically continuous unit and that the Basin Plan should be amended to replace the existing Bedford, Lee Lake, and Warm Springs Valley GMZs with the Upper Temescal Valley GMZ. The revised management zone map to be incorporated into the Basin Plan is shown in the Attachment to Resolution R8-2020-0038, amending Figure 3-6.

DRAFT

Beneficial Uses

The beneficial uses for the Bedford, Lee Lake and Warm Springs GMZs, as defined in Chapter 3, Table 3-1 of the current Basin Plan, are shown in **Table 1**. No changes are proposed to these beneficial uses for the Upper Temescal Valley GMZ. The revisions to Chapter 3 and Table 3-1 of the Basin Plan are shown in the Attachment to Resolution R8-2020-0038.

DRAFT

Table 1. Beneficial Uses of the Bedford, Lee Lake, and Warm Springs GMZs.

Groundwater Management Zone	BENEFICIAL USE																		Hydrologic Unit	
	MUN	AGR	IND	PROC	GWR	NAV	POW	REC1	REC2	COMM	WARM	LWRM	COLD	BIOL	WILD	RARE	SPWN	EST	Primary	Secondary
MIDDLE SANTA ANA RIVER BASIN																				
Bedford	X	X	X	X															801.32	481.31
Lee Lake	X	X	X	X															801.34	
Warm Springs[a]																				

a. Not listed in the 2004 Basin Plan.

DRAFT

3. Proposed Antidegradation TDS and Nitrate Objectives for the Upper Temescal Valley GMZ

The TDS and nitrate antidegradation objectives defined for GMZs in the Basin Plan were revised in 2004 and were set based on the technical work performed by the Task Force from 1996-2000. The technical methodology for computing ambient water quality is documented in *TIN/TDS Study – Phase 2A Development of Groundwater Management Zones – Estimation of Historical and Current TDS and Nitrogen Concentrations in Groundwater* (WEI, 2000). "Ambient water quality" is a statistical representation of water quality in a GMZ over a 20-year period of record. The TDS and nitrate antidegradation objectives are based on historical ambient water quality of the GMZs for the 20-year period of 1954 to 1973, the objective-setting period. The Basin Plan requires that the "current" ambient water quality of the GMZs be computed every three years using the methodology described in WEI, 2000. The current ambient water quality computations are then compared to the objectives and assess assimilative capacity. "Current" ambient water quality represents the 20-year period that precedes the "current" year (e.g. current ambient water quality for 2015 is based on the 20-year period of data for 1996 to 2015).

The key steps in the methodology to compute ambient water quality are:

- compute ambient water quality TDS and nitrate statistics for all wells with sufficient data availability, where sufficient data is defined as wells with a minimum of three TDS and nitrate data points in three different years over the 20-year contiguous period of assessment;
- generate iso-concentration contour maps of TDS and nitrate for each GMZ, based on the ambient water quality statistic value computed at each well; and
- compute the volume-weighted TDS and nitrate concentration in the GMZ based on the aquifer properties and current volume of water in storage in the GMZ.

As introduced in Section 1, TDS and nitrate antidegradation objectives were adopted only for GMZs where sufficient spatial and temporal historical data existed to perform these steps. The Bedford, Lee Lake, and Warm Springs GMZs were among the GMZs for which there was insufficient data to define aquifer properties, compute statistics, and prepare iso-concentration contours. Thus, in order to establish antidegradation objectives and address the regulatory compliance challenges for Elsinore Valley and Eastern, an alternative methodology must be relied on to define TDS and nitrate objectives for the Upper Temescal Valley GMZ.

Elsinore Valley and Eastern developed and applied an alternative, science-based methodology for computing the antidegradation objectives for the Upper Temescal Valley GMZ that is consistent with some of the key elements of the approach used to establish antidegradation objectives in the 2004 Basin Plan amendment, including

DRAFT

estimating water quality conditions for the 1954 to 1973 objective setting period. The alternative method is based on the concept that the Upper Temescal Valley GMZ aquifer system underlying Temescal Wash is shallow, narrow, and primarily confined to the sediments underlying the Wash and therefore the ambient TDS and nitrate concentrations will be about equal to the volume-weighted average recharge TDS and nitrate concentrations for a representative preceding period (e.g. 1954-1973). This is a valid assumption if it can be demonstrated that the total recharge volume over that period is significantly greater than the storage volume of the management zone, where "significantly" means that the basin turn-over time (e.g. the number of years it takes for recharge to completely replace the volume of water in storage) is less than or equal to half the number of years in the representative period. For establishing antidegradation objectives, the representative period of interest is 20 years and so the turn-over time must be 10 years or less. The technical work performed for the SNMP demonstrated that the turn-over time in the Upper Temescal Valley is about 7 years. The technical methodology, the data on which it is based, and its use to estimate historical ambient water quality is documented in detail in the SNMP report (WEI, 2017).

The alternative methodology includes the following steps:

- Estimate the potential volume of water in storage in the GMZ
- Define the sources of recharge and discharge in the GMZ
- Estimate the annual recharge volume and associated TDS and nitrate concentrations for each recharge term in each year of the 1954 to 1973 period
- Estimate the annual discharges from the GMZ for each year in the 1954 to 1973 period
- Compute the annual volume-weighted TDS and nitrate concentration in the GMZ for each year in the 1954 to 1973 period
- Compute the mean, standard error of the mean, and t-statistic for the 20 annual volume-weighted TDS and nitrate concentrations in the 1954 to 1973 period
- Compute ambient water quality based on the following equation:

$$AWQ = mean + (t * standard\ error\ of\ the\ mean)$$

The annual volume-weighted TDS concentration of the Upper Temescal Valley GMZ ranged from about 699 to 923 mg/L and averaged about 808 mg/L over the 20-year period of 1954 to 1973. Applying the ambient water quality statistic, the historical ambient TDS concentration for the period of 1954 to 1973 is 822 mg/L, as shown below in **Table 2**.

The annual volume-weighted nitrate concentration of the Upper Temescal Valley GMZ ranged from about 4.3 to 9.7 mg/L and averaged about 7.5 mg/L over the 20-year period of 1954 to 1973. Applying the ambient water quality statistic process, the historical ambient nitrate concentration for the period of 1954 to 1973 is 7.9 mg/L, as shown below in **Table 2**.

DRAFT

Table 2
Historical Ambient Water Quality of the Upper Temescal Valley GMZ

Constituent	20-Year Mean 1954-1973	Standard Error of the Mean	t-statistic	Historical Ambient (mean + t*std error)
TDS (mg/L)	808	15	1.0	822
Nitrate (mg/L)	7.5	0.4	0.99	7.9

TDS and Nitrate Antidegradation Objectives

Consistent with the existing antidegradation objectives for GMZs in the Basin Plan, Staff recommends that the antidegradation objectives for the Upper Temescal Valley GMZ be based on historical ambient water quality for the 20-year period of 1954 to 1973. The proposed antidegradation objectives for TDS and nitrate-nitrogen are shown in **Table 3** and are presented in the Attachment to Resolution R8-2020-0038, amending Chapter 4, Table 4-1 WATER QUALITY OBJECTIVES. As was done for the 2004 Basin Plan amendment, the calculated ambient TDS concentration was rounded to the nearest ten to establish the antidegradation objective.

Table 3
Proposed Antidegradation Objectives for TDS and Nitrate

Constituent	Calculated Historical Ambient Concentration	Antidegradation Objective
TDS (mg/L)	822	820
Nitrate (mg/L)	7.9	7.9

Consistency of these objectives with CWC 13241 is discussed in Section 5 of this Staff Report.

4. Current Ambient Water Quality, Assimilative Capacity, and Projections of Future Ambient Water Quality

Current Ambient Water Quality in the Upper Temescal Valley GMZ

The same methodology used to compute historical ambient water quality was applied to compute current ambient water quality for 2014. The 20-year period of analysis was 1995 to 2014. The work to compute current ambient water quality is documented in detail in the SNMP report (WEI, 2017), and the results are shown in Table 4.

Table 4
Current Ambient Water Quality of the Upper Temescal Valley GMZ

Constituent	20-Year Mean 1995-2014	Standard Error of the Mean	t-statistic	Current Ambient (mean + t*std error)
TDS (mg/L)	738	13	1.0	751
Nitrate (mg/L)	4.5	0.2	1.0	4.7

Assimilative Capacity

Assimilative capacity is defined as the amount, in mg/L, of degradation that can occur before a GMZ exceeds its Basin Plan objective. If the current ambient water quality of a GMZ is equal to or numerically higher than the water quality objective, then that GMZ does not have assimilative capacity. If the current ambient water quality is numerically less than the specified water quality objectives, then that GMZ has assimilative capacity. The difference between the objectives and current ambient water quality is the amount of assimilative capacity available. The assimilative capacity of a GMZ must be assessed in order to permit waste discharges to that GMZ.

The assimilative capacity available in the Upper Temescal Valley GMZ is shown in **Table 5**. Note that just as with the objectives, the current ambient calculation for TDS is rounded to the nearest ten.

Table 5
Assimilative Capacity for TDS and Nitrate in the Upper Temescal Valley GMZ

Constituent	Antidegradation Objective	Current Ambient	Assimilative Capacity
TDS (mg/L)	820	750	70
Nitrate (mg/L)	7.9	4.7	3.2

5. Consistency with California Water Code 13241

As discussed in Section 3, Staff recommends that the antidegradation objectives for the Upper Temescal Valley GMZ be based on historical ambient water quality for the 20-year period of 1954 to 1973, consistent with the existing antidegradation objectives for GMZs in the Basin Plan. Santa Ana Water Boards are also required to consider other requirements when establishing water quality objectives. California Water Code §13241 states:

> *Each regional board shall establish such water quality objectives in water quality control plans as in its judgment will ensure the reasonable protection of beneficial uses and the prevention of nuisance; however, it is*

DRAFT

recognized that it may be possible for the quality of water to be changed to some degree without unreasonably affecting beneficial uses. Factors to be considered by a regional board in establishing water quality objectives shall include, but not necessarily be limited to, all of the following:

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

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

(c) Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area.

(d) Economic considerations.

(e) The need for developing housing within the region.

(f) The need to develop and use recycled water.

The following describes the factors considered in recommending the proposed TDS and nitrate antidegradation objectives of 820 and 7.9 mg/L for the Upper Temescal Valley GMZ.

<u>CWC §13241 (a) Past, present, and probable future beneficial uses of water</u>

The proposed beneficial uses for the Upper Temescal Valley GMZ are:

- MUN – waters used for community, military, municipal, or individual water systems. These uses include, but are not limited to, drinking water supply.
- AGR – waters used for farming, horticulture, or ranching. These uses may include, but are not limited to, irrigation, stock watering, and support of vegetation for range grazing.
- PROC – waters are used for industrial activities that depend primarily on water quality. These uses include, but are not limited to, process water supply and all uses of water related to product manufacturing and food preparation.

The use impairment threshold concentrations for TDS and TIN for these beneficial uses, as listed or inferred from the current Basin Plan and from Santa Ana Water Board Order R8-2010-0012 (the Declaration of Conformance with the State Recycled Water Policy), are:

DRAFT

Table 6

Beneficial Uses and Water Quality Thresholds

Beneficial Use	TDS Threshold (mg/L)	TIN Threshold (mg/L-N)
MUN	500 - 1,000	8-10
AGR	700 – 750	>10
IND	nl	nl
PROC	nl	nl

The "nl" listed above means that the Basin Plan is silent as to the impairment threshold concentration for these uses. For the MUN use, the Basin Plan states that a TDS concentration of 1,000 mg/L is the beneficial use threshold and that 500 mg/L is preferable for drinking water supply. The 500 mg/L is really a goal based on consumer preference. In certain areas in the watershed, the TDS concentration in municipal supplies exceeds 500 mg/L, including the services areas[2] of Elsinore Valley and Eastern. Per R8-2012-0012, the threshold for setting Basin Plan objectives that are not based on historic water quality is 750 mg/L. The only GMZs with allowable TDS objectives greater than this limit are set based on historic high-TDS conditions, such as the Arlington (980 mg/L), Riverside-D (810 mg/L), Menifee (1,020 mg/L), Perris South (1,260 mg/L), and Irvine (910 mg/L) GMZs. For AGR use, the Basin Plan states that 700 mg/L is the beneficial use threshold for irrigation, and R8-2010-0012 notes that concentrations greater than 750 mg/L have adverse impacts to *some* crops. In reality, this threshold is arguable in that most of the recycled water served for irrigation in the Orange County part of the Santa Ana Region ranges from 700 mg/L to 1,000 mg/L; and groundwater used for irrigation in the Temescal Valley and the southern Chino Basin also has historically exceeded 700 mg/L.

The Basin Plan threshold for TIN for MUN use is 10 mg/L, which is the maximum allowable concentration for nitrate in drinking water, as set by the DDW for the protection of human health. However, per R8-2012-0012, the threshold for setting Basin Plan objectives that are not based on historic water quality is 5 mg/L. The Basin Plan and R8-2010-0012 are silent regarding the TIN impairment threshold for AGR use; however, it is reasonable to assume that this impairment threshold is significantly greater than 10 mg/L and is thus shown above as >10 mg/L.

[2] In areas that use extensive amounts of Colorado River Aqueduct (CRA) water or a blend of CRA and SWP water, the TDS concentration can exceed 500 mg/L. For example, the TDS concentration of water provided to EMWD and the District from the Metropolitan Water District of Southern California Skinner treatment plant exceeds 500 mg/L about 60 percent of the time and has historically exceeded 700 mg/L.

DRAFT

Establishing the TDS and nitrate antidegradation objectives for the Upper Temescal Valley GMZ based on the historical ambient water quality values of 820 mg/L and 7.9 mg/L, respectively is consistent with the 2004 Basin Plan amendment methodology. And the work performed in support of the Upper Temescal Valley SNMP demonstrates that recycled water discharges will not contribute to exceedances of the objectives. For TDS, all of the recycled water discharges are less than the objective and are projected to be less than current ambient water quality of 750 mg/L about 95 percent of the time. For nitrate, the discharges are only projected to use about three percent of current assimilative capacity and nitrate concentrations are projected to remain well below the objective in the future. Lastly, the requirement to implement the Upper Temescal Valley SNMP, will ensure that water quality of the GMZ is monitored, that ambient water quality is periodically recomputed, and that future projections of ambient water will periodically be prepared based on the latest cultural conditions and planning information. This process will enable the Santa Ana Water Board to continually assess if beneficial uses of the Upper Temescal Valley GMZ are being protected.

<u>CWC §13241 (b) Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto</u> *and* <u>CWC §13241 (c) Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area</u>

The TDS and nitrate antidegradation objectives of 820 mg/L and 7.9 mg/L, respectively, for the Upper Temescal Valley GMZ are based on the historical ambient water quality values for the 1954-1973 period and are reflective of the hydrogeologic condition and the sources of water supply available in the region. The hydrogeologic properties of the Upper Temescal Valley GMZ have a significant influence on water quality in the groundwater basin. As summarized in Section 2 of this report and described in detail in the Upper Temescal Valley SNMP report (WEI, 2017), the Upper Temescal Valley GMZ aquifer system underlying Temescal Wash is shallow, narrow, and primarily confined to the sediments underlying the Wash. Storage is estimated to be about 75,000 acre-feet and the total recharge volume over a 20-year period is significantly greater than the storage volume of the GMZ. Based on the storage volume and recharge, the turn-over time in the Upper Temescal Valley is about 7 years. The TDS and nitrate concentrations in the GMZ are highly variable both spatially and at individual wells. This variability is reflective of wet and dry climate cycles, the small effective storage, and the surface and groundwater interchange along the Temescal Wash.

The primary sources of groundwater recharge are streambed infiltration from stormwater and recycled water discharges and the deep infiltration of water applied outdoors for irrigation. The Upper Temescal Valley SNMP demonstrates that the ambient TDS and nitrate concentrations, if represented by a 20-year time period, are reflective of the volume-weighted average TDS and nitrate concentrations of the recharge sources. For this reason, the groundwater quality of the Upper Temescal

Valley GMZ is highly affected by the water quality of sources used for outdoor irrigation, especially over dry periods when stormwater recharge is limited, and by the TDS concentration of recycled water discharges.

The research performed for the development of the SNMP identified that the sources of water procured by the Temescal Water Company and used for irrigation in the Upper Temescal Valley Watershed from 1886 to 1973 were high in TDS, and that several of the sources of supply had to be abandoned due to excessive TDS concentrations, including Lake Elsinore and groundwater imported from the San Jacinto Valley. **Table 7** summarizes the estimated TDS and nitrate concentrations of the source waters used in the Upper Temescal Valley from 1900 to 1975, based on available historical documents. The TDS concentration of these sources ranged from as low as 100 mg/L for local surface-water runoff to greater than 1,000 mg/L for Lake Elsinore and San Jacinto River Basin groundwater. The nitrate concentrations ranged from zero to ten mg/L.

Table 7
Estimated TDS and Nitrate Concentrations of Source Waters Used in Upper Temescal Valley from 1900-1975

Water Supply Source	Estimated TDS	Estimated Nitrate
	mg/L	*mg/L*
San Jacinto River Basin Groundwater (Perris South GMZ)	1,260	2.5
Coldwater GMZ	380	1.5
Upper Temescal Valley GMZ	> 380	
Surface Water Diversions from Tributaries to Temescal Wash	150 - 300	0 - 6
Bunker Hill-B GMZ	330	7.3
Riverside-A GMZ	560	6.2
Riverside-F GMZ	660	9.5
San Jacinto River Diversions	n.a.	trace
Colorado River Aqueduct	700	< 1

n.a. = data not available

DRAFT

Given that the highest-quality water sources (local surface and storm waters) were not available year-round and were insufficient to meet demands in most years, especially as urban development began, it is reasonable to assume that the average TDS of the irrigation supply in any given year ranged between 300 and 900 mg/L, depending on the mix of sources being used and assuming that irrigators would manage the irrigation to have a TDS concentration of less than 1,000 mg/L to protect the citrus trees. Based on this source water quality, and assuming that irrigated crops do not assimilate the TDS and that flood irrigation practices had an efficiency of 50 percent, the TDS concentration of the deep infiltration of applied water likely ranged between 600 and 1,800 mg/L. Given that crops do assimilate nitrogen, the nitrate concentration of the deep infiltration of applied water would have been a function of fertilizer practices, but would not be expected to be low.

Given the hydrogeology of the Upper Temescal Valley GMZ, the high-TDS and nitrate historical ambient water quality for the 1954-1973 period of the Upper Temescal Valley (820 and 7.9 mg/L) is explained in large part by the irrigation practices, including sources waters available to the region at the time. The historically high TDS and nitrate in the neighboring Temescal and Arlington GMZs (770 and 10 mg/L; and 980 and 10 mg/L respectively), is likely also explained, in part, by the abundant use of these same poor-quality source waters and fertilizer practices for the large-scale irrigation that was also occurring in those GMZs.

The water quality of the Upper Temescal Valley GMZ is still dominated by the streambed infiltration and the deep infiltration of applied water, but streambed recharge has a far greater influence on recharge quality for the current ambient water quality as of 2014. The average streambed recharge has increased to nearly 11,900 acre-feet per year, compared to 4,700 acre-feet per year in the historical period. The increase in streambed infiltration is driven by the increase in storm runoff due to urbanization of the watershed and recycled water discharges to the Temescal Wash.

Table 8 summarizes the TDS and nitrate concentrations of the current water supply sources used in the Upper Temescal Valley based on available data as of 2014. The TDS concentrations of the potable water sources range between 270 and 530 mg/L. Dedicated non-potable outdoor irrigation supply sources range between 500 and 1,500 mg/L. Based on the mix of supplies used for outdoor irrigation, and assuming that irrigated vegetation does not assimilate the TDS and an irrigation efficiency of 75%, the concentration of the deep infiltration of applied water likely ranges between 1,500 and 2,500 mg/L. The nitrate concentrations of the potable water sources range between 0.2 and 2.8 mg/L and the non-potable sources from 3.6 to 45 mg/L. As with the historical period, the nitrate concentration of the deep infiltration of applied water is a function of fertilizer practices, however today the practices are dominated by urban application and not expected to result in high nitrate recharges.

DRAFT

Table 8
Estimated TDS and Nitrate Concentrations of Source Waters Currently (2014) Used in Upper Temescal Valley

Water Supply Source	Estimated TDS	Estimated Nitrate
	mg/L	*mg/L*
Imported Water from the State Water Project (SWP)	270	0.6
Blend of SWP and Colorado River Water from the Skinner Treatment Plant	518	0.2
Potable Groundwater from the Coldwater GMZ	440	2.8
Potable Groundwater from the Elsinore GMZ	490	2.1
City of Corona DWP Municipal Water Supply	530	1.8
Brackish Groundwater from the UTV GMZ	400 - 1,500	ND* - 20
Recycled Water from TVWD WRF	500 - 550	5.3 - 8.9
Recycled Water from Corona #3 WRF	650 - 690	3.6 - 6.4
Recycled Water from Horsethief WRF	570 - 730	20 - 45

ND* = non-detect

In summary, the hydrogeologic properties of the Upper Temescal Valley GMZ and the sources of water quality available in the watershed have a significant influence on water quality in the groundwater basin and so the concentrations of recycled water discharged to Temescal Wash and used for irrigation are the controllable factors that contribute to groundwater quality in the Upper Temescal Valley GMZ. As previously described, in Sections 4 and 5 of this Staff Report (Antidegradation Analysis), the work performed in support of the Upper Temescal Valley SNMP demonstrates that recycled water

DRAFT

discharges will not contribute to exceedances of the objectives. For TDS, all of the recycled water discharges are less than the objective and are projected to be less than current ambient water quality of 750 mg/L about 95 percent of the time. For nitrate, the discharges are only projected to use about three percent of current assimilative capacity and nitrate concentrations are projected to remain well below the objective in the future.

CWC §13241 (d) Economic considerations

Section 7 (under the discussion of the Alternatives Analysis) of this Staff report provides a full economic discussion and consideration in support of the proposed regulatory compliance strategy, which includes the establishment of TDS and nitrate objectives. As described in detail in Section 7 and shown in Table 11, the present value compliance cost of the status quo (No Project) regulatory compliance approach that does not establish groundwater quality objectives, and that requires construction of salt offset facilities for exceedance of discharge limitations ranges from about $11.2 to $27.2 million dollars (2012 $). The annual salt offset provided by these facilities is far in excess of the liabilities that would need to be mitigated by Elsinore Valley and Eastern for the periodic violation of the discharge limitations. Even the smallest facility, sized at 0.5 million gallons per day (MGD), exceeds the offset needs by about 530 tons per year.

The proposed Basin Plan amendment is a preferred alternative to this approach because it establishes water quality objectives that can be used as a metric to more reasonably achieve the Santa Ana Water Board goal of writing discharge permits that comply with receiving water body objectives and it provides for a cost-effective approach to defining a salt offset program for periodic and short-term permit violations through participation in the Task Force efforts.

Further, the Upper Temescal Valley SNMP study provides a robust, scientifically-defensible method to establish TDS and nitrate objectives in a manner that is consistent with key principles of the Santa Ana Water Board-approved methodology used establish antidegradation objectives in the 2004 Basin Plan Amendment. Under that approach, salt offset facilities are not necessary to protect beneficial uses or comply with the antidegradation objectives. Thus, the costs that would potentially be incurred by implementing an alternative approach are not warranted. Adoption of the preferred action provides the Santa Ana Water Board with a regulatory framework that allows ongoing assessment of ambient water quality and adjustment to the SNMP implementation actions should water quality or other planning and regulatory conditions change.

CWC §13241 (e) The need for developing housing within the region *and* CWC §13241 (f) The need to develop and use recycled water

Currently there are no TDS and nitrate antidegradation objectives established for the Upper Temescal Valley GMZ. As described in the Upper Temescal Valley SNMP report, the population of the Upper Temescal Valley watershed is growing and much of the vacant land as of 2014 will be converted to urban uses.

As the region grows, there will be increased demands for non-potable uses of water supplies, which could be served, at least in part, with recycled water. Establishing TDS and nitrate antidegradation objectives for the Upper Temescal Valley will support the Santa Ana Water Board's ability to permit and assess the impacts of increased recycled water reuse in the Watershed. The implementation of the Upper Temescal Valley SNNP, will further enable these efforts. Thus, establishing objectives and requiring the implementation of the SNMP as recommended in this Staff report address the future need for housing and recycled water reuse.

6. Proposed Modification to the Basin Plan Implementation Plan

Section 13242 of the California Water Code specifies that Basin Plan implementation plans must contain a description of the monitoring and surveillance programs to be undertaken to determine compliance with water quality objectives. As part of this proposed revision to the TDS and nitrate water quality objectives and update of the TDS and nitrate management plan, Staff proposes changes to the Basin Plan to require the implementation of the following management actions defined in the Upper Temescal Valley SNMP. The management actions are:

(1) Develop and implement a data collection program, including a new field surface water and groundwater monitoring program

(2) Prepare a triennial report that describes each agency's source water supplies, potable and recycled water quality, and the current and potential future management activities to support management of TDS in these water supplies

(3) Participation in the Santa Ana River Watershed stakeholder efforts to periodically update the wasteload allocation analysis of recycled water discharges to the Santa Ana River and its tributaries

(4) Develop salt offset strategies for recycled water discharges that periodically exceed discharge permit limits (submit plan by December 31, 2021)

(5) Periodic recomputation of current and projected TDS and nitrate concentrations in the Upper Temescal Valley

(6) Periodic update of the SNMP implementation actions

(7) Annual reporting of progress and activities related to implementation of the SNMP

Given that the specific tasks and associated frequency of activities under each of these management actions may need to be adapted over time due to improved understanding of hydrogeology and water quality or changed planning conditions, Staff recommends that the Basin Plan only reference the requirement to implement the most current

version of the SNMP management actions. The specific recommended amendments to Chapter 5 of the Basin Plan are shown in the Attachment to draft Resolution R8-2020-0038. The requirement to implement the SNMP will also be included as requirements of the Elsinore Valley and Eastern waste discharge permits.

Elsinore Valley and Eastern have already begun implementing the management actions and have submitted their first annual report of progress (WEI, 2019). The annual report documents the monitoring program work performed in 2018 and provides the status of all other management activities and planned activities for 2019. A brief overview of each management action as described in the 2017 SNMP follows.

Monitoring and Data Collection Program

The objective of the monitoring and data collection program is to create a comprehensive dataset for analyzing current and future TDS and nitrate concentrations in the Upper Temescal Valley GMZ. The types of data sets that need to be collected for this purpose include: surface water flow and quality of Temescal Wash; groundwater levels and quality; groundwater production; recycled water discharge volumes and TDS and nitrate concentrations; recycled water reuse volumes and locations of reuse; precipitation; Lake Elsinore outflow; water supply plans of the agencies overlying the Upper Temescal Valley watershed; and land use and drainage system changes.

To fill existing data gaps, some of this data is being collected as part of new surface water and groundwater field monitoring programs. Other readily available datasets will be provided by cooperating agencies.

Reporting of Water Supply and Discharge TDS and Water Quality Management Activities

The objective of this reporting requirement is to provide information on how water quality in the Elsinore Valley and Eastern service areas is changing over time. Elsinore Valley and Eastern will each prepare their own separate report of activities. The reports will include: a characterization of the service area, source water supplies, and recycled water discharge and reuse; descriptions of the current and potential future activities to manage/improve the TDS concentration of supply sources and/or wastewater; and a characterization of historical and current TDS concentrations of source waters and recycled waters to demonstrate water quality trends over time. Eastern and Elsinore Valley each submitted reports in 2018 (WEI, 2018a and WEI, 2018b, respectively).

Participation in the Update of the Wasteload Allocation for the Santa Ana River Watershed

The objective of this reporting requirement is to ensure that Elsinore Valley and Eastern participate in the periodic efforts to evaluate the current and future impacts of recycled water discharges on the quality of the Santa Ana River, its tributaries, and the associated underlying GMZs. As part of the existing Basin Plan implementation activities described in Chapter 5, the Santa Ana Water Board requires the Task Force to

update the wasteload allocation analysis for the Santa Ana River Watershed on a period basis at the request of the Santa Ana Water Board. To meet this commitment, Elsinore Valley MWD and Eastern MWD must participate financially, or with in-kind contributions of the robust data and models developed for the Upper Temescal Valley SNMP, in the watershed-wide effort when it is required to be performed by the Santa Ana Water Board.

Develop Salt Offset Strategies for Recycled Water Discharges that Periodically Exceed Discharge Permit Limits

The objective of this management action is to identify economically feasible salt offset strategies for the periodic, short-term discharges of recycled water with TDS concentrations that exceed waste discharge limitations. Although the Upper Temescal Valley SNMP identified that there are no regulatory compliance concerns as they relate to permitting Elsinore Valley MWD's and Eastern MWD's recycled water discharges at the TDS permit limitations established in the existing waste discharge permits, their discharges will continue to occasionally exceed the discharge limitations, thus requiring a salt offset strategy to be adopted.

As described in Section 5 above, the Task Force is leading an effort to evaluate a variety of alternative management and permitting strategies that take these climate-driven occurrences, and their associated impacts to groundwater and beneficial uses, into account. Development of this policy will involve extensive technical studies to demonstrate the impacts of the various management strategies considered. In lieu of developing a specific salt mitigation strategy in the SNMP to address permit violations, Elsinore Valley and Eastern will participate in the Task Force efforts and will adopt and implement a TDS management strategy that is consistent with any new Santa Ana Water Board-approved management strategy. To meet this commitment, Elsinore Valley and Eastern must participate financially in the Task Force effort and submit a plan to the Regional Board for Executive Officer approval by December 31, 2021.

Periodic Recomputation of Ambient Water Quality

Given that the technical methodology used to evaluate water quality in the GMZ deviates from the current Basin Plan approved methodology, the objective of this management action is to ensure the periodic assessment of compliance with Basin Plan objectives in the Upper Temescal Valley GMZ pursuant to methods acceptable to the Santa Ana Water Board. This effort will include computing ambient water quality and preparing updated projections of future TDS and nitrate concentrations based on the recycled water reuse and development plans of the agencies in the Upper Temescal Valley to determine if revised or new SNMP management actions are required.

The next recomputation is due to the Santa Ana Water Board by October 31, 2020. For this next update, the same (or functionally equivalent) surface water and groundwater modeling tools will be updated to include the new datasets collected through the SNMP monitoring program. Upon completion of the technical work in 2020, Elsinore Valley and

Eastern will work with the Santa Ana Water Board to establish a plan and schedule for the next recomputation.

Periodic Update of the Salt and Nutrient Management Plan Actions

The objective of this management action is to ensure that the SNMP management actions are updated in accordance with the latest assessments of compliance with Basin Plan objectives. Based on the results of the periodic efforts to compute current and future TDS and nitrate concentrations in the Upper Temescal Valley GMZ, Elsinore Valley and Eastern will update, as necessary, the SNMP implementation actions – including the plan and schedule for future ambient water quality recomputations. The need for updated actions will be reported together with the ambient water quality assessments.

Annual Reporting of SNMP Progress and Activities

The objective of this management action is to provide detailed status reports to the Santa Ana Water Board. Elsinore Valley MWD and Eastern MWD will prepare a joint annual report on their progress and activities related to the implementation of the Upper Temescal Valley SNMP, including progress towards meeting compliance schedules for each management action. The reporting period will be the calendar year. Each year, the annual report will be due to the Santa Ana Water Board by April 15th. As previously noted, the first annual report was submitted in April 2019 (WEI, 2019).

7. California Environmental Quality Act

The Secretary of Resources has certified the Basin Planning process as functionally equivalent to the preparation of an Environmental Impact Report (EIR) or a Negative Declaration pursuant to the California Environmental Quality Act (CEQA) (California Code of Regulations, Title 14, sections 15250 and 15251(g)). However, in lieu of these documents, the Santa Ana Water Board is required to prepare the following: the Basin Plan amendment; an Environmental Checklist that identifies potentially significant adverse environmental impacts of the Basin Plan amendment; and, a staff report that describes the proposed amendment, reasonable alternatives, and mitigation measures to minimize any significant adverse environmental impacts identified in the Checklist. The Basin Plan amendment, Environmental Checklist (Substitute Environmental Document [SED]), and staff report together are functionally equivalent to an EIR or Negative Declaration.

The proposed Basin Plan amendment is shown in the Attachment to draft Resolution R8- 2020-0038. The SED, included as Attachment X to this report, concluded that there are no potentially significant impacts on the environment caused by the adoption of this Basin Plan amendment. Therefore, no mitigation measures are required.

Alternative Analysis

DRAFT

Pursuant to the State Water Board's regulations for implementing CEQA (CCR title 23, sec. 3777[a]), this environmental review must include an analysis of reasonable alternatives to the proposed action. The intent of the alternatives analysis is to consider whether there are reasonable alternatives that would fulfill the underlying purpose of the Proposed Action which involves an Amendment to the Basin Plan to also achieve and protect water quality standards, but that would minimize or eliminate the potential adverse environmental effects of the Proposed Action. Further, pursuant to CEQA Section 15187, this environmental review must also include an analysis of reasonably foreseeable alternative means of compliance with the rule or regulation which would avoid or eliminate the identified impacts.

As described in *Section G. Environmental Checklist* of the SED, there are no potential adverse environmental impacts associated with the proposed action to amend the Basin Plan to incorporate the Upper Temescal Valley SNMP (GMZ boundary, antidegradation TDS and nitrate objectives, and implementation plan). As there are no potential environmental impacts which could be reduced, the only alternative addressed herein is the No Project Alternative.

Under the "No Project" Alternative, no action would be taken to amend the Basin Plan to combine the Bedford, Lee Lake and Warm Springs GMZs into the Upper Temescal Valley GMZ, to establish antidegradation TDS and nitrate objectives for the Upper Temescal Valley GMZ, or to include the Upper Temescal Valley SNMP in the implementation plan. The TDS and nitrate objectives would remain undefined for the Bedford, Lee Lake and Warm Springs GMZs. The two regulatory alternatives considered by the Santa Ana Water Board included:

(1) *Assume that existing TDS concentration limitations in the Elsinore Valley and Eastern waste discharge permit limits are protective of beneficial uses of the Bedford, Lee Lake and Warm Springs GMZ*. In this case, the Santa Ana Water Board would continue to permit the Elsinore Valley and Easter recycled water discharges at 700 and 650 mg/L, respectively, and no assessment would be done to evaluate if the permitted limits have the potential to degrade water quality (as was the assumption immediately following the 2004 Basin Plan amendment). However, Elsinore Valley and Eastern would continue to have regulatory compliance issues for the periodic, short-term violation of the discharge limits in times of drought, conservation and high-TDS source water supplies. In the absence of the preferred regulatory alternative, the Santa Ana Water Board would require the Elsinore Valley and Eastern to develop a salt offset plan to mitigate any ongoing exceedances of the discharge permit limitations (the historical offsets were already mitigated through the development of the Upper Temescal Valley SNMP study). Projected future exceedances by both agencies are expected to be occur at a rate similar to that observed since 2013. **Table 9** shows the annual TDS liabilities that Elsinore Valley would have accrued in the absence of the offset allowed for the development of the

SNMP over the period of 2013 to 2017. The salt offset facility would need to be sized to mitigate an annual average liability of 4.3 tons.

Table 9.

Elsinore Valley TDS Liabilities That Would Have Accrued in the Absence of the Offset Allowed for the Development of the Upper Temescal Valley SNMP

Year	Total Discharge to Temescal Wash (acre-feet)	Range of Monthly 12-Month Rolling Average TDS (mg/L)	Salt Liability (tons)
2013	659	624 - 645	0
2014	612	655 - 690	0
2015	626	690 - 715	4
2016	642	698 - 738	12
2017	595	601 - 751	10
2018	629	583 - 698	0
		Total	26
		6-year average	4.3

Table 10 shows the annual TDS liabilities that Eastern would have accrued in the absence of the offset allowed for the development of the SNMP over the period of 2013 to 2017. The salt offset facility would need to be sized to mitigate an annual average liability of 69 tons.

DRAFT

Table 10.

Eastern TDS Liabilities That Would Have Accrued in the Absence of the Offset Allowed for the Development of the Upper Temescal Valley SNMP

Year	Total Discharge to Temescal Wash (acre-feet)	12-Month Rolling Average TDS (mg/L)	Salt Liability (tons)
2013	2,726	668	67
2014	0	na	0
2015	0	na	0
2016	0	na	0
2017	2,920	737	345
2018	0	na	0
		Total	412
		6-year average	69

Together, Elsinore Valley and Eastern would need a salt offset facility that could mitigate 73 tons of TDS per year. The Elsinore Valley's consultant MWH performed a detailed engineering analysis of salt offset facilities prior to the development of the SNMP (MWH, 2012). The study identified two facility options to mitigate salt loading in the Upper Temescal Valley GMZs:

a. *Desalt recycled water effluent from the Regional WRF.* Two facility sizes were contemplated: 0.5 MGD and 1.0 MGD. **Table 19** summarizes the annual salt offset provided by the facility, the 2012 present value cost to build it, the equivalent annual cost, and the cost per ton of salt removal.

b. *Desalt groundwater pumped from the Upper Temescal Valley GMZs.* A 2.0 MGD facility was conceptualized. **Table 11** summarizes the annual salt offset provided by the facility, the 2012 current value cost to build it, the equivalent annual cost, and the cost per ton of salt removal

DRAFT

Table 11.

Cost of Potential Salt Offset Facilities for the Upper Temescal Valley

Facility Type	Facility Size (MGD)	Annual Salt Offset Provided (tons)	2012 Present Value Cost ($)	Equivalent Annual Cost ($)	Cost per Ton of Salt Removal ($/tons)
Recycled Water Desalter	0.5	607	11,170,000	820,000	1,350
Recycled Water Desalter	1.0	709	17,500,000	1,300,000	1,835
Groundwater Desalter	2.0	1,430	27,200,000	2,000,000	1,398

The annual salt offset provided by these facilities is far in excess of the liabilities that would need to be mitigated by Elsinore Valley and Eastern for the periodic violation of the discharge limitations. Even the smallest facility, sized at 0.5 MGD, exceeds the offset needs by about 530 tons per year. At the time the MWH study was completed, it was determined that these are not cost-effective facilities for mitigating the small salt liabilities accrued by the periodic and short-term exceedances of the TDS discharge limitations.

The proposed Basin Plan amendment is a preferred alternative to this approach because it establishes water quality objectives that can be used as a metric to more reasonably achieve the Santa Ana Water Board goal of writing discharge permits that comply with receiving water body objectives and it provides for a more cost-effective approach to defining a salt offset program for periodic and short-term permit violations through participation in the Task Force efforts.

(2) *Use an alternative methodology to establish TDS and nitrate objectives in each of the Bedford, Lee Lake and Warm Springs GMZs*. It has been established that it is not possible to use the methodology defined in the Basin Plan for establishing TDS and nitrate antidegradation objectives in these management zones. Thus, in this alternative the Basin Plan would be amended to incorporate objectives based on Best Professional Judgement. Prior to the proposed development of the SNMP, Santa Ana Water Board staff proposed to set objectives based on TDS and nitrate concentrations measured at wells. As described in the Upper Temescal Valley SNMP, the TDS and nitrate concentrations measured at wells across the Upper Temescal Valley are highly variable both spatially and at individual wells. This variability is reflective of wet and dry climate cycles, the small effective storage, and the surface and groundwater interchange along the Temescal Wash. For example, review of current and historical data show that annualized average TDS concentrations at individual wells can vary by as much as 800 mg/L, and the range in TDS concentrations across all wells varies from about 250 to 1,500 mg/L. Using the measured TDS concentration results alone could lead to setting TDS objectives

that are too high to protect beneficial uses. Or, it could result in setting the limits too low and resulting in high compliance costs that might not provide an actual water quality benefit. This is not a preferred option because it would be difficult to build a scientifically-defensible argument for any particular objective based on the extremely variable water quality conditions.

If objective values were established that were less than the current waste discharge limitations, then the Santa Ana Water Board would be required to lower the discharge limitations or require Elsinore Valley and Eastern (and other dischargers in the Upper Temescal Valley – City of Corona and Temescal Valley Water District) to implement a salt offset program. As described for No Project Option 1, the cost to implement salt offset facilities in the Upper Temescal Valley ranges from about $11M to $27M (2012 Present Value Cost).

The Upper Temescal Valley SNMP study provided a robust, scientifically-defensible method to establish TDS and nitrate objectives in a manner that is consistent with key principles of the Santa Ana Water Board-approved methodology used establish antidegradation objectives in the 2004 Basin Plan Amendment. Under that approach, salt offset facilities are not necessary to protect beneficial uses or comply with the antidegradation objectives. Thus, the costs that would potentially be incurred by implementing an alternative approach are not warranted. Adoption of the preferred action provides the Santa Ana Water Board with a regulatory framework that allows ongoing assessment of ambient water quality and adjustment to the SNMP implementation actions should water quality or other planning and regulatory conditions change.

8. Scientific Peer Review

Pursuant to Health and Safety Code Section 57004, all proposed rules that have a scientific basis must be submitted for external scientific peer review. The draft staff report, SED, and the SNMP have been reviewed by four reviewers selected by the State Board staff and the comments have been received and responded. Attachment X contains the peer review comments and the staff responses for comments.

9. Staff Recommendation

Board staff recommends adoption of Resolution R8-2020-0038 to certify the Substitute Environmental Document and adopt the Basin Plan amendment to incorporate the changes shown in the Attachment to draft Resolution R8- 2020-0038, including:

- Revise Tables 3-1 and 4-1 of the Basin Plan to remove the Bedford, Lee Lake, Warm Springs Valley GMZs and replace them with the Upper Temescal Valley GMZ.
- Establish beneficial uses of MUN, AGR, and PROC for the Upper Temescal Valley GMZ.

- Establish TDS and nitrate antidegradation objectives of 820 and 7.9 mg/L for the Upper Temescal Valley GMZ.
- Incorporate the Upper Temescal Valley Salt and Nutrient Management Plan (SNMP) into the Implementation Plan.

DRAFT

References

California Regional Water Quality Control Board, Santa Ana Region. (2004). Resolution R8-2004-0001 Resolution Amending the Water Quality Control Plan for the Santa Ana River Basin to Incorporate an Updated Total Dissolved Solids (TDS) and Nitrogen Management Plan for the Santa Ana Region.

California Regional Water Quality Control Board, Santa Ana Region. (2013). *Approval of Revised TDS Offset Plan.*

California Regional Water Quality Control Board, Santa Ana Region. (2017). Approval of Proposed Salt and Nutrient Management Plan for the Upper Temescal Valley Watershed Submitted by the Elsinore Valley Municipal Water District and the Eastern Municipal Water District.

MWH. (2012). Elsinore Valley Municipal Water District TDS Offset Plan for Regional Water. *Reclamation Facility, Draft Report*. Prepared for the Elsinore Valley Municipal Water District, September 2012.

WEI. (2000). Development of Groundwater Management Zones – Estimation of Historical and Current TDS and Nitrogen Concentrations in Groundwater. TIN/TDS Study – Phase 2A Final Technical Memorandum. Prepared for the TIN/TDS Task Force, July 2000.

WEI. (2002). TIN/TDS Study – Phase 2B of the Santa Ana Watershed Wasteload Allocation Investigation. Technical Memorandum.

WEI. (2013). Letter Report documenting the application of the Wasteload Allocation Model to characterize the TDS impact on the Santa Ana River and Upper Temescal Valley management zones from Eastern Municipal Water District recycled water discharges to Temescal Creek. Prepared for the Eastern Municipal Water District, June 2013.

WEI. (2014). Rationale for Creating the Upper Temescal Valley Groundwater Management Zone. Letter to Elsinore Valley and Eastern dated September 8, 2014.

WEI. (2015). Addendum to the 2008 Santa Ana River Watershed Allocation Model Report: Scenario 8. Technical Memorandum.

WEI. (2017). *Salt and Nutrient Management Plan for the Upper Temescal Valley.* Prepared for the Elsinore Valley Municipal Water District and Eastern Municipal Water District, September 2017.

WEI. (2018a). 2018 Triennial Update to the Maximum-Benefit Salinity Management Plan. Prepared for the Eastern Municipal Water District. August 9, 2018

WEI. (2018b). Water Supply and Recycled Water in the Elsinore Valley Municipal Water District – Salinity Trends and Management. Prepared for the Elsinore Valley Municipal Water District. December 12, 2018

DRAFT

WEI. (2019). *2018 Annual Report of the Salt and Nutrient Management Plan for the Upper Temescal Valley.* Prepared for the Elsinore Valley Municipal Water District and Eastern Municipal Water District, April 2019.

DRAFT