SUBSTITUTE ENVIRONMENTAL DOCUMENT
SALT AND NUTRIENT MANAGEMENT PLAN

CENTRAL BASIN AND WEST COAST BASIN
Southern Los Angeles County, California

WRD
WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA

February 12, 2015

WEST BASIN MUNICIPAL WATER DISTRICT

PUBLIC WORKS

LA DWP

SANITATION DISTRICTS OF LOS ANGELES COUNTY

COVER

Center: Map of the Central Basin and West Coast Basin
Top: Photo of the Montebello Forebay Spreading Grounds
Left: Photo of reverse osmosis membranes
Right: Photo of the Terminal Island Water Reclamation Plant/Advanced Water Purification Facility
Bottom: Photo of the Leo J. Vander Lans Advanced Water Treatment Facility

ACKNOWLEDGMENTS

Many agencies/organizations collaborated to develop the Salt and Nutrient Management Plan (SNMP) and this associated Substitute Environmental Document (SED) for the Central Basin and West Coast Basin (CBWCB). The CBWCB stakeholders would like to recognize and thank everyone who contributed to this tremendous endeavor.

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ACRONYMS

AFY	acre-feet per year
AGB	Alamitos Gap Seawater Intrusion Barrier
AOP	advanced oxidation process
ARRF	Aquifer Recharge and Recovery Facility
AWT	Advanced Water Treatment
AWTF	Advanced Water Treatment Facility
BMPs	Best Management Practices
CalARP	California Accidental Release Prevention
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CBWCB	Central Basin and West Coast Basin
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
CECs	Constituents of Emerging Concern
CFR	Code of Federal Regulations
CGP	Construction General Permit
CH&SC	California Health and Safety Code
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalence
CR	Colorado River
CRMMP	Cultural Resources Monitoring and Mitigation Plan
CWA	Clean Water Act
CWC	California Water Code
CWH	Council for Watershed Health
dB	decibel
dBA	A-weighted decibel scale
DGB	Dominguez Gap Seawater Intrusion Barrier
DGSG	Dominguez Gap Spreading Grounds
DWR	California Department of Water Resources
ERP	Emergency Response Plan
EWMP	Enhanced Watershed Management Plan
ft-msl	feet above mean sea level
GBMP	Groundwater Basins Master Plan
GHG	greenhouse gases
GLAC	Greater Los Angeles County
GRIP	Groundwater Reliability Improvement Program
GRIP A	Groundwater Reliability Improvement Program, Recycled Water Project A
GRIP B	Groundwater Reliability Improvement Program, Recycled Water Project B
GWP	global warming potential
HMBP	Hazardous Materials Business Plan
I-605	Interstate 605 Freeway
IRWMP	Integrated Regional Water Management Plan
kwH	kilowatt hours
LABOS	City of Los Angeles Bureau of Sanitation
LACFCD	Los Angeles County Flood Control District
LACDPW	Los Angeles County Department of Public Works

LADWP	Los Angeles Department of Water and Power
LARWQCB	Los Angeles Regional Water Quality Control Board
Leq	Equivalent Noise Level
LID	Low Impact Development
LOS	Levels of Service
LST	Localized Significance Threshold
MCL	Maximum Contaminant Level
MF	microfiltration
MFSG	Montebello Forebay Spreading Grounds
MG	million gallons
mg/L	milligrams per liter
Metro	Los Angeles County Metropolitan Transportation Authority
MLD	Most Likely Descendant
MOA	Memorandum of Agreement
MRPs	Monitoring and Reporting Programs
MS	management strategies
MS4	Municipal Separate Storm Sewer System
MT	million tons
MWD	Metropolitan Water District of Southern California
NAHC	Native American Heritage Commission
NdN	Nitrification/denitrification
NO_x	nitrous oxides
NPDES	National Pollutant Discharge Elimination System
NPR	Non-potable reuse
NWRI	National Water Research Institute
O_3	Ozone
OSHA	Occupational Safety and Health Administration
$PM_{2.5}$	fine particulate matter (aerodynamic diameter of 2.5 micrometers or less)
PM_{10}	suspended particulate matter (aerodynamic diameter of 10 micrometers or less)
PRC	Public Resources Code
RGWMP	Regional Groundwater Monitoring Program
RHSG	Rio Hondo Spreading Grounds
RMP	Risk Management Plan
RO	reverse osmosis
ROG	reactive organic gas
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCSC	Southern California Salinity Coalition
SDLAC	County Sanitation Districts of Los Angeles County
SEAs	Significant Ecological Areas
SED	Substitute Environmental Document
SMCL	Secondary Maximum Contaminant Level
S/N	salt and nutrient
SNMP	Salt and Nutrient Management Plan
SO_x	sulfur oxides
SR 60	State Route 60
SRWS	Self Regenerating Water Softeners
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board

TDS	total dissolved solids
TIWRP	Terminal Island Water Reclamation Plant/Advanced Water Purification Facility
TMDL	Total Maximum Daily Load
TM	Technical Memorandum
UF	ultrafiltration
USACE	United States Army Corp of Engineers
USBOR	United States Department of the Interior-Bureau of Reclamation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UV	ultraviolet irradiation
WBMWD	West Basin Municipal Water District
WCBB	West Coast Basin Seawater Intrusion Barrier
WDRs	Waste Discharge Requirements
WQO	Water Quality Objective
WRD	Water Replenishment District of Southern California
WRF	Water Recycling Facility
WRP	Water Reclamation Plant
WRRs	Water Recycling Requirements
WTP	Water Treatment Plant
WWII	World War II
WY	Water Year

EXECUTIVE SUMMARY

In accordance with the 2009 State Water Resources Control Board's (SWRCB) statewide Recycled Water Policy, this Substitute Environmental Document (SED) was prepared by Environmental Science Associates (ESA) for the Salt and Nutrient Management Plan (SNMP) for the Central Basin and West Coast Basin (CBWCB or Study Area), which are located in southern Los Angeles County, California. The SNMP was developed through a collaborative process involving major stakeholders in the CBWCB, including the Water Replenishment District of Southern California (WRD), Los Angeles County Department of Public Works (LACDPW), West Basin Municipal Water District (WBMWD), Los Angeles Department of Water and Power (LADWP), Sanitation Districts of Los Angeles County (SDLAC), Metropolitan Water District of Southern California (MWD), Council for Watershed Health, City of Los Angeles Bureau of Sanitation, and other interested parties. The CBWCB stakeholders worked in close consultation with the Los Angeles Regional Water Quality Control Board (LARWQCB) to develop the SNMP and SED.

As set forth in the Recycled Water Policy, the SNMP must comply with the California Environmental Quality Act (CEQA). Hence, this SED presents the results of the environmental analysis of the SNMP, specifically the proposed implementation measures and major recycled water projects that were presented in the SNMP Implementation Plan. In accordance with the Recycled Water Policy, these implementation measures and proposed recycled water projects were developed by the CBWCB stakeholders to manage salt and nutrient (specifically, total dissolved solids [TDS], chloride, and nitrate) loading in the basins on a sustainable basis and/or reduce dependency on potable water supplies by increasing the use of recycled water. A Draft SED and Draft SNMP were submitted simultaneously to the LARWQCB under separate covers for their review in August 2014. No comments were received subsequently from LARWQCB regarding the Draft SED or Draft SNMP. A Basin Plan Amendment based on the SNMP was prepared by LARWQCB and adopted (Resolution R15-001) by the LARWQCB Board on February 12, 2015. As such, for the objective of LARWQCB adoption of the Basin Plan Amendment, the LARWQCB was the lead agency for purposes of CEQA.

In accordance with CEQA requirements, three reasonable program alternatives, Programs 1 through 3, were developed by the LARWQCB and CBWCB stakeholders based on the primary objectives of the SNMP and Recycled Water Policy. Below is a description of the three program alternatives.

- Program 1 – This is the "No Future Projects" alternative, which means a continuation of existing implementation measures or baseline conditions, so no planned implementation measures or proposed major recycled water projects will be carried out. Program 1 is contrary to the Recycled Water Policy, which requires development of an SNMP that must include implementation measures that will manage S/N loading in the basins on a sustainable basis.

Since Program 1 did not meet the objectives of the Recycled Water Policy or CBWCB SNMP, Program 1 was not considered reasonable or feasible and was eliminated for consideration.

- Program 2 – This alternative includes all the proposed implementation measures, increased recycled water use for irrigation with water quality at the Secondary Maximum Contaminant Level (SMCL) for TDS and chloride and Maximum Contamination Level (MCL) for nitrate, and the Groundwater Reliability Improvement Program, Recycled Water Project A (GRIP A). GRIP A is a proposed major recycled water project that would completely replace imported water used for recharge at the Montebello Forebay Spreading Grounds (MFSG) with a combination of 11,000 acre-feet per year (AFY) of tertiary-treated recycled water and 10,000 AFY of recycled water that has undergone advanced water treatment (AWT). GRIP A will require construction of a new treatment plant and a new pipeline was proposed to deliver the AWT recycled water to the MFSG for recharge.

- Program 3 – This alternative includes all the same elements as Program 2, with the exception of GRIP Recycled Water Project B (GRIP B). GRIP B is a proposed major recycled water project that will completely replace imported water used for recharge at the Montebello Forebay Spreading Grounds (MFSG) with 21,000 acre-feet per year (AFY) of tertiary-treated recycled water. GRIP B will utilize existing infrastructure, so no major construction activities will occur.

Both Programs 2 and 3 meet the objectives of the SNMP and Recycled Water Policy and therefore, both are considered reasonable and feasible. The only difference between Programs 2 and 3 are the GRIP Recycled Water Projects A and B, respectively. Under Program 2, GRIP A involves the complete replacement of imported water for recharge at the MFSG with a blend of AWT/tertiary-treated recycled water. The water quality of the replacement recycled water blend mirrors that of the imported water; therefore, the mixing model used to develop the SNMP showed that there will be no significant changes to S/N loading or concentrations in groundwater due to the implementation of GRIP A. Under Program 3, GRIP B involves complete replacement of imported water for recharge at the MFSG with tertiary-treated recycled water only. In contrast to GRIP A, the SNMP mixing model results show that GRIP B will increase S/N loading and concentrations in groundwater, although not to a level that exceeds the LARWQCB water quality objectives (WQOs). Additionally, any negative groundwater quality impacts associated with GRIP B will be more than offset by positive impacts of other projects and implementation measures. Thus overall, groundwater quality will remain well below WQOs in the Central Basin and WQOs will be achieved in the future in the West Coast Basin. In comparison to GRIP A, GRIP B results in greater S/N loading and would increase S/N concentrations in groundwater. Therefore, any overall water quality impacts due to the implementation of Program 3 would be greater than Program 2. As a result, Program 2 was selected as the most likely program alternative to be implemented (i.e. Recommended Program Alternative) because it is the most environmentally advantageous program alternative with respect to groundwater quality.

Since Program 2 was selected as the Recommended Program Alternative, a program-level CEQA assessment was conducted for this alternative, which included an Environmental Checklist. The CEQA assessment concluded that Program 2 could result in potentially significant environmental impacts related to earth, air, plant life, animal life, noise, light and glare, risk of upset, transportation/circulation, utilities and service systems, human health, aesthetics, and archaeological/historical resources. As a result, mitigation measures were identified that would reduce these potentially significant impacts to a

less than significant level. Additionally, Program 2 would not result in unavoidable or irreversible significant environmental impacts nor cause significant direct and indirect growth-inducing impacts in the CBWCB. The program-level CEQA analysis further concludes that when Program 2 is implemented in combination with other projects proposed in the region, there would be less than significant cumulative impacts on the environment.

Among the alternatives to the Recommended Program Alternative, Program 3 would be the environmentally superior alternative primarily because GRIP B requires no new construction, and thus avoids all construction-related impacts associated with GRIP A; although, GRIP B would result in greater groundwater quality impacts compared with GRIP A as described above. Even though Program 2 results in no unmitigated significant unavoidable environmental impacts, Program 3 would result in lessened environment impacts to earth; air; plant life; animal life; noise; light, glare and aesthetics; risk of upset and human health; transportation/circulation; utilities, service systems and energy; and archaeological/historical resources. In addition, unlike Program 1, Program 3 would meet the objectives of the SNMP and Recycled Water Policy because it includes implementation measures that would manage S/N loading on a sustainable basis.

To determine the impacts on future groundwater quality, the major proposed projects associated with Program 2 were simulated using a mixing model that had been developed as part of the SNMP. The SNMP mixing model clearly demonstrates that future recycled water projects that may increase S/N loading in the basins are more than offset by implementation measures and other projects that reduce S/N loading and thus, groundwater quality overall in the CBWCB would either continue to improve or remain well below Water Quality Objectives for S/Ns.

The program-level CEQA analysis determined that Program 2 generally would not have a reasonably foreseeable significant adverse effect on the environment. Although there may be potentially significant impacts to the environment from implementation of Program 2, these impacts generally are expected to be limited, short-term, and/or would be reduced to less than significant levels with the implementation of the identified mitigation measures. As specific projects are implemented under Program 2, subsequent and separate project-level CEQA assessments would occur where applicable and necessary. Any project-specific potential environmental impacts would be identified through the subsequent project-level CEQA process and the implementing agencies would be responsible for executing the recommended mitigation measures.

The implementation of the Basin Plan Amendment will result in improved groundwater quality in the CBWCB and will have significant positive impacts to the environment (including preservation of groundwater beneficial uses) and the economy over the long term. Preserving groundwater beneficial uses will have positive social and economic effects by decreasing S/N loading and reducing S/N concentrations in groundwater in the CBWCB. Thus, as demonstrated by this SED, implementation of the CBWCB SNMP is both necessary and beneficial.

SECTION 1

Introduction

In accordance with the 2009 State Water Resources Control Board's (SWRCB) statewide Recycled Water Policy, this Substitute Environmental Document (SED) was prepared by Environmental Science Associates (ESA) for the Salt and Nutrient Management Plan (SNMP) for the Central Basin and West Coast Basin (CBWCB or Study Area), which are located in southern Los Angeles County (**Figure 1**). The SNMP was developed through a collaborative process involving major stakeholders in the CBWCB, including the Water Replenishment District of Southern California (WRD), Los Angeles County Department of Public Works (LACDPW), West Basin Municipal Water District (WBMWD), Los Angeles Department of Water and Power (LADWP), Sanitation Districts of Los Angeles County (SDLAC), Metropolitan Water District of Southern California (MWD), Council for Watershed Health, City of Los Angeles Bureau of Sanitation, and other interested parties. The CBWCB stakeholders worked in close consultation with the Los Angeles Regional Water Quality Control Board (LARWQCB) to develop the SNMP and SED.

As set forth in the Recycled Water Policy, the SNMP must comply with the California Environmental Quality Act (CEQA). Hence, this SED presents the results of the environmental analysis of the SNMP. Both a Draft SED and Draft SNMP were submitted simultaneously under separate covers to the LARWQCB for their review in August 2014. The SED and SNMP have been finalized following adoption of the Basin Plan Amendment by the LARWQCB Board on February 12, 2015, as discussed further in Section 1.2.

1.1 SNMP and SED Purpose and Objectives

In February 2009, the SWRCB adopted Resolution No. 2009-0011, which established a statewide Recycled Water Policy. The Recycled Water Policy encourages increased use of recycled water and local stormwater, together with enhanced water conservation. It also requires local water and wastewater entities, together with local salt and nutrient (S/N) contributing stakeholders to develop SNMPs for each groundwater basin in California. The SNMPs will be approved by the Regional Water Quality Control Boards (RWQCBs).

As stated in the Recycled Water Policy, the goal of the SNMP is to manage S/Ns from all sources on a basin-wide basis in a manner that ensures attainment of Water Quality Objectives (WQOs) and protection of beneficial uses, which are designated in the Basin Plan[1]. The Recycled Water Policy

[1] The Basin Plan (http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/) was issued by the LARWQCB in 1994 to preserve and enhance water quality and protect the beneficial uses of all regional waters in the Los Angeles Region. Specifically, the Basin Plan designates the beneficial uses for surface water and groundwater, establishes numerical objectives (referred to as Water Quality Objectives [WQOs]) that must be attained or maintained to protect the

encourages development of regional S/N management strategies rather than relying on the past local RWQCB approach of imposing requirements on individual recycled water projects with no recognition of the relative and cumulative impacts when all projects and loading sources are considered regionally. Accordingly, the SNMP is intended to provide support and justification for elimination of separate anti-degradation analyses and individual site monitoring requirements for proposed recycled water projects and so that the vast majority of proposed recycled water projects may be streamlined. The intent of this streamlined permitting process is to expedite the implementation of recycled water projects in a manner that complies with State and Federal water quality laws.

As set forth in the Recycled Water Policy, the SNMP must comply with CEQA and thus, this SED presents the results of the environmental analysis of three program alternatives that were developed based on the SNMP Implementation Plan, which includes implementation measures and planned major recycled water projects that were proposed by the CBWCB stakeholders. In accordance with the Recycled Water Policy, these implementation measures and planned recycled water projects were developed by the CBWCB stakeholders to manage S/N loading in the basins on a sustainable basis[2] and/or reduce dependency on potable water supplies by increasing the use of recycled water.

This SED evaluated potential cumulative impacts to groundwater quality due to the execution of proposed implementation measures and major recycled water projects presented in the SNMP. Because the results of this program-level CEQA analysis can be used in future CEQA analyses for individual projects, the SED may be used to facilitate streamlining of these future project-level CEQA analyses. As stated as Item 2c in the Recycled Water Policy, "*This* [Recycled Water] *Policy describes permitting criteria that are intended to streamline the permitting of the vast majority of recycled water projects. The intent of this streamlined permit process is to expedite the implementation of recycled water projects in a manner that implements state and federal water quality laws while allowing the Regional Water* [Quality Control] *Boards to focus their limited resources on projects that require substantial regulatory review due to unique site-specific conditions.*" (LARWQCB, 2009) The SED facilitated adoption of the Basin Plan Amendment (see Section 1.2), which was be based on the SNMP.

1.2 Basin Plan Amendment and CEQA Lead Agency

Upon LARWQCB's approval of the SNMP, an implementation plan based on the SNMP was prepared by the LARWQCB and adopted as an amendment to the Basin Plan (Resolution R15-001) by the LARWQCB Board on February 12, 2015. Resolution R15-001 can be downloaded from the LARWQCB website: http://63.199.216.6/bpa/docs/R15-001_RB_RSL.pdf. A CEQA analysis was a required part of the adoption process in accordance with the SWRCB's certified regulatory program. As such, for the objective of LARWQCB adoption of the Basin Plan Amendment, the LARWQCB was the lead agency for purposes of CEQA. In accordance with the Recycled Water Policy, the CBWCB stakeholders funded the development of the SNMP, which included conducting the environmental analysis and preparing this

designated beneficial uses and conform to the State's Anti-degradation Policy (SWRCB Resolution No. 68-16, http://www.swrcb.ca.gov/board_decisions/adopted_orders/resolutions/1968/rs68_016.pdf), and describes implementation programs to protect all waters in the region.

[2] "Sustainable" in this context means using a resource such that the resource, i.e., groundwater, is not depleted or permanently damaged.

SED to comply with CEQA. The CBWCB stakeholders and LARWQCB worked in close collaboration to conduct the CEQA analysis and prepare this SED.

The LARWQCB's goal in adopting the Basin Plan Amendment was to incorporate regional S/N management strategies rather than relying on the past approach of imposing requirements on individual projects with no consideration of the relative and cumulative impacts when all projects and loading sources are considered. As a result, the CBWCB SNMP Basin Plan Amendment may allow for streamlined permitting and elimination of separate anti-degradation analyses for the vast majority of projects, allowing the LARWQCB to focus their limited resources on projects that require substantial regulatory review due to unique site-specific conditions.

1.3 CEQA Program-Level Assessment

California Public Resources Code (PRC) Section 21159(d) states that the RWQCB is not required to conduct a "project-level analysis." As such, the analysis in this SED is a program level (i.e., macroscopic) analysis of environmental impacts. CEQA describes a program-level environmental analysis as one prepared for a series of actions that can be characterized as one large project and are related either (1) geographically, (2) as logical parts in the chain of contemplated actions, (3) in connection with issuance of rules, regulations, or plans, or (4) as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways (California Code of Regulations, Title 14, Section 15168).

In accordance with PRC Section 21159(a), this SED does not engage in speculation or conjecture. This SED identifies the reasonably foreseeable environmental impacts associated with the reasonably foreseeable methods of compliance for the SNMP Implementation Plan (PRC, Section 21159(a)(1)), based on information developed before, during, and after the CEQA Scoping Meeting (refer to Section 2.7 of this SED for further details). When the CEQA analysis identifies a potentially significant environmental impact, the accompanying analysis identifies reasonably foreseeable feasible mitigation measures (PRC, Section 21159(a)(2)). Because the CBWCB stakeholders intend to carry out a combination of implementation measures and major recycled water projects identified in the SNMP, this SED evaluated multiple program alternatives that represent the reasonably foreseeable alternatives (PRC, Section 21159(a)(3); refer to Section 5 of this SED for further details). Entities or agencies that carry out or implement the individual projects associated with the SNMP are considered the lead agencies under CEQA for their specific projects. Thus, these lead or implementing agencies will conduct the subsequent and separate project-level CEQA analyses of the individual projects as appropriate and necessary.

1.4 Organization of the SED

This SED is organized into an Executive Summary, 10 sections, and three appendices as summarized below.

Section 1 – Describes the purpose of the SNMP and SED, Basin Plan Amendment and CEQA lead agency, the program-level CEQA analysis, and the organization of this document.

Section 2 – Describes regulatory requirements and objectives of the CBWCB SNMP and SED.

Section 3 – Describes the baseline environmental conditions in the CBWCB, against which the analysis of potential environmental impacts was conducted.

Section 4 – Summarizes the SNMP Implementation Plan, including the implementation measures and planned major recycled water projects in the CBWCB.

Section 5 – Presents the three program alternatives, including the Recommended Program Alternative, that were developed by the LARWQCB and CBWCB stakeholders based on the primary objectives of the SNMP and Recycled Water Policy.

Section 6 – Contains the CEQA Checklist with an analysis of potential direct and indirect impacts for each identified environmental resource.

Section 7 – Describes other environmental considerations for the Recommended Program Alternative, including cumulative environmental impacts and growth-inducing effects.

Section 8 – Presents the environmental analysis of the two alternatives to the Recommended Program Alternative.

Section 9 – Provides the statement of overriding considerations and the CEQA determination.

Section 10 – Provides a list of references citied in this SED.

Supporting materials are attached as the following appendices to this SED.

Appendix A – State Water Resources Control Board *Recycled Water Policy for Water Quality Control for Recycled Water* (Recycled Water Policy), Resolution No. 2013-0003, Revised January 22, 2013 and Effective April 25, 2013 (originally approved as Resolution No. 2009-0011 on May 14, 2009)

Appendix B – Los Angeles Regional Water Quality Control Board, June 28, 2012, *Regional Water Board Assistance in Guiding Salt and Nutrient Management Plan Development in the Los Angeles Region*

Appendix C – List of special-status plant and wildlife species identified in the California Department of Fish and Wildlife's California Natural Diversity Database and California Native Plant Society's online inventory

SECTION 2

Regulatory Requirements

This section presents the regulatory requirements for assessing the potential environmental impacts associated with the proposed implementation measures and major recycled water projects identified in the SNMP. As a Certified Regulatory Program, the environmental assessment of the SNMP was conducted at a program level, as explained further below.

2.1 Recycled Water Policy

In February 2009, the SWRCB adopted Resolution No. 2009-0011, *Policy for Water Quality Control for Recycled Water* (Recycled Water Policy). The statewide Recycled Water Policy was revised, specifically the monitoring requirements for priority pollutants and constituents of emerging concern, by an Amendment (Resolution No. 2013-0003) that was adopted by the SWRCB on January 22, 2013 and became effective on April 25, 2013. The Recycled Water Policy and its Amendment (http://www.swrcb.ca.gov/water_issues/programs/water_recycling_policy/docs/rwp_revtoc.pdf) are provided as **Appendix A**.

The Recycled Water Policy encourages increased use of recycled water and local stormwater, together with enhanced water conservation. Specifically, the Recycled Water Policy establishes the following goals for California:

- Increase the use of recycled water over 2002 levels by at least one million AFY by 2020 and by at least two million AFY by 2030,
- Increase the use of stormwater over use in 2007 by at least 500,000 AFY by 2020 and by at least one million AFY by 2030,
- Increase the amount of water conserved in urban and industrial uses by comparison to 2007 by at least 20% by 2020, and
- Included in these goals is the substitution of as much recycled water for potable water as possible by 2030.

The Recycled Water Policy also requires local water and wastewater entities, together with local salt and nutrient contributing stakeholders to develop SNMPs by May 2014 for each groundwater basin in California. In the Los Angeles Region, the SNMPs will be approved by the LARWQCB and an implementation plan based on the SNMP will be adopted by the LARWQCB Board as an amendment to the Basin Plan.

2.2 LARWQCB Guidance

The Recycled Water Policy also requires that the SNMP comply with CEQA. CEQA requirements that are applicable to the SNMP are described in the *Regional Water Board Assistance in Guiding Salt and Nutrient Management Plan Development in the Los Angeles Region* (SNMP Assistance Document, http://www.swrcb.ca.gov/rwqcb4/water_issues/programs/salt_and_nutrient_management/Stakeholder_Outreach/Regional%20Water%20Board%20SNMP%20Assistance%20Document.PDF) that was issued by the LARWQCB on June 28, 2012. The SNMP Assistance Document provides guidance for preparation of SNMPs within the Los Angeles Region and outlines the CEQA requirements for LARWQCB adoption of an Implementation Plan based on the SNMP into the Basin Plan. The SNMP Assistance Document, provided as **Appendix B**, was used as guidance to prepare this SED.

Per the SNMP Assistance Document, the environmental analysis of the SNMP was conducted primarily by the basin stakeholders with oversight and review by LARWQCB. Following the release of the Draft SED by LARWQCB for public review, there were no comments received regarding its technical and regulatory aspects. LARWQCB had been designated as the lead to respond to any comments that referenced the regulatory process, while the basin stakeholders had been designated as the lead for responding to technical comments. No comments were received by LARWQCB regarding the Draft SED and thus, there are no responses to comments presented in this SED.

Once the SNMP is approved by LARWQCB and specific projects are to be implemented, the stakeholders will be responsible for conducting project-specific environmental analyses, when applicable, in accordance with CEQA while meeting all other applicable regulatory requirements. Public agencies and other entities that carry out or implement projects associated with the SNMP are considered the lead agencies under CEQA for these individual projects. However, in addition, the implementation measures identified in the SNMP may be adopted as amendments to the Basin Plan by the Regional Water Board, and CEQA analysis is a required part of the adoption process in accordance with the SWRCB's Certified Regulatory Program. As such, for the objective of LARWQCB adoption of a Basin Plan Amendment, the LARWQCB was the lead agency for purposes of CEQA for the SNMP. In accordance with the Recycled Water Policy, the CBWCB stakeholders funded the development of the SNMP, which included conducting the environmental analysis and preparing this SED to comply with CEQA. The CBWCB stakeholders and LARWQCB worked in close collaboration to conduct the CEQA analysis and prepare this SED.

Per the SNMP Assistance Document, the SED was considered by the LARWQCB as part of the adoption of the implementation measures and proposed major recycled water projects described in the SNMP. Approval of the SED is separate from approval of a specific project or a component of a program alternative. Approval of the SED refers to the process of: (1) addressing comments, (2) confirming that the LARWQCB considered the information in the SED, and (3) affirming that the SED reflects independent judgment and analysis by the LARWQCB (California Code of Regulations [CCR], Title 14, Division 6, Chapter 3 *Guidelines for Implementation of the California Environmental Quality Act* [CEQA Guidelines], Sections 10590 and 15090).

2.3 Purpose of CEQA

CEQA requires that State and local agencies determine the potential significant environmental impacts of proposed projects and identify measures to avoid or mitigate these impacts where feasible. As set forth in the Recycled Water Policy, the SWRCB finds that the use of recycled water which supports the sustainable use of groundwater and/or surface water that is sufficiently treated so as not to adversely impact public health or the environment and which ideally substitutes for use of potable water is presumed to have a beneficial impact. This presumption was utilized in the evaluation of the impacts of implementation measures and proposed major recycled water projects on the environment, as required by CEQA.

The basic purposes of CEQA are to: 1) inform the decision makers and public about the potential significant environmental effects of a proposed project, 2) identify ways that environmental damage may be mitigated, 3) prevent significant, avoidable damage to the environment by requiring changes in projects, through the use of alternatives or mitigation measures when feasible, and 4) disclose to the public why an agency approved a project if significant effects are involved (CCR, Title 14, Section 15002(a)).

To meet the objectives listed above, a CEQA review is to be viewed in light of what is reasonably feasible. CEQA documents need only to be a good faith effort at full disclosure (CCR, Title 14, Section 15151). A CEQA document also does not require unanimity of opinion among experts. The analysis is satisfactory as long as those opinions are considered (CCR, Title 14, Section 15151). For this SED, the LARWQCB and CBWCB stakeholders performed a good faith effort at full disclosure of the reasonably-foreseeable environmental impacts that could occur with adoption of the Basin Plan Amendment.

2.4 Exemption from Certain CEQA Requirements

A proposed amendment to the Basin Plan is part of the basin planning process of the Water Boards, i.e. both SWRCB and RWQCBs. The California Secretary for Natural Resources had certified that the basin planning process is exempt from certain CEQA requirements, including preparation of an initial study, negative declaration, or environmental impact report (CCR, Title 14, Section 15251(g)). However, as a Certified Regulatory Program, the basin planning process remains subject to other provisions of CEQA, such as the requirement to avoid significant adverse effects on the environment where feasible (CCR, Title 14, Section 15250). This SED is the substitute for the initial study, negative declaration, and environmental impact report and, as required, includes a description of the proposed activity, identification of potentially significant effects on the environment (if any), and identification of alternatives to the activity or mitigation measures to avoid or reduce potentially significant effects on the environment (CCR, Title 23, Section 3777(a)). The LARWQCB is required to comply with the SWRCB regulations set forth in CCR, Title 23, Sections 3775 et. seq., and California Public Resources Code (PRC) Section 21159.

2.5 California Code of Regulations and Public Resources Code Requirements

While the basin planning process, as a Certified Regulatory Program of the RWQCB, is exempt from certain CEQA requirements, it is subject to substantive requirements of CCR, Title 23, Section 3777, which requires a written report (i.e. SED) that includes a description of the proposed activity, an environmental analysis of reasonable program alternatives, and identification of mitigation measures to minimize any significant adverse environmental impacts. Section 3777(a) also requires completion of an Environmental Checklist, which is provided in Section 6.2 of this SED.

Any water quality control plan, State policy for water quality control, and any other components of California's water quality management plan as defined in the Code of Federal Regulations, Title 40, Sections 130.2(k) and 130.6, proposed for RWQCB approval or adoption must include or be accompanied by an SED and supported by substantial evidence in the administrative record. The SED may be comprised of a single document or a compilation of documents. The SED must be circulated prior to RWQCB action approving or adopting a project as specified in CCR, Title 23, Sections 3778 and 3779. The SED shall be a written report containing an environmental analysis of the proposed project(s), a completed Environmental Checklist, and other documentation the RWQCB deems necessary. The SED shall include at a minimum the following information:

a) A brief description of the proposed project(s);

b) An identification of any significant or potentially significant adverse environmental impacts of the proposed project(s);

c) An analysis of reasonable alternatives to the project(s) and mitigation measures to avoid or reduce any significant or potentially significant adverse environmental impacts; and

d) An environmental analysis of the reasonably foreseeable methods of compliance. This environmental analysis shall include, at a minimum all of the following:

    i. An identification of the reasonably foreseeable methods of compliance with the project(s);

    ii. An analysis of any reasonably foreseeable significant adverse environmental impacts associated with those methods of compliance;

    iii. An analysis of reasonably foreseeable alternative methods of compliance that would have less significant adverse environmental impacts; and

    iv. An analysis of reasonably foreseeable mitigation measures that would minimize any unavoidable significant adverse environmental impacts of the reasonably foreseeable methods of compliance.

In the preparation of the environmental analysis described in (d) above, the RWQCB may utilize numerical ranges or averages where specific data are not available; however the RWQCB shall not engage in speculation or conjecture. The environmental analysis shall take into account a reasonable range of environmental, economic, and technical factors, population and geographic areas, and specific sites, but the RWQCB shall not be required to conduct a site-specific project level analysis of the

methods of compliance, which CEQA may otherwise require of those agencies who are responsible for complying with the plan or policy, when they determine the manner in which they will comply.

As to each environmental impact, the SED shall contain findings as described in State CEQA Guidelines (CCR, Title 14, Section 15091), and if applicable, a statement of overriding considerations as described in CCR, Title 14, Section 15093. If the RWQCB determines that no fair argument exists that a proposed program alternative could result in any reasonably foreseeable significant adverse environmental impacts, the SED shall include a finding to that effect in lieu of the analysis of alternatives and mitigation measures.

In addition to the CCR, California Public Resources Code (PRC) Section 21159 also requires the RWQCB to conduct an environmental analysis of the reasonably foreseeable methods of compliance at the time of the adoption of a ". . . rule or regulation requiring the installation of pollution control equipment, or a performance standard or treatment requirement . . . ." PRC Section 21159 has the same minimum requirements as CCR Title 23 for the environmental analysis which the RWQCB is also required to fulfill along with the same considerations. PRC Section 21159(c) requires that the environmental analysis take into account a reasonable range of environmental, economic, and technical factors; population and geographic areas; and specific sites. A "reasonable range" does not require an examination of every site, but a reasonably representative sample of them.

2.6 Program-Level versus Project-Level Environmental Analyses

PRC Section 21159(d) states that the RWQCB is not required to conduct a "project-level analysis." As such, the analysis in this SED is a program level (i.e., macroscopic) analysis of environmental impacts. CEQA describes a program-level environmental analysis as one prepared for a series of actions that can be characterized as one large project and are related either (1) geographically, (2) as logical parts in the chain of contemplated actions, (3) in connection with issuance of rules, regulations, or plans, or (4) as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways (CCR, Title 14, Section 15168).

In accordance with PRC Section 21159(a), this SED does not engage in speculation or conjecture. This SED identifies the reasonably foreseeable environmental impacts associated with the reasonably foreseeable methods of compliance for the SNMP Implementation Plan (PRC, Section 21159(a)(1)), based on information developed before, during, and after the CEQA Scoping Meeting (refer to Section 2.7 of this SED for further details). When the CEQA analysis identifies a potentially significant environmental impact, the accompanying analysis identifies reasonably foreseeable feasible mitigation measures (PRC, Section 21159(a)(2)). Because the CBWCB stakeholders intend to carry out a combination of implementation measures and major recycled water projects identified in the SNMP, this SED evaluated multiple program alternatives that represent the reasonably foreseeable alternatives (PRC, Section 21159(a)(3); refer to Section 5 of this SED for further details).

Subsequent project-level environmental analyses will be performed, as required by CEQA, by the local agencies that will implement the projects and programs (i.e., proposed implementation measures and

major recycled water projects) proposed in the SNMP (PRC, Section 21159.2). Notably, the RWQCB is prohibited from specifying the manner of compliance with its regulations (California Water Code, Section 13360), and accordingly, the actual environmental impacts of specific projects will necessarily depend upon the compliance strategy selected by the local implementing agencies and other permittees (i.e., CBWCB stakeholders). The environmental analysis of the program alternatives presented in this SED assumes that the CBWCB stakeholders will design, install, and maintain projects following all applicable laws, regulations, ordinances, and formally adopted municipal and/or agency codes, standards, and practices.

This SED evaluates potential cumulative impacts to groundwater quality due to the implementation of proposed projects and programs developed by the CBWCB stakeholders and presented in the SNMP to manage S/Ns on a sustainable basis. Because the results of this program-level CEQA analysis can be used in future CEQA analyses for individual projects, the SED may be used to facilitate streamlining of these future project-level CEQA analyses. As stated as Item 2c in the Recycled Water Policy, "*This* [Recycled Water] *Policy describes permitting criteria that are intended to streamline the permitting of the vast majority of recycled water projects. The intent of this streamlined permit process is to expedite the implementation of recycled water projects in a manner that implements state and federal water quality laws while allowing the Regional Water* [Quality Control] *Boards to focus their limited resources on projects that require substantial regulatory review due to unique site-specific conditions.*" (LARWQCB, 2009) The SED facilitates adoption of the Basin Plan Amendment, which will be based on the SNMP.

2.7 CEQA Scoping Meeting

Pursuant to PRC Section 21083.9, a CEQA Scoping Meeting was held to receive comments on the appropriate scope and content of the SED supporting any amendments to the Basin Plan. The purpose of this public meeting was to scope the proposed implementation measures and major recycled water projects that were developed by the CBWCB stakeholders for groundwater basin management and to determine, with input from interested agencies and persons, if those means could result in significant adverse impacts to the environment. Information garnered from this process were considered during development of the Draft SED and, where applicable, were incorporated into the final SED.

For the CBWCB SNMP, the CEQA process was initiated after the implementation measures and major recycled water projects were proposed by the stakeholders during the SNMP development process. The CEQA Scoping Meeting for the CBWCB SNMP was held jointly by the LARWQCB and basin stakeholders on October 21, 2013 at LARWQCB's office in Los Angeles, California. At this public meeting, LARWQCB, WRD, and ESA gave presentations describing the Recycled Water Policy, general CEQA process, key SNMP findings, implementation measures, proposed major recycled water projects, and environmental criteria for the CEQA evaluation. This meeting was attended by the CBWCB stakeholders, SNMP stakeholders in other groundwater basins, consultants, and LARWQCB staff.

As the lead agency for the CEQA process, LARWQCB prepared and issued the Notification of the CEQA Scoping Meeting to all interested parties and was designated as the entity to receive all public comments regarding the proposed SED scope and content. A 30-day public comment period was established by LARWQCB and comments were also solicited during the October 21st CEQA Scoping Meeting. No comments regarding the proposed environmental analysis were received by LARWQCB by

the deadline of October 31, 2013 and thus, there are no responses to public comments presented in this SED.

Although not required as part of the CEQA process, the CBWCB stakeholders also prepared a Project Summary that concisely presented key SNMP findings, implementation measures, and proposed major recycled water projects. The Project Summary was distributed during the October 21, 2013 CEQA Scoping Meeting and was also distributed by LARWQCB along with the Notification of the CEQA Scoping Meeting to all interested parties. Documents associated with the CEQA Scoping Meeting, including the meeting Notification, presentations, sign-in sheet, and Project Summary, can be downloaded from the LARWQCB website: http://www.swrcb.ca.gov/rwqcb4/water_issues/programs/salt_and_nutrient_management/index.shtml .

Following the CEQA Scoping Meeting, a Draft SED, as well as a Draft SNMP, were prepared and submitted by the CBWCB stakeholders to LARWQCB for review on August 29, 2014. No comments were received subsequently from the LARWQCB regarding both draft documents. The SED and SNMP were finalized after the LARWQCB Board adopted the Basin Plan Amendment (see Section 1.3.2 for further details) on February 12, 2015.

SECTION 3

Environmental Setting

This section describes the environmental setting or existing conditions of the CBWCB. The following subsections provide the context and background for the assessment of potential environmental impacts associated with the proposed program alternatives described in Section 5.

3.1 Land Uses and Population

The CBWCB, as shown in Figure 1, are located in southern Los Angeles County and cover an area of approximately 420 square miles. Forty-three cities overly the basins; and it is a highly urbanized area with nearly 4 million residents, which is greater than 10 percent of the State's population. Land uses in the Study Area are predominantly urban residential, commercial, and industrial, as shown in **Figure 2**. As a result, the CBWCB ground surface is mostly covered with buildings and paved surfaces, which limit natural groundwater recharge. Hence, managed aquifer recharge is conducted in the CBWCB to replenish the groundwater supply, mainly through the Montebello Forebay Spreading Grounds located in the northeastern area of the Central Basin and the three seawater intrusion barriers, including the West Coast Basin Barrier, the Dominguez Gap Barrier, and the Alamitos Gap Barrier, located along the coast (Figure 1), as further described in Sections 3.3.

The Study Area is mostly urbanized and essentially fully developed. According to the California Department of Finance, the State's population as a whole is projected to increase by more than 35 percent while population in Los Angeles County is projected to increase by approximately 18 percent by 2050 (USBR, LACFCD, LACDPW, 2013). Much of the predicted countywide increase in population will likely occur through development outside of the CBWCB. While the CBWCB population is predicted to increase, use of potable supplies (imported water and groundwater) is projected to remain near 2010 levels through the end of the SNMP future planning period (2025). This maintenance of 2010 imported and groundwater use levels is achieved through increased use of recycled water to replace imported water and water conservation to reduce total water demand.

3.2 Climate and Drought

The climate in the Study Area ranges from subtropical along the Pacific Ocean to semi-arid in the Central Basin. Nearly all precipitation in the region occurs during the months of December through March. During the summer months, precipitation is infrequent and dry periods can often last several months. Precipitation varies considerably from year to year. At the LACDPW Downey Station (located in the City of Downey in the Central Basin), precipitation measurements between 1971 and 2010 varied between 2.8 and 33.9 inches per year with an average of 14.6 inches.

Historically, California has experienced frequent periods of prolonged drought. Based on scientific projections, drought is expected to occur more frequently and for longer intervals due to climate change. With below-normal rainfall since 2012, the current drought is being described as the driest period in the State's recorded history. Due to seriously diminished water supplies, on January 17 2014, Governor Jerry Brown declared a State of Emergency (Proclamation No. 1-17-2014, http://www.gov.ca.gov/news.php?id=18368). As part of his proclamation, the Governor directed State officials to take all necessary actions to prepare for drought conditions. On April 25, 2014, Governor Brown issued an Executive Order (http://gov.ca.gov/news.php?id=18496) proclaiming a continued state of emergency due to severe drought conditions, with an emphasis on statewide conservation and included directives to strengthen the State's ability to manage water effectively under drought conditions. Directive No. 10 in the Executive Order states, "The Water Board [State Water Resources Control Board (SWRCB)] will adopt statewide general waste discharge requirements to facilitate the use of treated wastewater that meets standards set by the Department of Public Health, in order to reduce demand on potable water supplies." (Office of California Governor Edmund G. Brown, Jr., 2014b)

In direct response to the Governor's April 2014 Executive Order, the SWRCB adopted *General Waste Discharge Requirements for Recycled Water Use* (General Order No. WQ 2014-0090-DWQ; http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2014/wqo2014_0090_dwq_revised.pdf) on June 3, 2014 to streamline permitting for recycled water use (i.e. relieve producers, distributors, and users of recycled water from the lengthy permit approval process) throughout the State. This General Order is intended to increase local water supplies by promoting the non-potable use of recycled water in communities grappling with drought conditions. Additionally, the General Order is consistent with the Recycled Water Policy that was adopted by the SWRCB in 2009 and amended in 2013, which required the development of SNMPs for all groundwater basins in California. Thus, all uses of recycled water allowed by the General Order must be consistent with the SNMPs that will be approved by the Regional Water Quality Control Boards. Importantly, the General Order did not modify existing permitted recycled water quality limits established for irrigation. If this was the case, this would have significantly limited the sustainable and cost effective use of recycled water to offset demand for raw and potable water supplies in the CBWCB.

3.3 Management of the Groundwater Basins

The water supply in the CBWCB is comprised of groundwater, imported water (from Northern California, Colorado River, and Owens River Valley), and recycled water. Imported water, recycled water, and stormwater are also utilized for groundwater replenishment, as described below. Water is imported to the CBWCB from three major sources: the Sacramento-San Joaquin Delta (northern California), Colorado River, and Owens Valley/Mono Basin (eastern Sierra Nevada Mountains). MWD imports river water from northern California (State Water Project) and the Colorado River (via the 242-mile Colorado River Aqueduct) to the CBWCB. LADWP imports water from the Owens Valley/Mono Basin to the City of Los Angeles via the Los Angeles Aqueduct.

From 1900 through the 1950s, groundwater was an important factor in urbanization of the CBWCB. Excessive over pumping in the basins caused severe overdraft (e.g., lowered groundwater levels) and created a hydraulic gradient that resulted in seawater intrusion, which contaminated the coastal groundwater aquifers.

To address the problems of groundwater level declines, seawater intrusion, and other associated groundwater management problems related to supply and quality, the courts adjudicated the two basins in the early 1960s and set a limit on allowable groundwater production. In addition, multiple measures were implemented by the CBWCB stakeholders and continue today to further manage groundwater supply and quality, as described below:

- **Montebello Forebay Spreading Grounds (MFSG)** – The MFSG, consisting of the Rio Hondo Spreading Grounds (RHSG) and the San Gabriel River Spreading Grounds (SGRSG), are located in the northeastern portion of the Central Basin, as shown in Figure 1. The MFSG are owned and operated by the LACDPW to replenish the groundwater basin. Water recharged in the spreading grounds is comprised of stormwater (since 1930s), imported water (since 1950s), and recycled water (since 1960s). Groundwater in the Central Basin is also artificially replenished by instream recharge facilities (i.e. unlined portions and rubber dams) located along the San Gabriel River.

- **Dominguez Gap Spreading Grounds (DGSG)** – The DGSG is located along the Los Angeles River near the southern boundary between the Central Basin and West Coast Basin (Figure 1) and recharges local stormwater. The DGSG historically recharged both the Central Basin and West Coast Basin, but due to conversion of some of the facilities to wetlands, the spreading grounds now only recharge the West Coast Basin.

- **West Coast Basin Seawater Intrusion Barrier (WCBB)** – Constructed in the 1950s along the western coast of the West Coast Basin, the WCBB consists of a series of injection wells that are owned and operated by LACDPW to create a pressure ridge or subsurface water wall to block further seawater intrusion and recharge the groundwater basin (see Figure 1). Historically, the WCBB received only treated imported water (supplied by MWD), but began also utilizing recycled water that has undergone advanced water treatment (AWT) in 1995.

- **Dominguez Gap Seawater Intrusion Barrier (DGB)** – Constructed in the 1970s at the southern portion of the West Coast Basin, the DGB consists of a series of injection wells that are owned and operated by LACDPW to prevent seawater intrusion and recharge the groundwater basin (see Figure 1). Historically, the DGB received only treated imported water, but began also utilizing AWT recycled water in 2006.

- **Alamitos Gap Seawater Intrusion Barrier (AGB)** – Constructed in the 1960s along the southern border of the Central Basin, the AGB consists of a series of injection wells that are owned and operated by LACDPW to prevent seawater intrusion and recharge the groundwater basin (see Figure 1). Historically, the AGB received only treated imported water (supplied by MWD), but began also utilizing AWT recycled water in 2005.

- **Water Replenishment District of Southern California (WRD)** – WRD was established in 1959 to provide artificial replenishment water and manage groundwater in the CBWCB.

- **Desalters** – While the water injection activities at the WCBB were successful in halting further seawater intrusion, these efforts could not address the seawater that had already intruded into the basin before the WCBB began operating. Thus, a large plume of seawater-impacted groundwater, referred to as the "saline plume," is trapped inland of the WCBB injection wells

(see **Figure 3**), thereby degrading a significant volume of groundwater with high concentrations of chloride and total dissolved solids (TDS) and decreasing the ability of affected aquifers to provide groundwater storage for potable use.

To remediate the saline plume in the West Coast Basin, the C. Marvin Brewer Desalter (Brewer Desalter) and Robert W. Goldsworthy Desalter (Goldsworthy Desalter) began operating in 1993 and 2002, respectively, to pump and treat brackish groundwater for potable supply. The locations of the desalters are depicted in Figure 3.

- **Monitoring Programs** – The CBWCB are comprehensively managed and monitored by multiple agencies. Millions of dollars are expended annually for monitoring and compliance programs for recycled water, groundwater, stormwater, imported water, wastewater, and surface water. In accordance with the Recycled Water Policy, an SNMP monitoring program was developed for the CBWCB, as described in Appendix K of the SNMP.

3.4 Groundwater Basins Overview

The Central Basin and West Coast Basin are comprised of sedimentary deposits of gravel, sand, silt, and clay. The basins are characterized by a multiple layered aquifer/confining layer system (**Figure 4**). Aquifers are comprised predominantly of coarse-grained gravels and sands, while confining layers are comprised of more fine-grained clays and silts. The confining layers limit the downward percolation of water and contaminants and provide some natural protection for groundwater quality in the deeper aquifers of the confined portions of the basins.

3.4.1 Central Basin

The Central Basin is bounded on the southwest by the Newport-Inglewood Uplift, on the north by the Hollywood Basin, on the northeast by a series of low hills, and on the southeast by the Los Angeles-Orange County line and the Orange County Basin (Figure 1).

The Central Basin is geologically divided into four subareas, including the Los Angeles Forebay, Montebello Forebay, Whittier Area, and Pressure Area (Figure 1]). The forebays are areas where confining layers are thin or absent and infiltration of precipitation and surface water can recharge deeper potable production aquifers. The Central Basin Pressure Area, largest of the four subareas, is characterized by aquifers that are confined by relatively impermeable clay layers over most of the area. Thus, the groundwater basin is generally unconfined in the forebay areas and confined in the pressure area.

In the Central Basin, groundwater levels are highest in the vicinity of the Montebello Forebay, where significant managed aquifer recharge occurs (i.e. MFSG). Groundwater generally flows in a southwest direction away from the Montebello Forebay recharge area and toward pumping depressions to the southwest (see **Figure 5**). The Newport-Inglewood Uplift acts as a partial barrier to groundwater flow and water levels on either side of the uplift are significantly different, as shown in Figure 5. Groundwater levels in the northeast portion of the Central Basin, which is influenced by managed aquifer recharge in the MFSG, are above sea level, whereas groundwater levels in the remainder of the basin are well below sea level due to significant groundwater pumping.

Major natural surface water features in the Central Basin include the Los Angeles River, San Gabriel River, and the Rio Hondo (Figure 1). The Rio Hondo joins the Los Angeles River in the Central Basin. The Rio Hondo is lined through its entire length in the Central Basin. The Los Angeles River is lined throughout most of the Central Basin except for a small stretch just before it flows out of the basin to the south. The San Gabriel River is unlined through most of the Montebello Forebay and becomes lined approximately nine miles downstream of the Whittier Narrows Dam just before entering the Central Basin Pressure Area. The unlined portion of San Gabriel River in the Montebello Forebay is a losing reach and instream facilities have been installed along its length to promote groundwater recharge as part of the Montebello Forebay managed aquifer recharge activities, as further discussed in Section 3.4.

The largest volume of recharge in the Central Basin occurs in the Montebello Forebay via the MFSG and instream facilities (i.e., unlined portions and rubber dams) along the San Gabriel River (Figure 1). Other sources of recharge in the basin include injection of imported water and advanced treated recycled water at the AGB, subsurface groundwater inflow from adjacent basins, deep percolation of precipitation, irrigation return flows, and mountain front recharge. Groundwater pumping constitutes the major outflow from the Central Basin.

The main source of potable groundwater in the Central Basin is the deeper aquifers of the San Pedro Formation (including from top to bottom, the Lynwood, Silverado, and Sunnyside Aquifers) (see Figure 4). In general, groundwater in the main producing aquifers of the Central Basin is of good quality. In Water Year (WY) 2009-10, groundwater production in the Central Basin was about 197,000 acre-feet (AF). The distribution of groundwater production in the Central Basin is shown in **Figure 6**. Imported water comprised the remainder of the basin water supply and amounted to about 139,000 AF in Fiscal Year 2009-10 (DWR, 2011).

3.4.2 West Coast Basin

The West Coast Basin is bounded by the Newport-Inglewood Uplift on the northeast, by the Santa Monica Basin on the north, and by the Pacific Ocean, Palos Verdes Hills, and the Los Angeles-Orange County line on the southwest and south (Figure 1).

In the West Coast Basin, groundwater levels are highest along the WCBB and decrease with distance away from the WCBB, reaching the lowest elevation of more than 100 feet below sea level near the Newport-Inglewood Uplift (see Figure 4). Groundwater flow in the West Coast Basin is generally from west to east. Given the generally eastward groundwater flow direction, operation of the seawater intrusion barriers is critical to preventing additional seawater intrusion. The Newport-Inglewood Uplift partially restricts groundwater movement and produces marked differences in groundwater levels on either side of the uplift.

Major surface water features in the West Coast Basin include the Dominguez Channel, the Los Angeles River, and the San Gabriel River (Figure 1). The Los Angeles River is concrete-lined along nearly all of its length in the West Coast Basin, becoming unlined south of Willow Street in the City of Long Beach. The San Gabriel River is completely concrete-lined in the West Coast Basin.

In the West Coast Basin, aquifers are generally confined and natural replenishment is dominated by subsurface inflows. Sources of recharge in the West Coast Basin include injection of imported water and

advanced treated recycled water at the WCBB and DGB, subsurface groundwater inflow, deep percolation of precipitation, mountain front recharge, irrigation return flows, and the DGSG.

Groundwater pumping constitutes the major outflow from the basin. The Silverado Aquifer is the most productive aquifer in the basin. Overall, production wells in the basin yield good quality groundwater. Localized areas of marginal to poor water quality exist, primarily at the basin margins and in the shallower and deeper aquifers impacted by seawater intrusion. In WY 2009-10, total groundwater production in the Central Basin was about 44,000 AF (Figure 6). Imported water comprises the remainder of the basin's water supply and amounted to about 129,000 AF in Fiscal Year 2009-10.

3.5 Groundwater Quality

In general, groundwater in the main producing aquifers of the CBWCB is of good quality. However, localized areas of marginal to poor quality water do exist, primarily at the basin margins where seawater intrusion occurred in the past and also in mostly shallow groundwater near "environmental release sites." Environmental release sites are commercial and industrial properties where improper activities (e.g., leaking aboveground and underground storage tanks, leaking sewer and oil pipelines, spills, illegal discharges, etc.) have contaminated groundwater with localized plumes of petroleum fuels, solvents, and other constituents of concern. In general, these plumes are typically found in shallow groundwater. However, as the aquifers and confining layers in the CBWCB are typically inter-fingered, the quality of groundwater in the deeper production aquifers is threatened by the migration of pollutants from the upper aquifers. Downward migration of contaminants is of particular concern in the Forebay areas where aquifers are in hydraulic communication and there is a downward vertical gradient. Environmental release sites in the CBWCB have been or are being investigated/remediated under the oversight of Federal and State regulatory agencies, including the United States Environmental Protection Agency, the LARWQCB, and the California Department of Toxic Substances Control.

As required by the Recycled Water Policy, the SNMP includes the identification of salt and nutrient sources, calculations of assimilative capacity and loading estimates, and a description of the fate and transport of salt and nutrients in groundwater. The following subsections describe the indicator constituents for salt and nutrients that were identified in the SNMP, discuss the fate and transport of these salt and nutrients in groundwater, and provide a summary of the existing groundwater quality that was determined from the SNMP analysis.

3.5.1 Indicator Constituents for Salt and Nutrients

As described in the SNMP, constituents of concern in the CBWCB were evaluated and TDS, chloride, and nitrate were selected as the most representative indicator constituents of salt and nutrients (S/Ns) in the CBWCB. As a result, for the remainder of this SED, any reference to S/Ns will specifically be referring to TDS, chloride, and nitrate. Below are descriptions of each S/N.

- **Total Dissolved Solids (TDS)** – Total salinity is commonly expressed in terms of TDS as milligrams per liter (mg/L). Because TDS monitoring data are widely available for source waters (both inflows and outflows) in the CBWCB and because TDS is a general indicator of total salinity, TDS is an appropriate indicator of salt and nutrients. While TDS can be an indicator of anthropogenic

impacts, there are also natural background TDS concentrations in groundwater. Background TDS concentrations in groundwater can vary considerably based on purity and crystal size of the minerals, rock texture and porosity, the regional structure, origin of sediments, the age of the groundwater, and many other factors. As established by the SWRCB Division of Drinking Water (formerly California Department of Public Health (CDPH), the recommended Secondary Maximum Contaminant Level (SMCL)[3] for TDS is 500 mg/L, with an upper limit of 1,000 mg/L, and a short-term limit of 1,500 mg/L.

Elevated TDS concentrations are undesirable in water to be used for potable supplies for aesthetic reasons related to taste, odor, or appearance of the water and not for health reasons; however, elevated TDS concentrations in water to be used for agricultural or industrial supplies can damage crops, affect plant growth, and damage municipal and industrial equipment. Reduced salinity (lower TDS concentrations) increases the life of plumbing systems and appliances, increases equipment service life, decreases industrial costs for water treatment, increases agricultural yields, reduces the amount of water used for leaching, reduces brine disposal costs, and improves the usability of recycled water.

- **Chloride** – Chloride is an inorganic salt that is naturally-occurring in groundwater and is commonly expressed in terms of mg/L. Historical seawater intrusion is a significant groundwater contamination problem in the West Coast Basin and Central Basin. Chloride is the constituent used in the CBWCB as a general indicator of seawater intrusion and is therefore an appropriate indicator of salt. The chloride concentration of seawater is about 19,000 mg/L. The SMCL for chloride is 500 mg/L.

  Similar to TDS, elevated chloride concentrations are undesirable in water to be used for potable supplies for aesthetic reasons related to taste, odor, or appearance of the water and not for health reasons; however, elevated chloride concentrations in water to be used for agricultural or industrial supplies can damage crops, affect plant growth, and damage municipal and industrial equipment. Reduced salinity (lower chloride concentrations) increases the life of plumbing systems and appliances, increases equipment service life, decreases industrial costs for water treatment, increases agricultural yields, reduces the amount of water used for leaching, reduces brine disposal costs, and improves the usability of recycled water.

- **Nitrate** – Nitrate is a colorless, odorless, and tasteless compound that is present in some groundwater and is commonly expressed in terms of mg/L. Nitrate is a health concern due to methemoglobinemia, or "blue baby syndrome," which affects infants and elevated levels may also be unhealthy for pregnant women. High levels of nitrate in groundwater are typically associated with agricultural activities, septic systems, confined animal facilities, landscape fertilization, and wastewater treatment facilities. Additionally, airborne nitrogen compounds discharged from industry and automobiles are deposited on the land in precipitation and as dry particles, referred to as dry deposition. These sources also contribute to nitrate loading to

[3] A SMCL (or secondary Maximum Contaminant Level) is a water quality standard established to manage drinking water for aesthetic considerations, such as taste, color, and odor. Contaminants with only SMCLs are not considered to pose a risk to human health.

groundwater. As nitrate is the primary form of oxidized nitrogen found in groundwater, it was selected to represent all other nitrogen compounds and other nutrients in the CBWCB.

In the CBWCB, natural nitrate as nitrate (nitrate-NO_3) levels in groundwater are generally very low (typically less than 10 mg/L as NO_3) and well below the Maximum Contaminant Level (MCL)[4] of 45 mg/L. Nitrate as nitrogen (nitrate-N) plus nitrite as nitrogen (nitrite-N) has an MCL of 10 mg/L.

3.5.2 Salt and Nutrient Fate and Transport

Fate and transport describes the way a constituent moves through an environment or media. Groundwater flow directions and rates, the characteristics of the constituent, and the characteristics of the aquifer determine fate and transport of any given constituent.

TDS, chloride, and nitrate are detected in the source waters that recharge the CBWCB. Salt and nutrients in source waters recharging the CBWCB may be increased through use and movement through the vadose zone and aquifer. This can occur through fertilizer use, which adds nitrogen that is not completely removed by plant uptake. Salt and nutrients in irrigation water can also be concentrated by evapotranspiration. Additionally, dry deposition, the process by which airborne pollutants are deposited to the earth, can contribute to increased S/Ns. As precipitation and irrigation water infiltrates, S/Ns in shallow soils can be picked up from surface soils. Salt and nutrients also exist in subsurface materials and can be leached via dissolution as water percolates.

Some S/Ns such as TDS and chloride are considered conservative in that they are not readily attenuated in the environment. In contrast, processes that affect the fate and transport of nitrogen compounds are complex, with transformation, attenuation, uptake and leaching in various environments. Nitrate is the primary form of nitrogen detected in groundwater. It is soluble in water and can easily pass through soil to the groundwater table. Nitrate can persist in groundwater for decades and accumulate to high levels as more nitrogen is applied to the land surface every year.

3.5.3 Water Quality Objectives

The LARWQCB Basin Plan sets Water Quality Objectives (WQOs), also referred to as Basin Plan Objectives (BPOs) in the SNMP, for surface water and groundwater in the Los Angeles Region. WQOs are intended to protect the public health and welfare and to maintain or enhance water quality in relation to the designated existing and potential beneficial uses of the water, as described further in Section 3.6. WQOs include numeric and narrative objectives necessary to support beneficial uses and the State's Anti-Degradation Policy (http://www.swrcb.ca.gov/board_decisions/adopted_orders/resolutions/1968/rs68_016.pdf). Such standards are mandated for all waterbodies within the State under the Porter-Cologne Water Quality

[4] The primary MCL (Maximum Contaminant Level) is the highest level of a contaminant that is allowed in drinking water and is protective of human health. Primary MCLs are established by the United States Environmental Protection Agency (USEPA) and SWRCB Division of Drinking Water (formerly CDPH) and reflect not only the chemicals' health risks but also factors such as their detectability and treatability, as well as the cost of treatment.

Control Act. In addition, the Basin Plan describes implementation programs to protect all waters in the region. The Basin Plan implements the Porter-Cologne Water Quality Control Act (commencing with Section 1300 of the California Water Code), requiring water quality standards for all surface water and groundwater pursuant to the Federal Clean Water Act (CWA).

Table 3-1 summarizes the numeric WQOs that are established in the Basin Plan for S/Ns in groundwater in the CBWCB.

TABLE 3-1
WATER QUALITY OBJECTIVES FOR GROUNDWATER

Constituent	Central Basin	West Coast Basin
Total Dissolved Solids (TDS)	700 mg/L	800 mg/L
Chloride	150 mg/L	250 mg/L
Nitrate (NO_3)	45 mg/L	45 mg/L
Nitrate as Nitrogen (NO_3-N)	10 mg/L	10 mg/L
Nitrite as Nitrogen (NO_2-N)	1 mg/L	1 mg/L
Nitrogen as Nitrate-Nitrogen plus Nitrite-Nitrogen (NO_3-N + NO_2-N)	10 mg/L	10 mg/L

mg/L – milligrams per liter

SOURCE: LARWQCB Basin Plan, June 13, 1994 and November 10, 2011 Amendment.

3.5.4 Existing Salt and Nutrient Groundwater Quality

As described in the SNMP, average groundwater quality and assimilative capacity were calculated for the Central Basin and West Coast Basin. This water quality analysis involved data collected from wells in the CBWCB during the recent five years (January 2007 through mid-2012), including production wells, WRD nested monitoring wells, and monitoring wells associated with environmental release sites. Utilizing an existing regional groundwater model that had been developed by the United States Geological Survey (USGS), average concentrations for each S/N were calculated for each of the four model layers[5]. Additionally, average S/N concentrations were calculated for each of the four subareas in the Central Basin, including the Los Angeles Forebay, Montebello Forebay, Whittier Area, and

[5] In 2003, the United States Geological Survey (USGS) developed a regional groundwater flow model of the CBWCB based on review of geophysical logs along with ancillary information. As part of the groundwater model, USGS simplified the underlying aquifers of the CBWCB into four aquifer systems for modeling purposes. Volume and flow data derived from the model were used to conduct the SNMP water quality analysis.

Pressure Area (Figure 3). Finally, the groundwater quality from all subareas and layers within each basin were amalgamated into a single average S/N concentration for the Central Basin and West Coast Basin.

For each basin, two average S/N concentrations were calculated: one average includes the coastal areas (i.e. areas seaward of the barriers) and the other average excludes these coastal areas (see Figure 3). Areas seaward of the seawater intrusion barriers areas are unlikely to be developed for water supply due to their high salt concentrations, and in some areas, have been de-designated by the LARWQCB for various beneficial uses. For the West Coast Basin, a third average groundwater quality estimate was calculated excluding the WCBB-inland saline plume (see Figure 3) and coastal areas in order to evaluate the impact of the saline plume on overall basin groundwater quality.

Table 3-2 presents the estimated average TDS, chloride, and nitrate concentrations for each subarea and for the basins as a whole. **Figure 7** shows the existing average TDS, chloride, and nitrate concentrations in the CBWCB.

The SNMP analysis indicates that average TDS and chloride concentrations in the Central Basin as a whole and Central Basin subareas, except the Whittier Area, are below WQOs, and assimilative capacity is available. Assimilative capacity is defined as the condition in which existing water quality is better than that required to support the most sensitive beneficial use(s) of the basin, i.e. existing salt and nutrient concentrations in groundwater are below WQOs. Elevated TDS concentrations in the Whittier Area are likely due to naturally poor quality groundwater at depth rather than impacts from anthropogenic activities or a surface release. Dissolution of formation materials high in silts and clays and/or of marine origin in the Whittier Area can result in naturally high TDS concentrations in ambient groundwater. The Puente Hills located north of the Whittier Area provide some of the source materials for the Whittier Area aquifers as well as for the Puente Subbasin located north of the Puente Hills. These source materials are relatively fine-grained and have also resulted in high ambient TDS concentrations in the Puente Subbasin.

Due to historical seawater intrusion in the West Coast Basin, average TDS and chloride concentrations for the basin exceed WQOs, and as a result there is no available assimilative capacity even with the coastal areas area removed from the average calculations. When the WCBB-inland saline plume and coastal areas are removed from the averaging calculation, the average TDS and chloride concentrations in the West Coast Basin are below the WQOs and there is available assimilative capacity.

Average nitrate concentrations are very low in both the Central Basin and West Coast Basin, well below the WQO and as a result, assimilative capacity is available for nitrate. There are no significant nitrate loading sources in the CBWCB and thus, nitrate is not considered a water quality concern and is not expected to be a concern in the future.

TABLE 3-2
SUMMARY OF AVERAGE SALT AND NUTRIENT GROUNDWATER QUALITY

	Existing Average Concentration (mg/L)		
Location	**TDS**	**Cl**	**NO_3-N**
Los Angeles Forebay	640	81	0.15
Montebello Forebay	534	88	1.13
Whittier Area	**1,007**	121	0.57
Central Basin Pressure Area (including coastal area)	485	65	0.10
Central Basin Pressure Area (no coastal area)	470	55	0.10
Central Basin (including coastal area)	538	73	0.28
Central Basin (no coastal area)	529	67	0.28
West Coast Basin (including coastal areas)	**1,424**	**660**	0.04
West Coast Basin (no coastal areas)	**890**	**306**	0.05
West Coast Basin (no coastal areas and no saline plume)	747	224	0.05

TDS – Total Dissolved Solids

Cl – Chloride

NO_3-N – Nitrate as Nitrogen

mg/L – milligrams per liter

Bold: Average concentration indicated exceeds Basin Plan Objective or Water Quality Objective

3.5.5 Future Salt and Nutrient Groundwater Quality

In order to assess future groundwater quality in the CBWCB, a mixing model was developed and utilized for the SNMP water quality analysis. This SNMP mixing model was designed to incorporate the existing volume of groundwater and mass of TDS, chloride, and nitrate in storage and track the annual change in groundwater storage and S/N mass for each model subarea/layer. S/N loading estimates for key inflows (including spreading ground recharge, seawater intrusion barrier injection, irrigation return flow, mountain front and precipitation recharge, and subsurface inflow) and outflows (including groundwater pumping and subsurface outflows) were determined based on available data and volumetric water budgets obtained from an existing groundwater model that was previously developed by the USGS. Selected S/N loading estimates and assumptions were refined to ensure a reasonable agreement between the simulated results and the dominant patterns in actual observed groundwater quality within

each model subarea/layer over a 10-year baseline period (WY 2000-01 through 2009-10) through a calibration process. Loading assumptions developed through the baseline period assessment were then applied to the SNMP 15-year future planning period (WY 2010-11 through 2024-25) S/N balances.

In recognition of the water supply implications of greenhouse gas emissions, climate change, drought, and uncertainties and increasing costs associated with imported water supplies, the CBWCB stakeholders have been planning and implementing projects, programs, and strategies to maximize the use of recycled water and stormwater, encourage conservation, and improve groundwater quality and supply. Over the 15-year future planning period, additional projects and implementation measures, as described further in Section 4, are anticipated to be carried out by the CBWCB stakeholders. The SNMP mixing model was used to predict/simulate the impacts of the proposed major projects on overall groundwater quality in the CBWCB through WY 2024-25.

As described in the SNMP, the mixing model results demonstrate the following:

- Nitrate is not a water quality concern in either the Central Basin or West Coast Basin and is not expected to be a concern in the future. Nitrate will not exceed or threaten to exceed its WQO in the future.
- In the Central Basin, average TDS and chloride concentrations in groundwater are below WQOs and will not exceed WQOs in the future.
- In the West Coast Basin, average TDS and chloride concentrations are currently greater than their WQOs due to the existence of the WCBB-inland saline plume. However, the WQOs are estimated to be achieved in 2035 as a result of existing and planned implementation measures, as described in Section 4.
- Future projects to be implemented in the CBWCB that may increase S/N loading are more than offset by projects that reduce loading. Thus, water quality overall in the CBWCB will either continue to improve and/or S/N concentrations will remain below WQOs.

3.6 Beneficial Uses of Groundwater

The Basin Plan designates beneficial uses of groundwater in the Los Angeles Region (LARWQCB, 1994 and 2011). Beneficial uses are the cornerstone of the State's and LARWQCB's efforts to protect water quality, as water quality objectives are set at levels that will protect the most sensitive beneficial use of a waterbody. Any impairment to groundwater in the CBWCB could impact the designated beneficial uses.

The Basin Plan designates four existing (E) beneficial uses for groundwater in the CBWCB: water supply (MUN), industrial process supply (PROC), industrial service supply (IND), and Agricultural Supply (AGR). These beneficial uses are briefly defined below.

- Water Supply Use (MUN) – Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
- Industrial Process Supply (PROC) – Uses of water for industrial activities that depend primarily on water quality.

- Industrial Service Supply (IND) – Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.
- Agricultural Supply (AGR) – Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

SECTION 4

SNMP Implementation Plan

This section summarizes the implementation measures and proposed major recycled water projects that were developed by the CBWCB stakeholders and discussed in the SNMP to manage S/N loading on a sustainable basis and/or reduce dependency on potable water supplies by increasing the use of recycled water. These implementation measures and recycled water projects serve as the basis for the program alternatives, which are described in Section 5, that were evaluated in this SED.

As described in the SNMP, some of the proposed recycled water projects may add S/N loading to groundwater and/or increase S/N concentrations in groundwater. However, the SNMP mixing model results clearly demonstrate that the existing and proposed implementation measures will offset all potential negative impacts and thus, groundwater quality overall in the CBWCB will either continue to improve and/or S/N concentrations will remain well below WQOs. Further details regarding the proposed implementation measures and major recycled water projects are discussed in Appendix J *Implementation Plan* of the SNMP.

4.1 Implementation Measures

Implementation measures are projects, programs, and strategies that are established to manage (mitigate) S/N loading on a sustainable basis. Implementation measures can impact the groundwater basins in two ways: 1) decrease the S/N loading, and/or 2) decrease the concentration of S/Ns in groundwater. This distinction is important in understanding the different types of benefits of implementation measures in the context of S/N management. Some of the proposed major recycled water projects discussed in Section 4.2 do not decrease S/N loading or decrease S/N concentrations in groundwater and hence, they were not designated as implementation measures.

As described in the SNMP, the planning horizon is 2025 for the implementation measures that were developed by the CBWCB stakeholders. The implementation measures were classified into three categories: existing, planned, and conceptual. **Table 4-1** lists the existing, planned, and conceptual implementation measures as well their impacts to the groundwater basins. “Existing” implementation measures are projects/programs/strategies that are currently in place; “planned” implementation measures are those anticipated to be in operation before 2025 notwithstanding constraints that are outside the control of the project sponsors; and “conceptual” implementation measures are those that have been hypothetically identified, but may or may not begin before or after 2025, if ever.

Some of the implementation measures listed in Table 4-1, specifically major existing and proposed projects in the basins, were quantitatively assessed for their S/N groundwater quality impacts using the SNMP mixing model, as discussed further in the SNMP. The remaining implementation measures were

not modeled because these projects were smaller in size and complexity (thus, their impacts to overall groundwater quality were insignificant) and/or lacked details that were required to perform modeling (e.g. conceptual implementation measures). Although impacts from some implementation measures could not be quantitatively assessed, it is clear that each implementation measure, based on the details of the project/strategy, will reduce S/N loading and/or improve groundwater quality, as indicated in Table 4-1.

As shown in Table 4-1, in addition to being categorized by time horizon, the implementation measures also are grouped by type into the following categories: seawater intrusion control, groundwater recharge, institutional, stormwater capture/runoff management, source water salinity control, wastewater salinity/nutrient source control, total maximum daily loads (TMDLs), conservation, public education, regulatory/non-regulatory, and land use regulation. Generally, projects/strategies that improve stormwater, wastewater, and recycled water quality, increase stormwater recharge, increase advanced treated recycled water recharge, and reduce sources of S/N loading provide for improved groundwater quality are considered implementation measures.

The implementation measures listed in Table 4-1 are described in detail below and Implementation Measure (IM) numbers correspond to the numbers shown in the third column from the left in Table 4-1.

TABLE 4-1
CBWCB IMPLEMENTATION MEASURES

Timeframe	Category	Implementation Measure (IM) No.	Description of S/N Management Strategy	Basin	Anticipated Implementation Date	Impact to S/N Loading to Groundwater	Impact to S/N Concentrations in Groundwater
Existing	Seawater intrusion control	1	Three seawater intrusion barriers (WCBB, DGB, and AGB) existing operations	CBWCB	Existing	Decrease	Decrease
		2	Two desalters (Brewer Desalter and Goldsworthy Desalter)	WCB	Existing	Decrease	Decrease
	Groundwater recharge	3	Dominguez Gap Spreading Grounds existing operations	WCB	Existing	Increase	Decrease
		4	Montebello Forebay Spreading Grounds (MFSG) existing operations	CB	Existing	Increase	Decrease
		5	MFSG interconnection pipeline	CB	Existing	Increase	Decrease
		6	Rio Hondo Spreading Grounds Basin 6E to 8E connection	CB	Existing	Increase	Decrease
		7	San Gabriel River rubber dams	CB	Existing	Increase	Decrease
		8	Whittier Narrows Dam Conservation Pool Project	CB	Existing	Increase	Decrease
	Institutional	9	CBWCB adjudication and Central Basin judgment amendment (December 2013)	CBWCB	Existing	Decrease	Decrease
		10	Groundwater management agency (WRD)	CBWCB	Existing	Decrease	Decrease
	Source water salinity control	11	LACDPW stormwater “First Flush” policy	CBWCB	Existing	Decrease	Decrease
		12	MWD Salinity Source Water Control Program	CBWCB	Existing	Decrease	Decrease
	Stormwater capture/ runoff management	13	City of Torrance stormwater retention basins	WCB	Existing	Increase	Decrease
		14	LID and stormwater BMPs	CBWCB	Existing	Decrease	Decrease
		15	MS4 NPDES permits issued by LARWQCB		Existing	Decrease	Decrease
	Wastewater salinity/ nutrient source control	16	Industrial wastewater source control programs	CBWCB	Existing	Decrease	Decrease
		17	Wastewater and recycled water nitrogen treatment	CBWCB	Existing	Decrease	Decrease
		18	Residential automatic water softener educational outreach	CBWCB	Existing	Decrease	Decrease

TABLE 4-1
CBWCB IMPLEMENTATION MEASURES

Timeframe	Category	Implementation Measure (IM) No.	Description of S/N Management Strategy	Basin	Anticipated Implementation Date	Impact to S/N Loading to Groundwater	Impact to S/N Concentrations in Groundwater
	Public education	19	Council for Watershed Health (http://watershedhealth.org/Default.aspx)	CBWCB	Existing	PNM Decrease	PNM Decrease
		20	CBWCB SNMP (http://www.wrd.saltnutrient.com/)	CBWCB	Existing	PNM Decrease	PNM Decrease
		21	Water Replenishment District of Southern California (http://www.wrd.org/index.php)	CBWCB	Existing	PNM Decrease	PNM Decrease
		22	Southern California Salinity Coalition (http://www.socalsalinity.org/)	CBWCB	Existing	PNM Decrease	PNM Decrease
		23	WateReuse Association (http://www.watereuse.org/) and WateReuse Research Foundation (http://www.watereuse.org/foundation)	CBWCB	Existing	PNM Decrease	PNM Decrease
	Conservation	24	Senate Bill x7-7 (20% by 2020) and Other Activities	CBWCB	Existing	PNM Decrease	PNM Decrease
	Regulatory/ non-regulatory	25	Wastewater, recycled water, surface water/stormwater, imported water and groundwater monitoring	CBWCB	Existing	PNM Decrease	PNM Decrease
		26	State regulations for groundwater replenishment using recycled water	CBWCB	Existing	PNM Decrease	PNM Decrease
		27	LARWQCB groundwater recharge permits	CBWCB	Existing	PNM Decrease	PNM Decrease
		28	Recycled water non-potable reuse regulations, guidelines, and permits	CBWCB	Existing	PNM Decrease	PNM Decrease
	Land use regulation	29	Model Water Efficient Landscape Ordinance	CBWCB	Existing	Decrease	Decrease
Planned	Seawater intrusion control	30	Increase AWT recycled water supply (completely replacing imported water) for all three seawater barriers (WCBB, AGB, and DGB)	CBWCB	2017	Decrease	Decrease
		31	Increased pump and treat by the desalters and expansion of Goldsworthy Desalter	WCB	2015	Decrease	Decrease
	Groundwater recharge	32	Dominguez Gap Spreading Grounds West Basin Percolation Enhancement	WCB	2015	Increase	Decrease

TABLE 4-1
CBWCB IMPLEMENTATION MEASURES

Timeframe	Category	Implementation Measure (IM) No.	Description of S/N Management Strategy	Basin	Anticipated Implementation Date	Impact to S/N Loading to Groundwater	Impact to S/N Concentrations in Groundwater
		33	MFSG new turnout structures	CB	2015	Increase	Decrease
		34	Rio Hondo Spreading Grounds sediment removal	CB	2016/17	Increase	Decrease
	Institutional	35	West Coast Basin Judgment amendment	WCB	Before 2025	PNM Decrease	PNM Decrease
	Stormwater capture/ runoff management	36	Additional LID projects and stormwater BMPs	CBWCB	Ongoing	Decrease	Decrease
		37	MS4 permits issued by LARWQCB	CBWCB	Ongoing	Decrease	Decrease
		38	Los Angeles Basin Stormwater Conservation Study	CBWCB	2014	Increase	Decrease
		39	Broadway Neighborhood Stormwater Greenway Project	CBWCB	2015	Increase	Decrease
		40	Improvements to Entradero storm drain channel for stormwater infiltration (GLAC IRWMP)	WCB	2015	Increase	Decrease
		41	Vermont Avenue stormwater capture	WCB	2017	Increase	Decrease
	TMDLs	42	TMDLs	CBWCB	Ongoing	Decrease	Decrease
	Conservation	43	Senate Bill x7-7 (20% by 2020) and Other Activities	CBWCB	2020	PNM Decrease	PNM Decrease
	Regulatory/ non-regulatory	44	SNMP Monitoring Program	CBWCB	January 2015	PNM Decrease	PNM Decrease
Conceptual	Seawater intrusion control	45	Additional desalters	WCB	NA	Decrease	Decrease
	Groundwater recharge	46	Additional tertiary-treated/AWT recycled water recharge in the Montebello Forebay	CB	NA	Increase	Decrease
		47	Los Angeles River Aquifer Stormwater Recharge and Recovery Facility	CB	NA	Increase	Decrease
		48	Montebello Forebay New Extraction and Intrabasin Transfer	CB	NA	Increase	Decrease
		49	New Los Angeles Forebay AWT recycled water recharge and recovery	CB	NA	Increase	Decrease

TABLE 4-1
CBWCB IMPLEMENTATION MEASURES

Timeframe	Category	Implementation Measure (IM) No.	Description of S/N Management Strategy	Basin	Anticipated Implementation Date	Impact to S/N Loading to Groundwater	Impact to S/N Concentrations in Groundwater
		50	Whittier Narrows Dam Conservation Pool Project	CB	NA	Increase	Decrease
	Stormwater capture/ runoff management	51	Additional LID projects and stormwater BMPs	CBWCB	NA	Decrease	Decrease
	Wastewater salinity/ nutrient source control	52	Residential automatic water softener control (bans and/or rebates)	CBWCB	NA	Decrease	Decrease
		53	San Jose Creek East WRP process optimization	CB	NA	Increase	Decrease
	Conservation	54	Xeriscape policy	CBWCB	NA	Decrease	Decrease
		55	Senate Bill x7-7 (20% by 2020) and Other Activities	CBWCB	NA	PNM Decrease	PNM Decrease

PNM Decrease – Potential non-measureable decrease
CBWCB – Central Basin and West Coast Basin
CB – Central Basin
WCB – West Coast Basin
LID – low impact development
SNMP – Salt and Nutrient Management Plan
SW – stormwater
BMPs – best management practices
WRP – Water Reclamation Plant
N/A – Not available
SNMP – Salt and Nutrient Management Plan
TMDL – total maximum daily load
AWT – advanced water treatment
MS4 – Municipal Separate Storm Sewer System
LACDPW – Los Angeles County Department of Public Works
LARWQCB – Los Angeles Regional Water Quality Control Board
MWD – Metropolitan Water District of Southern California
AGB – Alamitos Gap Seawater Intrusion Barrier
WCBB – West Coast Basin Seawater Intrusion Barrier
DGB – Dominguez Gap Seawater Intrusion Barrier
WRD – Water Replenishment District of Southern California
NPDES – National Pollutant Discharge Elimination System
MFSG – Montebello Forebay Spreading Grounds, which include the Rio Hondo Spreading Grounds, San Gabriel River Spreading Grounds, and the unlined portion of the San Gabriel River in the Montebello Forebay
GLAC IRWMP – Greater Los Angeles County Integrated Regional Water Management Plan
Existing – Implementation measures or projects/programs/strategies that are currently in place
Planned – Implementation measures that are anticipated to be in operation before 2025, notwithstanding exigencies that are outside the control of the project sponsors
Conceptual – Implementation measures that have been hypothetically identified, so may or may not begin by 2025

4.1.1 Existing Implementation Measures

The existing implementation measures are listed as IM 1 through IM 29 in Table 4-1 and described in detail below. Since these implementation measures are projects/programs that have already been put into place, they are considered part of the baseline conditions.

Seawater Intrusion Control

IM 1. Seawater Intrusion Barriers (WCBB, DGB, and AGB) – The seawater intrusion barriers manage the existing saline intrusion as well as provide groundwater recharge in the CBWCB. Currently, imported water and advanced treated recycled water are delivered to the seawater barriers for injection.

The AGB began operating in the early 1960s along the southern border of the Central Basin. Historically, the AGB received only treated imported water for injection, but began also utilizing recycled water that has undergone advanced water treatment (AWT) in 2005. The AWT recycled water is produced by WRD's Leo J. Vander Lans Advanced Water Treatment Facility (Vander Lans AWTF) and the treated imported water is provided by the MWD. Current advanced treatment processes at the Vander Lans AWTF include microfiltration (MF), reverse osmosis (RO), ultraviolet irradiation (UV), and advanced oxidation through the addition of peroxide.

The WCBB began operating in the mid-1950s along the western coast of the West Coast Basin. Historically, the WCBB received only treated imported water for injection, but began also utilizing AWT recycled water in 1995. The AWT recycled water is produced by the WBMWD's Edward C. Little Water Recycling Facility (WRF) and the treated imported water is provided by MWD. Treatment processes at the Edward C. Little WRF include MF, RO, AOP, ozonation (O_3), and chemical stabilization.

The DGB began operating in the early 1970s in southern portion of the West Coast Basin. Currently, AWT recycled water produced by the City of Los Angeles' Terminal Island Water Reclamation Plant/Advanced Water Purification Facility (TIWRP) and treated imported water from MWD are delivered to the DGB for injection. The TIWRP treatment train currently includes MF, RO, and chlorination. Historically, the DGB received only treated imported water, but began also utilizing AWT recycled water in 2006.

AWT recycled water is significantly lower in TDS and chloride compared with imported water, but nitrate levels are very low and comparable in both water sources. As such, the partial replacement of imported water with AWT recycled water at the seawater barriers continues to significantly reduce TDS and chloride loading and concentrations in groundwater in the CBWCB.

IM 2. Desalters – The C. Marvin Brewer Desalter (Brewer Desalter) and Robert W. Goldsworthy Desalter (Goldsworthy Desalter) are existing facilities that treat brackish groundwater pumped from wells located in areas impacted by seawater intrusion in the West Coast Basin, thereby increasing the outflow of S/Ns from the basin and reducing S/N concentrations in groundwater.

The desalters are operating in the City of Torrance. The Brewer Desalter has a design capacity of 1,200 acre-feet per year (AFY) and is owned by WBMWD and operated by California Water Service Company, who distributes the treated water as part of its potable supply.

The Goldsworthy Desalter has a design capacity of 2,800 AFY and currently operates at about 2,200 AFY. It is owned by WRD and is operated and maintained by the City of Torrance, who delivers the treated water to their drinking water system.

Groundwater Recharge

IM 3. Dominguez Gap Spreading Grounds (DGSG) Existing Operations – Stormwater is currently captured at the DGSG and recharges the West Coast Basin. Historically, the DGSG recharged both the Central Basin and West Coast Basin. Recharge of stormwater adds S/N load, but decreases concentrations because stormwater has lower S/N concentrations compared with ambient groundwater.

IM 4. Montebello Forebay Spreading Grounds (MFSG) Existing Operations – Currently, the MFSG uses tertiary-treated recycled water, untreated imported water, and stormwater for groundwater recharge. Although current recharge operations at the MFSG increase S/N loading, future water quality projections as determined from the SNMP analysis indicate that the current blend of recharge water results in declining S/N concentrations in groundwater in the Montebello Forebay.

IM 5. MFSG Interconnection Pipeline – The interconnection pipeline between the Rio Hondo Spreading Grounds and San Gabriel River Spreading Grounds, completed in 2011, allows greater operational flexibility and increases stormwater capture by about 1,300 AFY, thereby increasing S/N loading, but reducing S/N concentrations in groundwater.

IM 6. Rio Hondo Spreading Grounds (RHSG) Basin 6E to 8E Connection – Construction of a connection from RHSG Basin 6E to 8E is an existing project that allows for increased flexibility and the capture of an additional 1,200 AFY of replenishment water, thereby increasing S/N loading, but reducing S/N concentrations in groundwater.

IM 7. San Gabriel River Rubber Dams – Additional rubber dams recently installed in the San Gabriel River above the Whittier Narrows Dam increase the amount of stormwater capture by about 3,600 AFY, thus increasing S/N loading, but reducing S/N concentrations in groundwater.

IM 8. Whittier Narrows Dam Conservation Pool Project – Operational enhancements are being implemented to increase the conservation pool elevation behind the dam from 195 to 205 feet above mean sea level (ft-msl). The project is being implemented in phases. In 2004, the conservation pool elevation behind the dam was raised to 201.6 ft-msl, resulting in an estimated additional capture of about 3,000 AFY of stormwater, thereby increasing S/N loading, but reducing S/N concentrations in groundwater.

Institutional

IM 9 and IM 10. CBWCB Adjudication, Central Basin Judgment Amendment, and Groundwater Management Agency (WRD) – As described in Section 3.3, the following are existing institutional implementation measures currently in place:

- CBWCB judgments that adjudicated the basins and established other provisions,
- Central Basin judgment amendment issued in December 2013,

- Establishment of a groundwater management agency (WRD), and
- Multiple WRD programs, including the Safe Drinking Water Program, Groundwater Contamination Prevention Program, Regional Groundwater Monitoring Program, Hydrogeology Program, In-Lieu Program, and Water Independence Now (WIN) Program.

Due to significant overdraft in the CBWCB by the mid-1900s, the courts adjudicated the two basins to put a limit on pumping. The West Coast Basin judgment adjudicated the basin in 1961 and limited groundwater extractions to 64,468 AFY. The Central Basin judgment adjudicated the basin in 1965 and limited extractions to 217,367 AFY. While reduced pumping reduces S/N outflow from the basins, the net effect is reduced loading and improved groundwater quality due to reduced seawater intrusion.

To more efficiently manage the CBWCB and allow flexibility for basin pumpers, the judgments established provisions for carryover of unused annual pumping rights in any given year and an exchange pool wherein water rights not used by one party can be made available to another. A provision in the Central Basin judgment further allows additional carryover of pumping rights during a period that is declared by the WRD as a Water Emergency. The intent of this "drought carryover" provision is to prevent degradation of the groundwater basins by helping to restore groundwater levels and improving the water supply in the aquifers and provide an incentive to groundwater producers in the Central Basin to reduce pumping for a particular period of time under drought conditions.

On December 18, 2013, an amendment to the judgment for the Central Basin was issued by the courts. The amendment enables large-scale changes in the management practices within the basin, which are expected to enhance opportunities to develop recycled water for recharge and improve the capability to utilize the basin's storage for conjunctive use. As a result of the judgment amendment, the Watermaster in the Central Basin is now comprised of three entities: 1) Administrative Body, 2) Water Rights Panel, and 3) Storage Panel. WRD was designated as the Administrative Body and is responsible for preparing the annual *Watermaster Service* reports and submitting them to the Water Rights Panel. The Water Rights Panel is ultimately responsible for submitting the final *Watermaster Service* reports to the Superior Court of the State of California for filing.

WRD was established in 1959 for the purpose of protecting and preserving groundwater in the CBWCB. Accordingly, WRD is enabled under the California Water Code to provide the needed supplemental replenishment water to make up the difference between the adjudicated amounts and the natural safe yield. The process of supplementing natural groundwater recharge with additional recharge is known as artificial replenishment or managed aquifer recharge. In addition to facilitating groundwater recharge, WRD monitors and reports on groundwater quality and cooperates with various regulatory agencies to protect groundwater quality. Increased recharge increases S/N loading, but improves groundwater quality.

In order to ensure that the use of recycled water for groundwater recharge remains a safe and reliable practice, WRD participates in various research and monitoring activities, proactively contributes to the regulatory and legislative development processes, and engages in information exchange and dialogue with regulatory agencies and other recycled water users. WRD continues to closely coordinate with the SDLAC, which produces the recycled water used for surface spreading in the Montebello Forebay, on permit compliance activities, including groundwater monitoring, assessment, and reporting. Many

monitoring and production wells are sampled frequently by WRD staff, and the results are reported to the regulatory agencies.

In addition to compliance monitoring and sampling associated with the spreading grounds, WRD is partnering with others to more fully investigate the effectiveness of soil aquifer treatment during groundwater recharge. Research is underway to more fully characterize the percolation process and to quantify the filtering and purifying properties of the underlying soil with respect to constituents of concern, such as nitrogen, total organic carbon, and constituents of emerging concern (CECs). WRD continues to be vigilant in monitoring research on the occurrence, significance, attenuation, and removal of CECs, including pharmaceuticals, endocrine disruptors, and personal care products.

Three separate groundwater tracer studies were performed in 2003-2005, 2005-2006, and 2010-2011 for the purpose of tracking and verifying the movement of recycled water from the spreading grounds by testing the monitoring wells and the production wells. Results showed that the depth rather than the horizontal distance from the recharge ponds is the key factor influencing arrival times of recycled water to wells. Travel time to deeper wells is greater than to shallower wells, even if the deeper wells are very near the spreading grounds. In some cases, WRD made modifications to wells to seal off their shallow perforations so that the wells would only produce from the deeper aquifers. Tracer tests subsequent to well modification demonstrated an increased travel time compared to earlier results. These efforts, in addition to periodic studies assessing health effects and toxicological issues, are necessary to provide continued assurances that the use of recycled water for groundwater recharge remains safe and compliant with all regulatory standards.

The Safe Drinking Water Program was implemented by WRD in 1991 to promote the cleanup of groundwater resources at specific well locations. As part of this program, WRD provides grants and loans to pumpers in the CBWCB to install wellhead treatment facilities at active production wells that have been impacted by naturally-occurring constituents and man-made chemicals. A total of 16 wellhead treatment systems have been constructed. This program not only helps to remediate groundwater contamination plumes, but also helps to maintain a sustainable water supply by reducing reliance on imported water for potable supply.

In an effort to minimize or eliminate threats to groundwater supplies, WRD established the Groundwater Contamination Prevention Program. As part of this program, WRD created and administers the CBWCB Groundwater Contamination Forum, a data-sharing and discussion forum with key stakeholders that include the United States Environmental Protection Agency (USEPA), California Department of Toxic Substances Control (DTSC), LARWQCB, CDPH (now the SWRCB Division of Drinking Water), United States Geological Survey (USGS), and various cities and drinking water purveyors. In 2005, these stakeholders drafted and signed a Memorandum of Understanding, agreeing to meet regularly and share data on groundwater contaminated sites within the CBWCB. As a key stakeholder, WRD has been tracking and working in close consultation with the regulatory agencies to provide data and technical support to expedite investigations and cleanups at priority groundwater contaminated sites within the CBWCB.

WRD has been monitoring groundwater quality (including S/Ns) and water levels in the CBWCB for over 50 years. The Regional Groundwater Monitoring Program provides for the collection of basic information used for groundwater basin management including groundwater level data and water

quality data. It currently consists of a network of over 300 WRD and USGS-installed monitoring wells at over 50 locations throughout the CBWCB, supplemented by the existing groundwater production wells operated by the water purveyors. Annually, WRD collects nearly 600 groundwater samples from its nested monitoring well network and analyzes them for over 100 constituents to produce nearly 60,000 individual data points to help track groundwater quality. The information generated by this program is compiled and evaluated in WRD's annual Regional Groundwater Monitoring Report, which are available for downloading from the WRD website (http://www.wrd.org/engineering/groundwater-engineering-reports.php). The Regional Groundwater Monitoring Report provides water quality summary tables (including data for TDS, chloride, nitrate) for each of the nested monitoring wells, water quality maps for the nested wells and drinking water wells, and maps and hydrographs depicting groundwater level data.

WRD is also the designated groundwater monitoring entity for the CBWCB under the State of California's California Statewide Groundwater Elevation Monitoring (CASGEM) program. WRD collects water level data from 28 of its nested monitoring wells and uploads it to the State's CASGEM website on a regular basis for seasonal and long-term water level trend tracking. Public access to the CASGEM website is at: www.water.ca.gov/groundwater/casgem.

Work performed under WRD's Hydrogeology Program includes the preparation of an annual Engineering Survey and Report, which incorporates the calculation and determination of annual overdraft, accumulated overdraft, changes in storage, pumping amounts, and replenishment water availability to help assess groundwater replenishment needs and costs in the ensuing year. Maps are created to show water levels in the basins and groundwater production patterns and amounts. Much of this information is published in Technical Bulletins, which are two-page documents that summarize groundwater issues of importance in the CBWCB. WRD continuously works with the USGS to better characterize the hydrogeologic conditions in the basins by compiling and interpreting the extensive amounts of data generated during drilling and logging of the WRD/USGS monitoring wells and collected from historical information for production wells and oil wells within the CBWCB. The final conceptual model will significantly improve the understanding of the aquifer depths, extents and thicknesses throughout the basins, and will assist pumpers and other basin stakeholders with planning for groundwater resource projects such as new well drilling, storage opportunities, or modeling.

WRD's In-Lieu Program plays an important role in the conjunctive use of the CBWCB, utilizing surplus imported water to lower the annual overdraft and reduce artificial replenishment needs. The In-Lieu Program helps provide an alternate means of replenishing the groundwater supply by encouraging basin pumpers to purchase surplus imported water when available instead of pumping groundwater, which lowers the annual overdraft and reduces artificial replenishment needs. The goal of the In-Lieu Program is to replenish those areas which are not easily recharged through surface spreading due to their distance from the MFSG and/or location in deep confined aquifers. When wells are turned off, groundwater levels rise and water remains in storage that would have otherwise been pumped out.

WRD established the WIN Program to develop local and sustainable sources of water for use in groundwater replenishment activities. This has become increasingly important in light of persistent drought conditions in the State and environmental and regulatory issues that limit delivery of imported water to the Los Angeles area. As part of the WIN Program, the Groundwater Reliability Improvement Program (GRIP) was established to offset the current use of imported water by providing up to 21,000

AFY of alternative supply sources (e.g., recycled water, stormwater) for replenishment at the MFSG. The primary goals of GRIP are to:

- Provide a sustainable and reliable supply for replenishing the basins;
- Protect groundwater quality;
- Minimize the environmental/energy footprint of any option or options selected;
- Comply with pertinent regulatory requirements employing an institutionally feasible approach;
- Minimize cost to agencies using ground water; and
- Engage stakeholders in the decision making process.

Two recycled project alternatives were proposed as part of GRIP, GRIP Recycled Water Project A (GRIP A) and GRIP Recycled Water Project B (GRIP B), as further discussed in Section 4.2.2.

Source Water Salinity Control

IM 11. LACDPW Stormwater "First Flush" Policy – As described in WRD's 2007 Replenishment Operations Manual, typically at least the first several hours of flow (e.g., the "first flush") of the first season's stormwater event is bypassed around the MFSG and DGSG and wasted to the ocean because it is too high in turbidity and contains trash. This first flush is also believed to contain higher concentrations of pollutants, and thus conducting first flush potentially lowers S/N loading and improves groundwater quality.

IM 12. MWD Salinity Source Water Control Program – The MWD imports supplemental water supplies to the Southern California region, which includes the CBWCB. These supplies are imported from the Colorado River (CR) via the Colorado River Aqueduct and the Sacramento-San Joaquin Bay Delta (Delta) via the State Water Project (SWP). The salinity of these imported supplies is managed through source control measures, collaborative actions with other agencies, distribution system salinity management, and participation with local agencies to protect groundwater and recycled water supplies. Source control measures are critical for reducing salinity in imported water supplies and protecting groundwater supplies from additional salinity. Salinity control programs and studies are described below.

- Colorado River Basin Salinity Control Program – The program provides Federal appropriations for salinity reduction projects. These projects include irrigation improvement practices, rangeland management, and deep well brine injection which aid in meeting the program's salinity numerical objectives for the Colorado River Basin.
- California Department of Water Resources Municipal Water Quality Investigations Program – The program, funded through the SWP Contractors, provides routine and real-time monitoring and forecasting of salinity levels in the Delta and SWP.
- Future SWP Activities – The proposed Bay Delta Conservation Plan could significantly reduce TDS levels of exported SWP supplies. If the plan is implemented, the Sacramento River would bypass the Sacramento -San Joaquin Delta and feed directly into the SWP, reducing TDS levels in the SWP supply.

- Update of the 1999 Salinity Management Study – The 1999 Study is being updated through a partnership between MWD, the United States Bureau of Reclamation, and the Southern California Salinity Coalition. The Update will seek to effectively quantify and set goals for managing the effects of salinity on water resources in Southern California.

Collaborative actions with other agencies allow MWD to exchange water supplies, thereby providing its service area with lower salinity water as described below.

- MWD exchanges CR supplies for lower salinity SWP supplies with the Desert Water Agency and the Coachella Valley Water District. These water agencies contract for SWP supplies, but are unable to take direct delivery of these supplies.
- As opportunities arise, MWD also exchanges some of its SWP supplies for higher quality runoff from the Sierra Nevada mountain range as part of its storage and recovery operations with San Joaquin Valley irrigation districts.

MWD delivers a blend of CR water and SWP supplies to the CBWCB and this imported water is treated by three of MWD's drinking water treatment plants: two blended water plants (Weymouth and Diemer WTPs) and one SWP plant (Jensen WTP).

- 1999 Salinity Management Policy – MWD continues to support long-term salinity control by considering the 500 mg/L annual TDS goal in its operations by blending water from the SWP and CR. The anticipated Update of the 1999 Salinity Management Study will assess MWD's future operational capability to deliver low salinity water supplies through 2020.

MWD works with local agencies to manage salinity to protect the quality of groundwater resources and enhance the quality of recycled water.

- Local Salinity Management Projects – Various Southern California agencies are undertaking salinity management studies and projects related to brine concentrate disposal, water softener management, and desalination projects.
- Local Resources Program – MWD encourages the recovery and cleanup of saline groundwater through its Local Resources Program. This program provides financial payments of up to $250 per acre-foot of water supply yield created through desalters.

Stormwater Capture/Runoff Management

IM 13. City of Torrance Stormwater Retention Basins – Based on the Greater Los Angeles County Integrated Regional Water Management Plan (GLAC IRWMP) Online Project Tracking and Integration (OPTI) website, there are several projects that are considered implementation measures for the CBWCB. Currently, the City of Torrance operates a number of stormwater retention basins, some of which (the Bishop Montgomery, Del Amo, and Ocean basins) allow for recharge and groundwater replenishment. This project increases stormwater capture, which increases S/N loading but reduces S/N concentrations in groundwater due to the relatively low S/N concentrations in surface water/stormwater compared with ambient groundwater.

IM 14. Low Impact Development (LID) and Stormwater Best Management Practices (BMPs) – LID includes design techniques that infiltrate, filter, store, evaporate, and detain surface water runoff close

to its source. BMPs address the increased volume and rate of runoff from impervious surfaces and the concentration of pollutants in the runoff. BMPs can include structural systems such as infiltration devices, ponds, filters and constructed wetlands. BMPs can also include non-structural BMPs such as LID practices to preserve/recreate natural landscape features or minimize effective imperviousness and management measures such as maintenance practices, street sweeping, public education, and outreach programs. The main goals of LID and stormwater BMPs are to increase groundwater recharge and improve stormwater quality. There are multiple existing and planned LID and stormwater BMPs in the CBWCB. These projects/practices decrease S/N loading and concentrations in groundwater.

IM 15. LARWQCB Municipal Separate Storm Sewer System (MS4) Permit for Los Angeles County – In 2001, the LARWQCB issued the NPDES permit (2001 MS4 Permit; Order No. 01-182, NPDES No. CAS004001) for MS4 discharges for 84 cities and a majority portion of the unincorporated areas of Los Angeles County. Some cities within the CBWCB, such as the City of Long Beach, have a separate MS4 NPDES permit. The 2001 MS4 Permit regulated the discharge of runoff from MS4s or storm drains, prohibited non-stormwater discharges into the storm drain system, and limited any discharges to receiving waters that would cause or contribute to a violation of water quality standards. The 2001 MS4 Permit required implementation of a Stormwater Quality Management Plan that included the use of BMPs to reduce the amount of pollutants in stormwater and dry-weather runoff.

In December 2012, the LARWQCB adopted a new MS4 Permit (Order No. R4-2012-0175; http://www.waterboards.ca.gov/rwqcb4/water_issues/programs/stormwater/municipal/index.shtml) that replaced the 2001 MS4 Permit. The 2012 MS4 Permit differs significantly from the 2001 MS4 Permit in several respects, including new requirements for hydromodification[6] and LID that apply to existing development or redevelopment projects that have been constructed or for which grading or land disturbance permits have been submitted and are deemed complete prior to the adoption date of the 2012 MS4 Permit. Significantly, permittees are encouraged to infiltrate stormwater as a fundamental aspect of permit implementation. Additional details regarding the MS4 permits in Los Angeles County can be found in the SNMP *Monitoring Plan* (Appendix K of the SNMP). Overall, MS4 permits in the CBWCB decrease S/N loading and concentrations in groundwater.

Wastewater Salinity/Nutrient Source Control

IM 16. Industrial Wastewater Source Control Programs – Within the CBWCB, County Sanitation Districts of Los Angeles County (SDLAC), and the City of Los Angeles, Bureau of Sanitation (LABOS) operate pretreatment programs that regulate industrial and commercial discharges into the agencies' wastewater management systems. These activities are conducted in accordance with ordinances adopted by SDLAC and LABOS, Federal pretreatment regulations pursuant to Code of Federal Regulations, Title 40, Part 403, and the Clean Water Act. The source control programs permit, inspect,

6 Hydromodification can be any activity that increases the velocity and volume (flow rate), and often the timing, of runoff. Such activities include: construction and maintenance of channels, levees, dams, and other water conveyance structures and/or impoundments for purposes of flood control, water storage, water conveyance, and navigation; dredging and/or filling or other alterations to natural land contours for the purposes of new development (including transportation and other infrastructure) or navigation; development of impervious surfaces (asphalt, concrete, most buildings, etc.); and deforestation or removal of vegetation.

monitor, develop source control and pollution prevention requirements, and take enforcement actions for permit and ordinance violations. The overall objectives of the programs are to:

- Protect water treatment plants (WTPs) and water reclamation plants (WRPs) from interference with process operations and pass through of harmful pollutants to the environment;
- Protect the life, health, and safety of operating and maintenance personnel;
- Ensure the health, safety, and welfare of the public;
- Provide the opportunity for beneficial reuse of biosolids; and
- Provide the opportunity for water reclamation.

Each agency's ordinance allows for the development of industrial and commercial discharge requirements to protect the quality of recycled water and meet Waste Discharge Requirements/Water Recycling Requirements (WDRs/WRRs) and NPDES limits, including S/Ns. This can be accomplished by establishing industry-specific or industrial category-specific discharge limits, requiring industries to bypass discharges around WRPs, prohibiting the use of self-regenerating water softeners (SRWS), requiring implementation of pollution prevention BMPs, and conducting public outreach. Thus, these programs help to reduce S/N loading and concentrations in groundwater.

IM 17. Wastewater and Recycled Water Nitrogen Treatment – Within the Los Angeles Region, wastewater treatment plants that discharge to inland surface waters have implemented nitrification-denitrification (NdN) as part of their secondary biological treatment processes to reduce nitrogen concentrations. The biological conversion of ammonia in sewage to nitrate-nitrogen is called nitrification. The biological reduction of nitrate to nitrogen gas by facultative heterotrophic bacteria is called denitrification. By 2003, SDLAC converted its WRPs to include NdN to meet NPDES discharge limits for ammonia, nitrate, and nitrite that are based on Basin Plan objectives. The NdN modifications have achieved meaningful reductions in total nitrogen and therefore, help to reduce nutrient (nitrate) loading and concentrations in groundwater. As one example, the pre-NdN (1993 to mid-2003) average total nitrogen concentration in the San Jose Creek East WRP effluent was approximately 14 mg/L compared to the post-NdN (mid-2003 to 2011) average total nitrogen concentration of approximately 6.5 mg/L, a reduction of 53%. SDLAC documents NdN reductions for all of its WRPs.

IM 18. Residential Automatic Water Softeners Educational Outreach – Because self-regenerating water softeners (SRWS) rely on salt for water softening, which ultimately gets discharged to the sewer and wastewater treatment plants, they add significant salt loading to the tertiary-treated recycled water that recharges the CBWCB. The SDLAC and Santa Clarita Valley Sanitation District have done extensive outreach and education regarding SRWS in the Santa Clarita Valley in order to comply with the State's legal limit for chloride discharged to the Santa Clara River. The SDLAC's website provides information on SRWS, their groundwater quality impacts, and salt-free alternatives to SRWS: (http://www.lacsd.org/wastewater/automatic_water_softeners/alternatives.asp). This program helps to reduce salt (TDS and chloride) loading and concentrations in groundwater. There currently are no plans within the CBWCB for mandated replacement of residential SRWS or to implement voluntary rebate programs.

Public Education

IM 19. Council for Watershed Health – The Council for Watershed Health (CWH) is an organization established in 1996 to facilitate a stakeholder-driven consensus process to enhance the economic, social, and ecological health of the region's watersheds through education, research, and planning. One of the goals of the CWH is to achieve regional sustainability through integrated natural resources management, including water resources management. CWH conducts active technical and outreach programs directed at professionals, the media, agencies, elected officials, and the public. This organization and its outreach efforts have the potential to decrease S/N loading and concentrations in groundwater.

IM 20. CBWCB SNMP – To promote the development of the CBWCB SNMP, an informational website was created (http://www.wrd.saltnutrient.com/). The website disseminates information regarding the SNMP, including a calendar of events and meetings, meeting agendas and minutes, meeting presentations, project schedules, contact information, deliverables, data, and weblinks to other reference materials. Once the CBWCB SNMP is finalized and the Basin Plan Amendment is adopted, S/N management measures, including the implementation measures, will be carried out. As a result, these efforts will reduce S/N concentrations in groundwater or maintain groundwater quality in accordance with Basin Plan objectives.

IM 21. Water Replenishment District of Southern California (WRD) – WRD has a website (http://www.wrd.org/index.php) that provides useful information on various recharge and water quality monitoring and protection programs. WRD also conducts numerous public meetings and events throughout the year to discuss the uses and benefits of recycled water, groundwater replenishment, and preserving groundwater quality. This agency and its outreach efforts have the potential to decrease S/N loading and concentrations in groundwater.

IM 22. Southern California Salinity Coalition (SCSC) – SCSC was formed in 2002 to address the critical need to remove salt from water supplies and to preserve water resources in California. SCSC is administrated by the National Water Research Institute (NWRI; http://nwri-usa.org/) and is a coalition of water and wastewater agencies in Southern California (including SDLAC and MWD) dedicated to managing salinity in the water supply. SCSC has partnered with MWD and United States Department of the Interior, Bureau of Reclamation (USBOR) to update the 1999 Salinity Management Study. As part of the effort, SCSC will be producing outreach and education materials on understanding Southern California salinity conditions and practices and identifying opportunities to promote effective regional salinity management. SCSC is working to update the regional salt balance by considering local and imported salinity sources and identifying trends (e.g., groundwater basin accumulation considering salt imports and exports); develop a tool to determine annual salinity indicators to assess the status of regional salinity management; identify regulatory approaches that affect salinity management and water resource development (e.g., SWRCB/RWQCB criteria for brine discharges, implementation of SNMPs, water quality objectives for TDS, etc.); and assess the regional salinity impacts of compliance with SB X7-7 (refer to Implementation Measure No. IM 24), including impacts to wastewater and receiving groundwater. This organization and its outreach efforts have the potential to decrease salt (TDS and chloride) loading and concentrations in groundwater.

SCSC maintains websites for outreach on salinity information (www.socalsalinity.org) and assessing impacts of salinity from irrigation (www.salinitymanagement.org). The SCSC website (www.socalsalinity.org) describes upcoming and past events hosted by SCSC and provides salinity-related publications such as fact sheets, research project reports, workshop summaries, and SCSC-funded projects.

IM 23. WateReuse Association and WateReuse Research Foundation – The WateReuse Association (http://www.watereuse.org/) is a nonprofit organization whose mission is to advance the beneficial and efficient uses of high-quality, locally produced, sustainable water sources for the betterment of society and the environment through advocacy, education and outreach, research, and membership. The WateReuse Research Foundation (http://www.watereuse.org/foundation) is an educational, nonprofit corporation that was established to conduct applied research on behalf of the water and wastewater community for the purpose of advancing the science of water reuse, recycling, reclamation, and desalination. The Foundation's research covers a broad spectrum of issues, including chemical contaminants, microbiological agents, treatment technologies, salinity management, public perception, economics, and marketing. The Foundation's research supports communities across the United States and abroad in their efforts to create new sources of high quality water while protecting public health and the environment. As an example, a recent WateReuse research project, supported by SDLAC, assessed no-salt alternatives to self-regenerating water softeners, which contribute a significant salt load to the wastewater system. The research identified commercially available, cost competitive, and effective alternatives. These organizations and their efforts help to reduce S/N loading and concentrations in groundwater.

Conservation

IM 24. Senate Bill x7-7 and Other Activities –As recognized in the Department of Water Resources (DWR) Public Review Draft of the Water Plan Update 2013 (DWR, 2013), conservation is a fundamental component of the South Coast region's water management planning. The South Coast Region includes all of Orange County and portions of Ventura, Los Angeles (including the CBWCB), San Bernardino, Riverside, and Sana Diego counties. Water agencies in the South Coast have been aggressively implementing water conservation since the 1990s. Many local water agencies are signatories to the California Urban Water Conservation Council (CUWCC) memorandum of agreement for urban water conservation and also have adopted Urban Water Management Plans (UWMPs) to ensure water supply reliability during normal, dry, and multiple dry years. These agencies implement best management practices (BMPs) and demand management measures contained in those documents. The backbone of MWD's conservation program is the Conservation Credits Program (CCP), initiated in 1988, that contributes $195 per AF of water conserved to assist member agencies in pursuing urban BMPs and other demand management opportunities. All of the region's water suppliers have water conservation programs for their customers which feature residential and commercial water saving tips, rebates for water efficient purchases (e.g., low - flow toilets, high - efficiency clothes washers, weather - based irrigation controllers), and tools for implementing landscape/garden improvements.

Local agencies are also developing water conservation master plans and conservation rate structures as well as working closely through integrated regional water management (IRWM) planning efforts to develop coordinated water efficiency programs. To these ends, the GLAC IRWMP (GLAC IRWMP Leadership Committee, 2013) has been developed to define a clear vision and direction for the

sustainable management of water resources in the GLAC Region for the next 20 years, to present the basic information regarding possible solutions and the costs and benefits of those solutions, and to inspire the Region and potential funding partners outside this Region.

The Water Conservation Act of 2009 (Senate Bill [SB] x7-7) requires each urban retail agency to establish in its UWMP a reduction goal to help California achieve a 20% statewide reduction in daily per capita water use by 2020. SB x7-7 requires urban water suppliers to calculate baseline water use and set an interim 2015 (half the 2020 target) and 2020 water use targets. One hundred fifty - seven South Coast urban water suppliers have submitted 2010 urban water management plans to DWR. SB x7-7 provides options to meet these targets including shifting to more recycled water use. The UWMPs indicate the South Coast Hydrologic Region had a population-weighted baseline average water use of 188 gallons per capita per day with an average population-weighted 2020 target of 159 gallons per capita per day.

The GLAC IRWMP provides estimates of water conservation target volumes (water use efficiency excluding water recycling) for the CBWCB in 2035. These target volumes are believed to be a conservative estimate that would also be in effect in 2025 based on compliance with SB x7-7. The estimated water conservation target volumes in 2025 are shown in **Table 4-2**.

TABLE 4-2
2025 ESTIMATED WATER CONSERVATION TARGET VOLUMES FOR CENTRAL BASIN AND WEST COAST BASIN (AFY)

Central Basin	West Coast Basin
2,300[a]	9,600[d]
5,700[b]	4,100[e]
6,500[c]	21,400[f]
Total = 14,500	**Total = 35,100**

AFY – acre-feet per year; UWMP – Urban Water Management Plan

a - City of Los Angeles 2010 UWMP (broken down based on area within the Central Basin)

b - Long Beach Water Department 2010 UWMP

c - Central Basin Municipal Water District 2010 UWMP

d - West Basin Municipal Water District 2010 UWMP

e - Torrance 2010 UWMP

f - City of Los Angeles 2010 UWMP (broken down based on area of City of Los Angeles within the West Coast Basin)

Water conservation helps to ensure reliable water supplies by avoiding or efficiently using water, but can have mixed impacts on S/N loading. It has the potential to increase the TDS, chloride, and nitrate concentrations in wastewater discharged to the sewer due to reduced in-home water use. This is because the same amount of salt are added through use, but the total volume of water used is less. On the other hand, to the extent that conservation reduces irrigation and associated irrigation return flows, it will decrease S/N loading. Overall, Senate Bill x7-7 has the potential to reduce S/N loading and concentrations in groundwater, and is accordingly included as an implementation measure.

SDLAC evaluated its WRPs in the CBWCB in terms of flow reductions and changes in TDS and chloride concentrations. While wastewater flows have declined starting in 1998, the TDS concentrations have remained steady and do not appear to be impacted by water conservation. However, chloride trends are a bit different. For the six facilities that make up SDLAC's Joint Outfall System (including the WRPs that provide recycled water in Central Basin), chloride has increased at the Joint Water Pollution Control Plant, La Cañada WRP, and Whittier Narrows WRP. SDLAC has observed a slight increase at the Pomona WRP and San Jose Creek WRP-East, but since chloride concentrations appear to be cyclical at these plants, this trend is not definitive. Chloride levels are staying steady or dropping at the Long Beach WRP, Los Coyotes WRP, and San Jose Creek WRP-West, although this trend may be influenced by chloride industrial dischargers shutting down or being rerouted to other plants.

Assessment of the WBMWD's Edward C. Little WRF tertiary-treated recycled water quality shows a significant increase in both TDS and chloride beginning in Water Year (WY) 2005-06, indicating that an increasing trend in salt due to conservation may be occurring. Based on these findings, the increased use of tertiary-treated recycled water for irrigation was simulated as part of the SNMP analysis for both the average of the baseline period (WY 2000-01 through 2009-10) and at higher concentrations through the future planning period (WY 2010-11 through 2024-25). Refer to Section 4.2 (Recycled Water Project Nos. RW 3 and RW 4) for a discussion of the results of the SNMP analysis.

Regulatory/Non-Regulatory

IM 25. Wastewater, Recycled Water, Surface Water/Stormwater, Imported Water and Groundwater Monitoring – There are multiple recycled water, wastewater, imported water, surface water/stormwater, and groundwater monitoring programs within and upstream of the CBWCB. Details regarding these monitoring programs are provided in the SNMP *Monitoring Plan* (Appendix K of the SNMP). These monitoring programs provide a comprehensive and continuing assessment of all the types of water within and entering the CBWCB. Thus, the monitoring programs assist in the overall efforts to decrease S/N loading and concentrations in groundwater.

Under the various existing monitoring programs, groundwater has been and continues to be monitored near recycled water recharge sites, in production wells used for water supply, and in a large network of multiple completion monitoring wells for multiple decades. Groundwater from more than 1,500 wells[7]

[7] The total number of wells that are sampled in the CBWCB on a regular basis far exceeds 1,500 because this estimated quantity only includes nested groundwater monitoring wells owned and sampled by WRD, existing production wells, and permit compliance monitoring wells associated with ongoing large recycled water projects in the basins, such as the Montebello Forebay Spreading Grounds and the three seawater intrusion barriers. This quantity does not include the numerous groundwater monitoring wells associated with existing environmental release sites in the CBWCB.

is sampled on a daily to annual basis. Hundreds of chemicals/analytical parameters are tested each year.

WRD's Regional Groundwater Monitoring Program is an existing voluntary monitoring program that currently includes of a network of over 300 nested groundwater monitoring wells installed at over 55 locations throughout the CBWCB. Annually, WRD collects nearly 600 groundwater samples from its monitoring well network and analyzes them for over 100 constituents to produce nearly 60,000 individual data points to help track groundwater quality. Each year, WRD publishes a Regional Groundwater Monitoring Report that provides water quality summary tables (including data for TDS, chloride, nitrate) for each of the nested monitoring wells, water quality maps for the nested wells and production wells, and maps and hydrographs depicting groundwater level data.

In addition to groundwater monitoring, the CBWCB and tributary areas have numerous, robust, and accessible monitoring programs for recycled water, wastewater, imported water, and surface water/stormwater for the three S/N indicators. In addition, hundreds of chemicals/analytical parameters, including CECs, are tested each year for multiple source waters. These existing monitoring programs are managed by multiple stakeholder agencies/organizations. Some programs, such as surface water/stormwater and wastewater monitoring, are part of the NPDES permits' Monitoring and Reporting Programs (MRPs), including regional watershed monitoring programs. Drinking water permits mandate imported water and groundwater monitoring. Non-potable reuse monitoring programs and groundwater recharge reuse monitoring programs for the Montebello Forebay Groundwater Recharge Project and the seawater intrusion barriers (WCBB, DGB, and AGB) are part of MRPs in each project's recycled water/reuse permit.

IM 26 and IM 27. State Regulations for Groundwater Replenishment using Recycled Water and LARWQCB Permits for Groundwater Recharge Projects – Regulations regarding groundwater replenishment (both surface and subsurface applications) using recycled municipal wastewater are specified in California Code of Regulations, Title 22, Division 4, Chapter 3, Articles 5.1 and 5.2. These regulations include a number of measures to ensure protection of groundwater quality, including:

- An industrial pretreatment and pollutant source control program for the wastewater,
- Pathogenic microorganism control,
- Nitrogen compounds control,
- Regulated contaminants and physical characteristics control,
- Diluent water requirements,
- CEC monitoring,
- Demonstration that recycled water is retained underground for a period of time necessary to allow a response time sufficient to identify failure and implement actions necessary for the protection of human health,
- Calculation of the running monthly average recycled water contribution (RWC) based on the total volume of recycled water and credited diluent water that is recharged during the preceding 120 months,
- Chemical monitoring requirements for the recycled water and groundwater,

- Preparation of an Operation Optimization Plan that identifies and describes the operations, maintenance, analytical methods, and monitoring necessary to meet all groundwater recharge regulations,
- Groundwater monitoring well requirements, and
- Reporting to the SWRCB Division of Drinking Water (formerly CDPH) and LARWQCB.

Due to the potential for confusion and duplication of effort between CDPH and the RWQCBs, CDPH and the SWRCB signed a Memorandum of Agreement (MOA) in 1996. The MOA delineates responsibilities of each agency in review and approval of recycled water projects. As of July 1, 2014, under the direction of California Governor Jerry Brown, the administration of the Drinking Water Program was transferred from CDPH to the SWRCB to consolidate all major water quality programs within a single department, which will allow the State to better manage and protect water resources and ensure safe drinking water for all Californians. Thus, the State's drinking water and recycled water programs are now regulated under the SWRCB Division of Drinking Water. While the SWRCB Division of Drinking Water regulates public water systems and sets standards for wastewater reuse to protect public health (*Water Recycling Criteria* in Title 22 of the California Code of Regulations), the RWQCB has the permitting and ongoing oversight authority of groundwater recharge projects. SWRCB Division of Drinking Water requirements for permit approval are to be incorporated in the final permit that will be issued by the RWQCB. Together, groundwater recharge regulations and permits mitigate the S/Ns entering the CBWCB from recycled water reuse projects, thereby help to reduce S/N loading and concentrations in groundwater.

IM 28. Recycled Water Non-Potable Reuse Regulations, Guidelines, and Permits – In January 1977 the SWRCB approved Resolution No. 77-1 which states, "*the California legislature has declared that the State shall undertake all possible steps to encourage the development of water reclamation facilities so that reclaimed water may be made available to help meet the growing water requirements of the State.*" The resolution also recognizes the need to protect public health from the environmental problems associated with reclamation projects. To this end, the SWRCB included in its July 1997 strategic plan a goal to meet this objective.

Recycled water has been used in California since the late 1800s. Public health restrictions have been in effect since the early part of this century. The regulations covering recycled water irrigation in California are found in California Health and Safety Code (CH&SC) Division 104, Part 12; California Water Code (CWC), Division 7; California Code of Regulations (CCR), Title 22, Division 4; and CCR, Title 17, Division 1, Chapter 5, Group 4. These documents can be found on the LARWQCB website (http://www.swrcb.ca.gov/losangeles/laws_regulations/).

Recycled water is an important resource for the State of California, and its use for non-potable applications is, in many cases, mandated by State law. Manuals have been developed to ensure protection of public health and compliance with regulations. Two manuals have been prepared for local recycled water users, as described below.

- The 2005 Los Angeles County Recycled Water User's Manual was compiled by the local chapter of WateReuse and includes the water and regulatory agencies involved with recycled water. The manual provides the recycled water "User" and "Site Supervisor" a resource for the day-to-day operation and control of that system. The manual outlines the process of converting to

recycled water use in order to protect the health and welfare of the personnel involved with its use and the general public and to protect the quality of local water resources.

- The 2008 SDLAC Recycled Water Users Handbook provides information on the general rules, regulations, and guidelines regarding the safe use of tertiary-treated recycled water produced by SDLAC. The Handbook includes:
  - General information about SDLAC's water reuse program;
  - State and local standards, regulations, and guidelines for the use of recycled water;
  - Information on the duties and responsibilities of water purveyors and recycled water users;
  - Information on operational requirements at reuse sites; and
  - Information on notification and reporting.

Overall, recycled water non-potable reuse regulations, guidelines, and permits have the potential to reduce S/N loading and concentrations in groundwater in the CBWCB.

Land Use Regulation

IM 29. Department of Water Resources (DWR) Model Water Efficient Landscape Ordinance – The Water Conservation in Landscaping Act of 2006 requires cities, counties, charter cities, and charter counties, to adopt landscape water conservation ordinances by January 1, 2010. Pursuant to this law, the DWR prepared a Model Water Efficient Landscape Ordinance (Model Ordinance) for use by local agencies. The Model Ordinance became effective on September 10, 2009.

All local agencies were required to adopt a water efficient landscape ordinance by January 1, 2010. The local agencies either adopted the State Model Ordinance, or crafted an ordinance to fit local conditions. In addition, local agencies could have collaborated to craft a region-wide ordinance. In any case, the adopted ordinance had to be as effective as the Model Ordinance in regard to water conservation.

The objectives of DWR's Model Water Efficient Landscape Ordinance are to:

- Promote the values and benefits of landscapes while recognizing the need to invest water and other resources as efficiently as possible;
- Establish a structure for planning, designing, installing, maintaining, and managing water efficient landscapes in new and rehabilitated projects;
- Establish provisions for water management practices and water waste prevention for established landscapes; and
- Use water efficiently without waste by setting a Maximum Applied Water Allowance as an upper limit for water use and reduce water use to the lowest practical amount.

Reduced irrigation, as stipulated by the Model Ordinance, reduces S/N loading and improves groundwater quality.

4.1.2 Planned Implementation Measures

The planned implementation measures are numbered IM 30 through IM 44 in Table 4-1 and described in detail below. These projects/programs are expected to be implemented by the 2025 planning horizon of the CBWCB SNMP.

Seawater Intrusion Control

IM 30. Increase AWT Recycled Water Supply to Seawater Barriers (AGB, WCBB and DGB) – As described for Implementation Measure No. IM 1 in Section 4.1.1, the seawater intrusion barriers manage the saline intrusion as well as provide groundwater recharge in the CBWCB. Historically, both imported water and AWT recycled water were injected at each of the barriers. Within the 2025 planning horizon for the SNMP, projects will be implemented at each of the barriers to allow for AWT recycled water to completely replace imported water for injection. This will require upgrades and expansion of source water treatment plants, along with potential construction of conveyance facilities such as pipelines and pump stations to convey the additional AWT recycled water to the three seawater barriers.

During WY 2014-15 when the Vander Lans AWTF was expanded to produce from 3,360 AFY to 8,960 AFY of AWT recycled water, the treatment train was modified to also include advanced oxidation (AOP) through the addition of peroxide. As planned, the expanded Vander Lans AWTF will produce 100 percent AWT recycled water (total volume of 7,200 AFY), thus completely replacing the use of imported water. However, minor volumes of treated imported water, supplied by MWD, may be utilized as necessary through the future due to temporary operational and maintenance issues that may be encountered at the Vander Lans AWTF or at the AGB. The CEQA documentation for the Vander Lans AWTF Expansion Project was completed in March 2012.

In WY 2013-14, the Edward C. Little WRF was expanded from 14,000 AFY to 19,600 AFY and treatment train was modified to also include O_3. It was anticipated that AWT recycled water (total injection volume of 17,000 AFY) would fully replace imported water at the WCBB beginning in WY 2013-14. However, minor volumes of treated imported water, supplied by MWD, may be utilized as necessary through the future due to temporary operational and maintenance issues that may be encountered at the Edward C. Little WRF or at the WCBB.

The TIWRP is currently undergoing expansion activities to increase production of AWT recycled water. Once expansion of the TIWRP is complete in WY 2018-19, injection of 7,500 AFY into the DGB is planned to be 100 percent AWT recycled water, thus completely replacing imported water.

The SNMP mixing model was used to estimate the impacts of these seawater barrier projects on future groundwater quality. AWT recycled water is significantly lower in TDS and chloride compared with imported water, but nitrate levels are very low and comparable in both water sources. As such, the complete replacement of imported water with AWT recycled water at the seawater barriers will significantly reduce TDS and chloride loading and concentrations in groundwater. Groundwater quality in the CBWCB will continue to improve or remain well below WQOs.

IM 31. Increase Pump and Treat by the Desalters and Expansion of Goldsworthy Desalter – As described for Implementation Measure No. IM 2 in Section 4.1.1, the Goldsworthy Desalter is an existing facility located in the City of Torrance that extracts and treats brackish groundwater from an area inland of the WCBB that is impacted by historical seawater intrusion. The Goldsworthy Desalter has a design capacity of 2,800 AFY and currently operates at about 2,200 AFY. In 2015, the total plant capacity will be expanded to 5,500 AFY, which will allow increased groundwater pump and treat. In addition, average groundwater pumping for the Brewer Desalter is projected to increase in the future planning period compared with current pumping.

The SNMP mixing model was used to estimate the impacts of these desalter projects on future groundwater quality. Modeling results show that the desalters will continue to increase the outflow of TDS and chloride from the basin, thereby reducing salt concentrations in groundwater. Groundwater quality in the West Coast Basin will continue to improve and meet WQOs in the future.

Groundwater Recharge

IM 32. DGSG West Basin Percolation Enhancement – This planned project, described in the Draft GLAC IRWMP 2013 Update (February 2014), will increase capture and percolation of stormwater at the DGSG in Long Beach in order to increase groundwater replenishment in the West Coast Basin. The preliminary project design includes removing between five to ten feet of clay sediment or installing vertical trenches/drains through the poorly draining strata in the facility's west basin. Preliminary studies have been conducted including boring samples which will be used to further develop conceptual plans and estimate project benefits.

The SNMP mixing model was used to estimate the impacts of this project in combination with other proposed projects in the CBWCB on future groundwater quality. Recharge of stormwater adds S/N load, but decreases concentrations in groundwater because stormwater has lower S/N concentrations compared with ambient groundwater. Modeling results show that groundwater quality in the CBWCB will continue to improve in the West Coast Basin and WQOs will be achieved in the future.

IM 33. MFSG New Turnout Structures – This planned project consists of the construction of two new turnout structures along the San Gabriel River in 2015 that will allow for more flexibility for the spreading of recycled water. The existing system restricts recycled water distribution to the San Gabriel River Spreading Grounds when stormwater is available for replenishment. Although recharge operations at the MFSG increase S/N loading, future water quality projections as determined from the SNMP analysis indicate that groundwater quality in the Central Basin will remain well below WQOs.

IM 34. RHSG Sediment Removal – This planned project will restore percolation and storage capacity at the spreading grounds. This project is included in the GLAC IRWMP. The RHSG basins have approximately 450,000 cubic yards of sediment accumulated in them, which not only reduces the water storage capacity, but also the percolation capacity has been reduced from 400 cubic feet per second to 200 cubic feet per second. The spreading basins are thus filled to capacity sooner, which results in reduced operational flexibility and having to bypass storm flows, which reduces recharge of stormwater. The project would restore percolation and storage capacity, potentially yielding approximately 1,000 AFY of replenishment water by removing approximately 450,000 cubic yards of sediment accumulated in the spreading basins. The greater capacity will increase operational flexibility, thereby better

accommodating the increasingly dynamic delivery schedules of imported water, recycled water, and stormwater. The estimated implementation date for the sediment removal is WY 2016-17.

Although recharge operations at the MFSG increase S/N loading, future water quality projections as determined from the SNMP analysis indicate that groundwater quality in the Central Basin will remain well below WQOs.

Institutional

IM 35. West Coast Basin Judgment Amendment – The adjudication decree for the West Coast Basin is in the process of being amended and anticipated to be completed by the SNMP 2025 planning horizon.

The proposed amendment would enable large-scale changes in the management practices within the West Coast Basin. They will further enhance opportunities to develop recycled water for recharge and they will improve the capability to utilize the basin's storage for conjunctive use. There is a potential for this implementation measure to decrease S/N loading and concentrations in groundwater, depending on the final management strategies that are enacted as part of the judgment amendment.

Stormwater Capture/Runoff Management

IM 36 and IM 37. Additional LID Projects and Stormwater BMPs, and LARWQCB MS4 Permits – As described for Implementation Measure Nos. IM 14 and IM 15 in Section 4.1.1, there are multiple existing and planned LID projects and stormwater BMPs. Recent MS4 permits issued by the LARWQCB include new requirements for stormwater infiltration and reuse, hydromodification, and LID that apply to existing development or redevelopment projects that have been constructed or for which grading or land disturbance permits have been submitted and are deemed complete prior to the adoption date of the MS4 permit. It is anticipated that the MS4 permits and permit-related LID/BMP projects overall would decrease S/N loading and concentrations in groundwater in the CBWCB.

In the 2012 MS4 permit that was issued by LARWQCB for the 84 cities and a majority portion of the unincorporated areas of Los Angeles County, Enhanced Watershed Management Programs (EWMP) and Watershed Management Programs were required for development to increase stormwater and non-stormwater surface water capture as well as improve surface water quality. Recharge of higher quality surface water will result in improved groundwater quality once these programs are implemented.

IM 38. Los Angeles Basin Stormwater Conservation Study – In recognition that imported water supplies to Los Angeles County are uncertain due to periodic droughts in Northern California and the Colorado River Basin, court decisions related to endangered species in the Bay Delta, and potential allocations of Colorado River water, along with changing demographics, climate variability, and the competing interest for available water, the USBOR, Los Angeles County Flood Control District (LACFCD), and several local agencies have begun a study of the long-term flood control and water conservation impacts from projected population and climate conditions in the Los Angeles Basin. According to the California Department of Finance, the State's population as a whole is projected to increase by more than 35 percent while Los Angeles County's is projected to increase by approximately 18 percent by 2050. Projected larger population growth rates outside of Los Angeles County portends enormous pressure and competition for imported sources of water and the need for increased development of local water supply sources. The study to be completed in 2015 will recommend potential changes to the operation

of stormwater capture systems, modifications to existing facilities, and development of new facilities that could help resolve future flood control and water supply issues. It is assumed that some of the study recommendations will increase stormwater capture and will be implemented before 2025. Recharge of stormwater adds S/N load, but decreases concentrations in groundwater because stormwater has lower S/N concentrations compared with ambient groundwater.

IM 39. Broadway Neighborhood Stormwater Greenway Project – This planned project in the City of Los Angeles will improve surface water and groundwater quality by reducing pollutant discharges through a number of BMPs including subsurface infiltration basins, surface infiltration basins (i.e. rain gardens), dry wells, and green streets. This project is included in the GLAC IRWMP. The project incorporates LID practices on residential parcels and streets that will infiltrate and retain dry and wet weather runoff. These practices will result in a variety of benefits, including: 1) reducing the rate and volume of stormwater runoff; 2) providing filtration for water quality improvement; and 3) providing on-site storage and infiltration of stormwater into the underlying aquifers of the CBWCB. The LID measures will also reduce pollutant loading into the Los Angeles River by infiltrating and retaining contaminated stormwater runoff at its source: from roof tops, alleys, and neighboring streets of a 32-acre tributary area. This project is expected to begin operation in 2015. Recharge of stormwater adds S/N load, but decreases concentrations in groundwater because stormwater has lower S/N concentrations compared with ambient groundwater.

IM 40. Improvements to Entradero Storm Drain Channel for Stormwater Infiltration – This planned project in the City of Torrance will modify the Entradero Storm Drain Channel to improve stormwater infiltration for bacteria TMDL compliance. This project is included in the GLAC IRWMP. The channel currently has an asphalt bottom and dirt slopes. The project would replace the asphalt bottom and natural sides of the channel with a continuous pervious material to improve infiltration of stormwater while maintaining and planting native vegetation on the slopes to improve slope stability. This project is expected to begin operation in 2015. Recharge of stormwater adds S/N load, but decreases concentrations in groundwater because stormwater has lower S/N concentrations compared with ambient groundwater.

IM 41. Vermont Median Stormwater Capture – The Vermont Median Stormwater Park project in the City of Gardena consists of construction of a median park on Vermont Avenue over a planned recycled water line. The new park/dedicated open space accommodates multiuse pathways (pedestrian and bike lanes), open space areas, native habitats, biofiltration systems, and other stormwater features. This project is expected to begin operation in 2017. Recharge of stormwater adds S/N load, but decreases concentrations in groundwater because stormwater has lower S/N concentrations compared with ambient groundwater.

Total Maximum Daily Loads (TMDLs)

IM 42. TMDLs – Section 303(d) of the Clean Water Act requires States and Territories of the United States to identify water bodies that do not meet water quality standards (e.g., the 303(d) list of impaired water bodies) and then to establish TMDLs for each water body for each pollutant of concern. The TMDL is a calculation of the maximum amount of a pollutant from point sources and nonpoint sources that a water body can receive and still meet water quality standards, within a margin of safety and considering seasonal variation. When a TMDL is approved, controls on pollutants are expected to be

implemented for point sources through limits in NPDES permits and for nonpoint sources through other means, such as BMPs. TMDLs may help to reduce S/N loading and concentrations in groundwater.

Conservation

IM 43. Senate Bill x7-7 and Other Activities – As described previously for Implementation Measure No. IM 24 (Section 4.1.1), conservation is a fundamental component of the GLAC water management planning, which has included aggressively implementing water conservation since the 1990s. Many local water agencies are signatories to the CUWCC memorandum of agreement for urban water conservation and also have UWMPs to ensure water supply reliability during normal, dry, and multiple dry years. The backbone of MWD's conservation program is the CCP, initiated in 1988, that contributes $195 per AF of water conserved to assist member agencies in pursuing urban BMPs and other demand management opportunities. All of the region's water suppliers have water conservation programs for their customers.

Local agencies are also developing water conservation master plans and conservation rate structures as well as working closely through IRWM planning efforts to develop coordinated water efficiency programs. To these ends, the GLAC IRWMP (GLAC IRWMP Leadership Committee, 2013) has been developed for the greater Los Angeles County area.

SB x7-7, enacted in 2009, requires each urban retail agency to establish in its UWMP a reduction goal to help California achieve a 20% statewide reduction in daily per capita water use by 2020. SB x7-7 requires urban water suppliers to calculate baseline water use and set an interim 2015 (half the 2020 target) and 2020 water use targets. One hundred fifty - seven South Coast urban water suppliers have submitted 2010 urban water management plans to DWR. SB x7-7 provides options to meet these targets including shifting to more recycled water use.

The GLAC IRWMP provides estimates of water conservation target volumes (water use efficiency excluding water recycling) for the CBWCB in 2035. Accordingly, existing water conservation efforts are planned to continue through the SNMP future planning period and beyond. Overall, SB x7-7 has the potential to reduce S/N loading and concentrations in groundwater, and is accordingly included as an implementation measure.

Regulatory/Non-Regulatory

44. SNMP Monitoring Program – The Recycled Water Policy requires development of a SNMP Monitoring Plan for each groundwater basin in California. The SNMP *Monitoring Plan*, provided as Appendix K in the SNMP, includes a detailed description of the SNMP Monitoring Program. The intent of the SNMP *Monitoring Plan* is to evaluate concentrations of S/Ns in groundwater with respect to applicable WQOs.

The SNMP Monitoring Program was developed based on WRD's Regional Groundwater Monitoring Program. Seventy (70) WRD nested groundwater monitoring wells (referred to as the SNMP monitoring wells) at 13 locations throughout the CBWCB were designated for S/N sampling and reporting to SWRCB's online GeoTracker database. Each nested well is screened in a specific aquifer, which allows the assessment of S/Ns in all the major aquifers of the CBWCB. In accordance to the Recycled Water Policy, these wells were selected based on their location in the most critical areas of the basins, particularly their proximity to water supply wells and groundwater recharge projects that utilize recycled water, including the seawater intrusion barriers and the MFSG.

WRD's annual Regional Groundwater Monitoring Report provides maps depicting chloride, TDS, and nitrate concentrations in the all the nested wells and active production wells, chloride and TDS trend graphs for the SNMP monitoring wells, and a discussion of S/N concentrations/trends in groundwater with respect to WQOs to assess overall groundwater quality in the CBWCB. These analyses provide the performance measures and evaluation of CBWCB SNMP implementation measure effectiveness. Both WRD's Regional Groundwater Monitoring Program and the SNMP Monitoring Program provide the means for comprehensive assessment and reporting of S/N levels in groundwater in the CBWCB.

Once the LARWQCB has approved the SNMP and established an SWRCB GeoTracker weblink for the CBWCB SNMP Monitoring Program, WRD will implement the SNMP Monitoring Program by collecting TDS, chloride, and nitrate data from the 70 SNMP monitoring wells on a semi-annual basis and uploading this water quality data to the GeoTracker database. It is anticipated that the SNMP Monitoring Plan will be implemented in 2015. The SNMP Monitoring Plan will be reviewed and updated as necessary as part of the SNMP update every ten years.

The SNMP Monitoring Program will assist in the overall efforts to decrease S/N loading and concentrations in groundwater in the CBWCB.

4.1.3 Conceptual Implementation Measures

The conceptual implementation measures are numbered IM 45 through IM 55 in Table 4-1 and described in detail below. These projects/programs/strategies are those that have been hypothetically identified, but may or may not begin after the SNMP 2025 planning horizon.

Seawater Intrusion Control

IM 45. Additional Desalters – Additional desalters and associated extraction wells were described as one of many potential CBWCB management alternatives in WRD's Draft Groundwater Basins Master Plan (GBMP) (CH2MHILL, 2012). This alternative would include seven additional desalter wells with a total capacity of 15,000 AFY. Since management alternatives developed and assessed in the GBMP are conceptual in nature and may or may not ultimately be implemented, the additional desalters and associated extraction wells are included as a conceptual implementation measure. Any additional desalters will increase the outflow of S/Ns from the basins, thereby reducing S/N concentrations in groundwater.

Groundwater Recharge

IM 46. Additional Tertiary-Treated/AWT Recycled Water Recharge in the Montebello Forebay – As discussed in Section 7.2, GRIP recycled water projects are planned in the Montebello Forebay to recharge additional tertiary-treated recycled water and/or AWT recycled water at the MFSG. Other recycled water projects in the Montebello Forebay were described and assessed in the Draft GBMP (CH2MHILL, 2012) to fully utilize SDLAC's San Jose Creek WRP and Los Coyotes WRP to provide up to an additional 45,800 AFY of tertiary-treated/AWT recycled water for spreading and injection. These potential future expansions were projected to occur beyond the SNMP 2025 planning horizon. Since management alternatives developed and assessed in the GBMP are conceptual in nature and may or may not ultimately be implemented, this alternative is included as a conceptual implementation

measure. Depending on the type and amount of recycled water (tertiary-treated versus AWT) recharged, S/N loading could increase in the Central Basin, but S/N concentrations in groundwater could decrease since AWT recycled water has lower S/N concentrations than ambient groundwater quality. Potential impacts of any proposed groundwater recharge projects will be assessed in detail in the future and will be required to comply with all applicable State and Local regulations.

IM 47. Los Angeles River Aquifer Stormwater Recharge and Recovery Facility – In the Draft GBMP (CH2MHILL, 2012), the Los Angeles River Aquifer Recharge and Recovery Facility (ARRF) Project is proposed as a CBWCB management alternative that would capture approximately 5,000 AFY of stormwater for recharge. Stormwater flows would be diverted to an infiltration basin along the Interstate 710 Freeway where it would percolate into the upper, shallow aquifer above the confining aquitard. The treated water would then be recovered (pumped) for subsequent injection through a vadose zone infiltration conduit into the Central Basin as a source of supplemental replenishment supply. This alternative would provide natural filtration to remove nitrate, pathogenic microorganisms, and constituents of emerging concern. Since management alternatives developed and assessed in the GBMP are conceptual in nature and may or may not ultimately be implemented, this alternative is included as a conceptual implementation measure. Recharge of stormwater adds S/N load, but decreases concentrations in groundwater because stormwater has lower S/N concentrations compared with ambient groundwater.

IM 48. Montebello Forebay Extraction and Intrabasin Transfer Project – This conceptual project is a CBWCB management alternative assessed in the Draft GBMP (CH2MHILL, 2012). For this project, 25,000 AFY of groundwater would be extracted in the Montebello Forebay to reduce groundwater levels, which would provide additional storage capacity and allow for 17,000 AFY of additional stormwater recharge. A pipeline would be constructed to deliver the extracted water from the Montebello Forebay to participating water purveyors as far south as the City of Long Beach. Since management alternatives developed and assessed in the GBMP are conceptual in nature and may or may not ultimately be implemented, this alternative is included as a conceptual implementation measure. This project is not anticipated to have an impact on S/N loading, but the extraction of groundwater could decrease S/N concentrations in groundwater.

IM 49. New Los Angeles Forebay AWT Recycled Water Recharge and Recovery – The Draft GBMP (CH2MHILL, 2012) assesses the potential for a new replenishment supply in the Los Angeles Forebay produced by a new AWT recycled water facility. The facility, identified in the City of Los Angeles Recycled Water Master Planning, Groundwater Replenishment Master Planning Report (RMC, 2012), would skim and treat wastewater from the major sewer trunk line otherwise destined for the Hyperion WTP. The facility could produce 45,480 AFY of AWT recycled water for groundwater recharge. This is a conceptual project that may or may not be implemented. Recharge of AWT recycled water in the Los Angeles Forebay will increase S/N loading, but will decrease S/N concentrations in groundwater since AWT recycled water would have lower S/N concentrations than ambient groundwater quality.

IM 50. Whittier Narrows Conservation Pool Project – As described for Implementation Measure No. IM 8 in Section 6.2.1, this next phase of the Whittier Narrows Conservation Pool Project will increase the conservation pool elevation behind the Whittier Narrows Dam from 201.6 to 205 ft-msl resulting in an estimated additional capture of 1,100 AFY of stormwater. This project is not expected to be implemented within the SNMP 2025 planning horizon. Recharge of stormwater adds S/N load, but

decreases concentrations in groundwater because stormwater has lower S/N concentrations compared with ambient groundwater.

Stormwater/Runoff Management

IM 51. Additional LID Projects and Stormwater BMPs – Additional LID projects and stormwater BMPs may be implemented in the CBWCB through the SNMP future planning period (refer to Implementation Measure Nos. IM 36 and IM 37 in Section 4.1.2). These projects are only conceptual at this time. Overall, LID/BMP projects potentially could decrease S/N loading and concentrations in groundwater.

Wastewater Salinity/Nutrient Source Control

IM 52. Residential Self-Regenerating Water Softeners (SRWS) Control – There are currently no plans within the CBWCB for SDLAC or the City of Los Angeles to control residential SRWS or implement voluntary rebate programs. Thus, this project is only conceptual. While SRWS can add significant salt loading to the wastewater system, regulation of residential SRWS has historically been a very contentious issue and there are significant hurdles facing local agencies that wish to enact controls. Any efforts to control or reduce the use of SRWS would help to reduce salt (TDS and chloride) loading and concentrations in groundwater.

The State Health and Safety Code (California Code of Regulations, Section 116786) authorizes a local agency to prospectively limit the availability, or prohibit the installation, of residential water softening or conditioning appliances that discharge to the sewer system through adoption of an ordinance if the following findings are made, substantiated by an independent study, and included in the ordinance:

- Limiting the availability, or prohibiting the installation, of the appliance is a necessary means of achieving compliance with waste discharge requirements.
- The local agency has adopted and is enforcing regulatory requirements that limit the volumes and concentrations of saline discharges from nonresidential sources in the community waste disposal system to the extent technologically and economically feasible.

In 2009, Assembly Bill 1366 added Section 13148 to the California Water Code that provides other mechanisms to control residential SRWS. It only applies to specific hydrologic regions identified in the California Water Plan: the Central Coast, South Coast, San Joaquin River, Tulare Lake regions, and the Counties of Butte, Glenn, Placer, Sacramento, Solano, Sutter, and Yolo.[8] An agency is allowed to adopt an ordinance controlling residential SRWS if the applicable RWQCB makes a finding at a public hearing that the control of residential salinity input will contribute to the achievement of water quality objectives based on:

- A TMDL that addresses salinity-related pollutants in a water segment;
- A SNMP for a groundwater basin or subbasin;
- WDR, WRR, or master reclamation permit for a supplier or distributor of recycled water; or

[8] See http://www.water.ca.gov/groundwater/bulletin118/gwbasin_maps_descriptions.cfm and http://www.water.ca.gov/groundwater/bulletin118/maps/statewide_basin_map_V3_subbas.pdf

- A cease and desist order directed to a local agency.

An adopted ordinance can among, many options, require the removal of previously-installed residential SRWS and/or prospectively prohibit the installation of residential SRWS. If the agency includes in its ordinance removal or replacement of previously installed softeners, it must develop a program to compensate the owner for the "reasonable value" of the removed residential SRWS.

If a regional wastewater management agency (such as SDLAC) were to adopt an ordinance, it has no legal authority to enter residences and enforce the ban. Consequently, each city or local government within the agency's regional service area would have to adopt its own ordinance to implement and enforce the prospective ban.

The SNMP analysis indicates that existing and planned implementation measures are adequate to manage S/N sources for the sustainable protection of groundwater quality. However, future updates to the SNMP may consider SRWS control measures if water quality changes in the future.

IM 53. San Jose Creek WRP Process Optimization Project – This conceptual project would provide flow equalization and treatment process upgrades, which would enable SDLAC's San Jose Creek WRP to accept more wastewater and thereby produce more recycled water, either tertiary-treated or AWT. Further, flow equalization would make more recycled water available to water purveyors overnight when their demand is highest, thus facilitating increased recycled water use. This project is not expected to be implemented within the SNMP 2025 planning horizon and is therefore placed in the conceptual category. Depending on the type and amount of recycled water (tertiary-treated versus AWT) recharged or used for irrigation, S/N loading could increase in the Central Basin, but S/N concentrations in groundwater could decrease since AWT recycled water has lower S/N concentrations than ambient groundwater quality.

Conservation

IM 54. Xeriscape Policy – Some water agencies in the CBWCB provide rebates for weather-based irrigation controls and turf removal programs for residential and commercial customers. Additional information is available on the MWD SoCal Water$mart website: http://socalwatersmart.com. These projects have the potential to reduce S/N loading and concentrations in groundwater in the CBWCB.

IM 55. Senate Bill x7-7 and Other Activities – As described for Implementation Measure Nos. IM 24 and IM 43, conservation is a fundamental component of the GLAC water management planning, which has included aggressively implementing water conservation since the 1990s. Many local water agencies are signatories to the CUWCC memorandum of agreement for urban water conservation and also have UWMPs to ensure water supply reliability during normal, dry, and multiple dry years. The backbone of MWD's conservation program is the CCP, initiated in 1988, that contributes $195 per AF of water conserved to assist member agencies in pursuing urban BMPs and other demand management opportunities. All of the region's water suppliers have water conservation programs for their customers.

Local agencies are also developing water conservation master plans and conservation rate structures as well as working closely through IRWM planning efforts to develop coordinated water efficiency programs. To these ends, the GLAC IRWMP (GLAC IRWMP Leadership Committee, 2013) has been developed for the greater Los Angeles County area.

SB x7-7, enacted in 2009, requires each urban retail agency to establish in its UWMP a reduction goal to help California achieve a 20% statewide reduction in daily per capita water use by 2020. SB x7-7 requires urban water suppliers to calculate baseline water use and set an interim 2015 (half the 2020 target) and 2020 water use targets. One hundred fifty - seven South Coast urban water suppliers have submitted 2010 urban water management plans to DWR. SB x7-7 provides options to meet these targets including shifting to more recycled water use.

The GLAC IRWMP provides estimates of water conservation target volumes (water use efficiency excluding water recycling) for the CBWCB in 2035. Accordingly, existing water conservation efforts are planned to continue through the SNMP future planning period and beyond. Overall, SB x7-7 has the potential to reduce S/N loading and concentrations in groundwater, and is accordingly included as an implementation measure.

4.2 Proposed Major Recycled Water Projects

Recognizing the potential negative impacts of greenhouse gas emissions, climate change, and drought, the use of recycled water by stakeholders in the CBWCB has played a vital role in increasing the reliability and sustainability of the overall water supply. Because one of the goals of the Recycled Water Policy is increased use of recycled water to reduce dependency on expensive, energy-intensive (due to pumping, distribution, and other costs), and increasingly unreliable imported water supplies, the CBWCB stakeholders have proposed some major recycled water projects for implementation while still protecting groundwater quality and preserving beneficial uses.

Table 4-3 describes the proposed major recycled water projects in the CBWCB, estimated implementation dates, and their potential impacts to groundwater quality and S/N loading. The projects listed in Table 4-3 are described in detail below and recycled water project (RW) numbers correspond to the numbers shown in the second column from the left in Table 4-3. These projects are expected to be implemented by or before the SNMP 2025 planning horizon. Table 4-3 is not inclusive of all recycled projects that may be implemented in the future in the CBWCB. As other recycled water projects are proposed throughout the SNMP future planning period, it is expected that each project will be implemented in accordance with all applicable regulations, including the California Environmental Quality Act (CEQA). The SNMP will be updated every 10 years, and Table J-8 will be updated accordingly.

Some of the proposed recycled water projects listed in Table 4-3 (specifically Recycled Water Project No. RW 1), are also identified as implementation measures since they are expected to reduce S/N loading and improve groundwater quality. Other recycled water projects listed in Table 4-3 may add S/N load and increase S/N concentrations in groundwater.

TABLE 4-3
PROPOSED MAJOR RECYCLED WATER PROJECTS IN THE CBWCB

Category	Recycled Water Project (RW) No.	Description of Project	Basin	Estimated Implementation Date	Impact to S/N Loading to Groundwater	Impact to S/N Concentrations in Groundwater
Seawater Intrusion Control	1	Increase AWT recycled water supply to all seawater intrusion barriers (WCBB, AGB, and DGB)	CBWCB	2017	Decrease	Decrease
Groundwater Recharge	2A	GRIP A (AWT & tertiary-treated recycled water to replace imported water at MFSG)	CB	2017/18	No change	No change
	2B	GRIP B (tertiary-treated recycled water to replace imported water at MFSG)	CB	2014/15	Increase	Increase
Non-potable recycled water reuse	3	Increased non-potable reuse of recycled water for irrigation	CBWCB	Ongoing	Increase	Increase
	4	Recycled water quality limits at the SMCLs for TDS and chloride and MCL for nitrate	CBWCB	Upon approval of the SNMP by LARWQCB	Increase	Increase

CBWCB – Central Basin and West Coast Basin
CB – Central Basin
WCB – West Coast Basin
AGB – Alamitos Gap Seawater Intrusion Barrier
WCBB – West Coast Basin Seawater Intrusion Barrier
DGB – Dominguez Gap Seawater Intrusion Barrier
LARWQCB – Los Angeles Regional Water Quality Control Board
SNMP – Salt and Nutrient Management Plan
AWT – advanced water treatment
MFSG – Montebello Forebay Spreading Grounds
MCL – Maximum Contaminant Level
SMCL – Secondary Maximum Contaminant Level
GRIP – Groundwater Reliability Improvement Program
GRIP A – GRIP Recycled Water Project A
GRIP B – GRIP Recycled Water Project B
TDS – total dissolved solids

All the recycled water projects listed in Table J-8 were quantitatively assessed for their S/N groundwater quality impacts and use of assimilative capacity using the SNMP mixing model, as discussed further in the SNMP. The SNMP analysis demonstrated that projects that degrade groundwater quality are more than offset by projects (implementation measures) that improve groundwater quality. Further, an implementation plan that includes any of the combinations of projects described in Section 7.3 *Future Projects and Simulated Scenarios*, even including those that slightly degrade groundwater quality, is protective of groundwater quality and preserves beneficial uses. None of the identified major recycled water projects use more than 10% of the available assimilative capacity of the Central Basin and in the West Coast Basin, where there is no available assimilative capacity; the combined projects improve groundwater quality with respect to TDS and chloride and have essentially no impact on nitrate in groundwater. Overall, the SNMP analysis demonstrated that implementation of the proposed major recycled water projects will result in groundwater quality remaining below BPO/BSBPOs in the Central Basin and BSBPOs for chloride and TDS being achieved in the future in the West Coast Basin. Nitrate in groundwater in both basins remains significantly below the BPO through the future.

Because the negative groundwater quality impacts of the proposed major recycled water projects have been demonstrated in the SNMP to be minimal and more than offset by implementation measures that improve groundwater quality, the SNMP may be used to provide a basis for streamlining of the permitting process for recycled water projects in the future in the CBWCB, per the Recycled Water Policy.

This SED was prepared to document the program-level environmental analysis of the proposed major recycled water projects, as well as the implementation measures presented in Section 4.1. The proposed projects will undergo their own individual CEQA analysis and will comply with all applicable rules and regulations before they can be implemented.

4.2.1 Seawater Intrusion Control Projects

RW 1. Increase AWT Recycled Water Supply to All Seawater Intrusion Barriers (AGB, WCBB and DGB) – Refer to description for Implementation Measure No. IM 30 in Section 4.1.2.

4.2.2 Proposed Groundwater Recharge Projects

As discussed in Section 6.2.1 (Implementation Measure No. IM 10 in Section 6.2.1), two GRIP recycled water project alternatives, GRIP A and GRIP B, were proposed by WRD to completely replace imported water (up to 21,000 AFY) with a reliable alternative supply source (i.e. recycled water) for recharge at the MFSG. Both GRIP A and GRIP B are currently being considered for implementation and are described below as Recycled Water Project Nos. RW 2A and RW 2B, respectively.

The GRIP A and GRIP B alternatives are the end result of many studies conducted over a number of years to assess multiple potential projects to improve water supply reliability in the face of imported water supply uncertainties and increasing costs. These studies evaluated a wide spectrum of projects, including consideration of different levels of recycled water treatment and blending, modifications to existing wastewater treatment facilities, continued imported water deliveries, alternative imported water supplies, desalination, and increased stormwater capture. GRIP A and GRIP B were determined to

be the best alternatives for implementation and thus, potential water quality impacts for both scenarios were simulated by the SNMP mixing model (refer to Section 7 of the SNMP for further details).

As the CEQA Lead Agency, WRD issued the Draft Environmental Impact Report (EIR) for GRIP on March 23, 2014 and made it available for public comment through May 9, 2014 in accordance with the State required 45-day public review period. The Draft EIR (AECOM, 2014) is herein incorporated by reference for this SED and is available online at the following website: http://www.wrd.org/business/water-replenishment-grip.php. In the Draft EIR, GRIP A is identified as the "proposed project," while GRIP B is identified as an "alternative" to the "proposed project." As a result, it is anticipated that GRIP A likely would be the project to be implemented by WRD. However, this is subject to change until the Final EIR is prepared and certified by WRD.

RW 2A. GRIP Recycled Water Project A (GRIP A) – This planned recycled water project will completely replace the current use of 21,000 AFY of imported water at the MFSG with a combination of both tertiary-treated and AWT recycled water for groundwater replenishment. Based on the GRIP Draft EIR (AECOM, 2014), GRIP A is proposed to be located within portions of incorporated and unincorporated Los Angeles County, including in the unincorporated community of Whittier Narrows and the Cities of Industry and Pico Rivera. GRIP A consists of three main components:

1) Additional supply (11,000 AFY) of tertiary-treated recycled water produced by SDLAC's San Jose Creek WRP for recharge at the MFSG – This tertiary-treated recycled water would be conveyed to the MFSG via an existing underground outfall pipeline.

2) An advanced water treatment plant will be constructed by WRD to produce AWT recycled water (10,000 AFY) for recharge at the MFSG – Source water for the proposed AWT plant will consist of tertiary-treated recycled water produced by SDLAC's San Jose Creek WRP. The AWT plant is proposed for construction at either undeveloped areas within SDLAC's San Jose Creek WRP property or on adjacent parcels owned by the Los Angeles Department of Water and Power (LADWP) and United States Army Corps of Engineers. If the proposed AWT plant location is revised in the future, the GRIP Draft EIR (AECOM, 2014) will be revised and certified accordingly by WRD.

   As described in the GRIP Draft EIR (AECOM, 2014), the proposed AWT plant would occupy approximately 54,600 total square feet and include the following treatment processes: microfiltration/ultrafiltration (MF/UF), reverse osmosis (RO), and ultraviolet advanced oxidation process (UV-AOP). Backwash water and high-salinity brine will be the byproducts of the AWT process. The MF backwash would be diverted from the AWT plant into the San Jose Creek WRP sewer for on-site processing. The brine would be diverted from the AWT plant into the existing San Jose Creek WRP sewer for conveyance to and processing at SDLAC's Joint Water Pollution Control Plant in the City of Carson.

3) An underground pipeline is proposed for construction by WRD that would convey the AWT recycled water produced by the proposed treatment plant to the MFSG for recharge – Based on the currently proposed location of the AWT plant (AECOM, 2014), the proposed pipeline would follow portions of an existing SDLAC outfall pipeline located along the Interstate 605 Freeway. If the proposed AWT plant location is revised in the future, the proposed pipeline will modified as

necessary and the GRIP Draft EIR (AECOM, 2014) will be revised and finalized by WRD accordingly.

The estimated implementation date for GRIP A is WY 2017-18. Based on the results of the future S/N loading analysis conducted for the SNMP, implementation of GRIP A will result in similar S/N groundwater quality as from the continued operations of current recharge at the MFSG with the blend of imported water, stormwater, and recycled water.

In the GRIP Draft EIR (AECOM, 2014), GRIP A is identified as the "proposed project," while GRIP B is identified as an "alternative" to the "proposed project." As a result, it is anticipated that GRIP A likely would be the project to be implemented by WRD. However, this is subject to change until the Final EIR is prepared and certified by WRD.

RW 2B. GRIP Recycled Water Project B (GRIP B) – As an alternative to GRIP A, GRIP B would completely replace the current use of 21,000 AFY of imported water at the MFSG with tertiary-treated recycled water for groundwater replenishment. The 21,000 AFY of tertiary-treated recycled water will be supplied by SDLAC's San Jose Creek WRP and conveyed to the MFSG via an existing outfall pipeline. Unlike GRIP A, no physical changes to the environment would be required to implement GRIP B. The use of existing infrastructure eliminates the need to construct a new treatment plant or pipelines. For the SNMP analysis, GRIP B was modeled to begin in WY 2014-15.

Based on the results of the future S/N loading analysis conducted for the SNMP, implementation of GRIP B will result in slightly higher S/N concentrations in groundwater as compared with the continued operations of current recharge at the MFSG with a blend of imported water, stormwater, and recycled water. However, the SNMP mixing model results indicate that potential impacts from implementation of GRIP B are more than offset by projects that reduce S/N loading in the Central Basin. Thus, average S/N concentrations will not exceed or threaten to exceed their respective WQOs in the Central Basin in the future.

In the GRIP Draft EIR (AECOM, 2014), GRIP B was identified as an "alternative" to GRIP A and thus, was rejected from consideration after the CEQA evaluation. As a result, it is anticipated that GRIP A likely would be the project to be implemented by WRD. However, this is subject to change until the Final EIR is prepared and certified by WRD.

4.2.3 Proposed Non-Potable Recycled Water Reuse Projects

RW 3. Increased Recycled Water Reuse for Irrigation – The Recycled Water Policy encourages the increased use of recycled water as a reliable, drought proof, local, safe source of water supply. Recycled water is utilized for a variety of non-potable reuse (NPR) applications in the CBWCB, including irrigation and industrial operations. For the purposes of the SNMP, irrigation is the primary consideration since it can contribute to S/N loading to the groundwater basins. While recycled water use for irrigation results in increased S/N loading and does not meet the definition of implementation measures, which are projects or programs to control, reduce, or manage (mitigate) S/N loading on a sustainable basis, increased recycled water use is proposed by the CBWCB stakeholders because it is a critical component of the CBWCB water supply sustainability portfolio, meets the goals of the Recycled Water Policy (see Section 2.1), and supports the Governor's recent drought proclamations (see Section 3.2).

As discussed in Appendix H of the SNMP, NPR of recycled water is projected to increase during the SNMP future planning period. Total NPR in the Central Basin is projected to increase from about 9,700 AFY in WY 2009-10 to 22,100 AFY in WY 2014-25. Of this total, recycled water used for irrigation in the Central Basin is projected to increase from about 7,600 AFY in WY 2009-10 to 17,200 AFY in WY 2024-25. In the West Coast Basin, NPR of recycled water is projected to increase from about 21,100 AFY in WY 2009-10 to 44,000 AFY in WY 2024-25. Of this total, recycled water used for irrigation in the West Coast Basin is projected to increase from about 3,900 AFY in WY 2009-10 to 5,800 AFY in WY 2024-25.

As part of the SNMP, the CBWCB stakeholders, in close consultation with the LARWQCB, modeled the impacts on groundwater quality from the increased use of recycled water for irrigation at the average S/N concentrations in the effluent from applicable WRPs during the baseline period (WY 2000-01 through 2009-10). Modeling results show that increased recycled water use for irrigation increases TDS and chloride concentrations in groundwater a very small amount and uses a very small amount of the available assimilative capacity (significantly less than 10%). There was no impact to nutrient (nitrate) loading. Overall, increased recycled water use for irrigation has minimal impacts on groundwater quality and these minor impacts are more than offset by implementation measures and other projects that reduce S/N loading. Groundwater quality in the CBWCB will either continue to improve or remain well below WQOs.

In direct response to California Governor Jerry Brown's April 2014 Executive Order proclaiming a continued state of emergency due to severe drought conditions, the SWRCB adopted *General Waste Discharge Requirements for Recycled Water Use* (General Order No. WQ 2014-0090-DWQ; http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2014/wqo2014_0090_dwq_revised.pdf) on June 3, 2014 to streamline permitting for recycled water use (i.e. relieve producers, distributors, and users of recycled water from the lengthy permit approval process) throughout the State. This General Order is intended to increase local water supplies by promoting the non-potable use of recycled water in communities grappling with drought conditions. Additionally, the General Order is consistent with the Recycled Water Policy that was adopted by the SWRCB in 2009 and amended in 2013, which required the development of SNMPs for all groundwater basins in California. Thus, all uses of recycled water allowed by the General Order must be consistent with the SNMPs that will be approved by the Regional Water Quality Control Boards. Importantly, the General Order did not modify existing permitted recycled water quality limits established for irrigation. If this was the case, this would have significantly limited the sustainable and cost effective use of recycled water to offset demand for raw and potable water supplies in the CBWCB.

RW 4. Recycled Water Quality Limits at SMCLs for TDS and Chloride and MCL for Nitrate – Currently, permitted recycled water quality limits established for non-potable reuse (irrigation, industrial and recreational activities) are generally more conservative than the SMCLs established for TDS and chloride. As part of the SNMP, the CBWCB stakeholders, in close consultation with the LARWQCB, modeled the impacts on groundwater quality from the increased use of recycled water for irrigation at the SMCLs for TDS and chloride and at the Maximum Contaminant Level (MCL) for nitrate. The modeling results showed minimal impacts to the basins when utilizing recycled water for irrigation at these concentrations, even at increased volumes. Overall, increased recycled water use for irrigation at the SMCLs for TDS and chloride and MCL for nitrate has minimal impacts on groundwater quality and these minor impacts are more than offset by implementation measures and other projects that reduce S/N

loading. Groundwater quality in the CBWCB will either continue to improve or remain well below WQOs. Therefore, the CBWCB stakeholders believe that modification of existing permit requirements for recycled water for non-potable reuse are warranted to allow for increased use of recycled water to further reduce dependency on potable water supplies, meet the goals[9] set forth in the Recycled Water Policy to increase the use of recycled water, and more fully embrace the spirit of the Governor's recent drought proclamations (see Section 3.2).

9 The Recycled Water Policy establishes the following goals: 1) substitute as much recycled water for potable water as possible by 2030 and 2) increase the use of recycled water over 2002 levels by at least one million acre-feet per year (AFY) by 2020 and by at least two million AFY by 2030.

SECTION 5

Program Alternatives

In accordance with CEQA requirements, three reasonable program alternatives, Programs 1 through 3, as described in Section 5.1, were developed by the LARWQCB and CBWCB stakeholders based on the primary objectives of the SNMP and Recycled Water Policy. Program 2, as discussed further in Section 5.2, was selected as the program alternative that is most likely to be implemented, i.e. Recommended Program Alternative. As alternatives to the Recommended Program Alternative, Programs 1 and 3 are reasonable options that could feasibly avoid or substantially lessen some of the identified environmental effects of the Recommended Program Alternative while still attaining most of the basic objectives of the SNMP and Recycled Water Policy (CCR, Title 14, Section 15126.6).

Per CEQA, the SED does not need to consider every conceivable alternative to the Recommended Program Alternative and is not required to consider alternatives which are infeasible. Rather, a "rule of reason" governs the selection and consideration of alternatives, requiring only those alternatives necessary to permit a reasoned choice and that will foster informed decisionmaking and meaningful public participation (CCR, Title 14, Section 15126.6).

Potential environmental impacts associated with implementation of Program 2 are discussed in Section 6. Potential environmental impacts associated with the other program alternatives (i.e. Programs 1 and 3) are reviewed in Section 7.

5.1 Description of Program Alternatives

The following subsections describe the Recommended Program Alternative (Program 2), as well as two alternatives (Programs 1 and 3) to the Recommended Program Alternative. Programs 2 and 3 were developed based on the implementation measures and proposed major recycled water projects described in Section 4. Some of the proposed recycled water projects are mutually exclusive (e.g., GRIP A and GRIP B) and thus, were separated into two distinct program alternatives. Program 1 is the "No Future Projects" alternative and was developed to allow decisionmakers to compare the impacts of approving the Recommended Program Alternative with the impacts of not approving the Recommended Program Alternative.

5.1.1 Program 1: No Future Projects

Description of Program 1: The CBWCB stakeholders will not carry out any of the planned implementation measures or proposed major recycled water projects identified in Section 4. This program alternative is essentially continuation of existing implementation measures or baseline conditions.

According to CEQA Guidelines (CCR, Title 14, Section 15126.6(e)), discussion of the No Future Projects alternative must include a description of existing conditions and reasonably foreseeable future conditions that would exist if the Recommended Program Alternative was not approved. However, the No Future Projects alternative is contrary to the Recycled Water Policy, which requires development of an SNMP that must include implementation measures that will manage S/N loading in the basins on a sustainable basis. Additionally, one of the main purposes of the Recycled Water Policy is to increase the use of recycled water from municipal wastewater sources in accordance with State and Federal water quality laws (SWRCB, 2009a). Therefore, failure to develop and carry out proposed implementation measures and recycled water projects is not in compliance with the Recycled Water Policy.

Program 1 does not meet the objectives of the Recycled Water Policy or the CBWCB SNMP and is thus, not feasible.

5.1.2 Program 2: Implementation Measures, Recycled Water – Volume & Quality, and GRIP A

Description of Program 2: This program alternative includes the following four components:

1. All the implementation measures contained in the SNMP
    - As required by the Recycled Water Policy, these implementation measures were developed by the CBWCB stakeholders to manage S/N loading in the basins on a sustainable basis. For a further description of all the implementation measures, refer to Implementation Measures IM 1 through IM 55 in Section 4.1 and Table 4-1.

2. Increased use of recycled water for irrigation in the CBWCB
    - Recycled water use for non-potable reuse (NPR) applications (i.e. irrigation and industrial operations) is expected to increase in the basins through the SNMP future planning period. For the purposes of the SNMP, irrigation is the primary consideration since it can contribute to S/N loading to the groundwater basins. In the Central Basin, recycled water used for irrigation is projected to increase from about 7,600 AFY in WY 2009-10 to 17,200 AFY in WY 2024-25. In the West Coast Basin, recycled water used for irrigation is projected to increase from about 3,900 AFY in WY 2009-10 to 5,800 AFY in WY 2024-25. For a further description of this proposed project, refer to Recycled Water Project No. RW 3 in Section 4.2 and Table 4-3.

3. Recycled water quality limits at the SMCLs for TDS and chloride and the MCL for nitrate
    - Upon approval of the SNMP, the CBWCB stakeholders plan to pursue modification of existing permitted recycled water quality limits for non-potable reuse. Currently, permitted recycled water quality limits established for non-potable reuse (irrigation, industrial and recreational activities) are generally more conservative than the SMCLs established for TDS and chloride. SNMP mixing model results showed minimal potential impacts to the basins when utilizing recycled water for irrigation, even at increased volumes, at the SMCLs for TDS and chloride and at the MCL for nitrate. For a further description of this proposed project, refer to Recycled Water Project No. RW 4 in Section 4.2 and Table 4-3.

4. GRIP A

    - This proposed recycled water project would completely replace imported water used for recharge at the MFSG with a combination of 11,000 AFY of tertiary-treated recycled water produced by SDLAC's San Jose Creek Water Reclamation Plant and 10,000 AFY of AWT recycled water produced by a new treatment plant to be constructed by WRD. In addition, a new pipeline is proposed for construction to deliver the AWT recycled water from the new treatment plant to the MFSG (AECOM, 2014). For a further description of this proposed project, refer to Recycled Water Project No. RW 2A in Section 4.2 and Table 4-3.

The proposed major recycled water projects (listed above as Items 2, 3, and 4) were developed by the CBWCB stakeholders to reduce reliance on potable water supplies, meet the goals of the Recycled Water Policy (see Section 2.1), and support the Governor's recent drought proclamations (see Section 3.2), while still protecting groundwater quality and preserving beneficial uses. As part of the SNMP, the CBWCB stakeholders, in close consultation with the LARWQCB, modeled the impacts on groundwater quality from the implementation of these proposed recycled water projects. Modeling results showed that the individual and combined potential impacts from GRIP A, the increased usage of recycled water for irrigation, and the use of recycled water at SMCLs/MCL for S/Ns were minimal with respect to groundwater quality. Additionally, these minimal impacts were more than offset by projects that reduce S/N loading in the basins. Thus, groundwater quality will either continue to improve in the basins and/or average S/N concentrations will not exceed or threaten to exceed their respective WQOs in the future.

Program 2 meets the objectives of the Recycled Water Policy and the CBWCB SNMP and is therefore, reasonable and feasible.

5.1.3 Program 3: Implementation Measures, Recycled Water – Volume & Quality, and GRIP B

Description of Program 3: This program alternative includes the following four components:

1. All the implementation measures contained in the SNMP

    - As required by the Recycled Water Policy, these implementation measures were developed by the CBWCB stakeholders to manage S/N loading in the basins on a sustainable basis. For a further description of all the implementation measures, refer to Implementation Measures IM 1 through IM 55 in Section 4.1 and Table 4-1.

2. Increased use of recycled water for irrigation in the CBWCB

    - Recycled water use for non-potable reuse (NPR) applications (i.e. irrigation and industrial operations) is expected to increase in the basins through the SNMP future planning period. For the purposes of the SNMP, irrigation is the primary consideration since it can contribute to S/N loading to the groundwater basins. In the Central Basin, recycled water used for irrigation is projected to increase from about 7,600 AFY in WY 2009-10 to 17,200 AFY in WY 2024-25. In the West Coast Basin, recycled water used for irrigation is projected to increase from about 3,900 AFY in WY 2009-10 to 5,800 AFY in WY 2024-25. For a further

description of this proposed project, refer to Recycled Water Project No. RW 3 in Section 4.2 and Table 4-3.

3. Recycled water quality limits at the SMCLs for TDS and chloride and the MCL for nitrate
    - Upon approval of the SNMP, the CBWCB stakeholders plan to pursue modification of existing permitted recycled water quality limits for non-potable reuse. Currently, permitted recycled water quality limits established for non-potable reuse (irrigation, industrial and recreational activities) are generally more conservative than the SMCLs established for TDS and chloride. SNMP mixing model results showed minimal potential impacts to the basins when utilizing recycled water for irrigation, even at increased volumes, at the SMCLs for TDS and chloride and at the MCL for nitrate. For a further description of this proposed project, refer to Recycled Water Project No. RW 4 in Section 4.2 and Table 4-3.

4. GRIP B
    - As an alternative to GRIP A, GRIP B would completely replace imported water for recharge at the MFSG with 21,000 AFY of tertiary-treated recycled water produced by SDLAC's San Jose Creek Water Reclamation Plant. There will be no physical changes to the environment associated with this project since it would be utilizing existing infrastructure. For a further description of this proposed project, refer to Recycled Water Project No. RW 2B in Section 4.2 and Table 4-3.

The proposed major recycled water projects (listed above as Items 2, 3, and 4) were developed by the CBWCB stakeholders to reduce reliance on potable water supplies, meet the goals of the Recycled Water Policy (see Section 2.1), and support the Governor's recent drought proclamations (see Section 3.2), while still protecting groundwater quality and preserving beneficial uses. As part of the SNMP, the CBWCB stakeholders, in close consultation with the LARWQCB, modeled the impacts on groundwater quality from the implementation of these proposed recycled water projects. Modeling results showed that the individual and combined potential impacts from GRIP B, the increased use of recycled water for irrigation, and the use of recycled water at SMCLs/MCL for S/Ns were either minimal or more than offset by projects that reduce S/N loading in the basins. Thus, groundwater quality will either continue to improve in the basins and/or average S/N concentrations will not exceed or threaten to exceed their respective WQOs in the future.

Program 3 meets the objectives of the Recycled Water Policy and the CBWCB SNMP and is therefore, reasonable and feasible.

5.2 Recommended Program Alternative

As discussed in Section 5.1.1, Program 1 was eliminated for consideration because it did not include planned and conceptual implementation measures that were developed by the CBWCB stakeholders to manage S/Ns in the basins on a sustainable basis. Since this does not meet the objectives of the Recycled Water Policy or CBWCB SNMP, Program 1 is not considered reasonable or feasible.

Both Programs 2 and 3 include the implementation measures and proposed major recycled water projects that were developed by the CBWCB stakeholders (refer to Section 4) to manage S/N loading on

a sustainable basis and/or reduce dependency on potable water supplies by increasing the use of recycled water. The only difference between Programs 2 and 3 are the GRIP Recycled Water Projects A and B, respectively.

Under Program 2, GRIP A involves the complete replacement of imported water for recharge at the MFSG with a blend of AWT/tertiary-treated recycled water. The water quality of the replacement recycled water blend mirrors that of the imported water; therefore, the mixing model used to develop the SNMP showed that there will be no significant changes to S/N loading or concentrations in groundwater due to the implementation of GRIP A. Under Program 3, GRIP B involves complete replacement of imported water for recharge at the MFSG with tertiary-treated recycled water only. In contrast to GRIP A, the SNMP mixing model results show that GRIP B will increase S/N loading and concentrations in groundwater, although not to a level that exceeds the LARWQCB WQOs and does not use more than 10% of the available assimilative capacity. Additionally, any negative groundwater quality impacts associated with GRIP B will be more than offset by positive impacts of other projects and implementation measures. Thus overall, groundwater quality will remain well below WQOs in the Central Basin and WQOs will be achieved in the future in the West Coast Basin. In comparison to GRIP A, GRIP B results in greater S/N loading and would increase S/N concentrations in groundwater. Therefore, any overall water quality impacts due to the implementation of Program 3 would be greater than Program 2. As a result, for purposes of this SED, Program 2 was selected as the most likely program alternative to be implemented (i.e. Recommended Program Alternative) because it is the most environmentally advantageous program alternative with respect to groundwater quality. The selection of Program 2 as the Recommended Program Alternative also is supported by the GRIP Draft EIR (AECOM, 2014), which identifies GRIP A as the proposed project to be implemented.

Section 6 presents the results of the program-level CEQA analysis of Program 2; the identified potential environmental impacts associated with the implementation of Program 2 were assessed relative to existing baseline environmental conditions. Section 7 presents the results of the relative comparison of the potential environmental impacts associated with Programs 1 and 3 with respect to Program 2.

5.3 Program-Level Environmental Analysis

A program-level environmental analysis of the program alternatives described in Section 5.1 was conducted and results are presented in this SED. Given the level of detail available at this time for these program alternatives, this SED identifies broad environmental impacts and mitigation approaches at a program level. Subsequent project-level environmental analyses will be conducted by the responsible parties as appropriate, as specific projects are implemented over the SNMP future planning period. Specific locations of project components will be identified in future project-level environmental documentation. Section 2.6 further discusses the differences between a program-level and project-level environmental analysis.

The program-level environmental analysis presented in this SED assumes that the CBWCB stakeholders will design, install, and maintain projects associated with the program alternatives following all applicable laws, regulations, ordinances, and formally adopted municipal and/or agency codes, standards, and practices.

SECTION 6

Environmental Analysis of the Recommended Program Alternative

This section presents the environmental analysis of the Recommended Program Alternative (Program 2), specifically the identification of potential environmental impacts and appropriate mitigation measures associated with the implementation of Program 2. As described in Section 5.1.2, the following four components of Program 2 were assessed in accordance with CEQA requirements:

1. Planned and conceptual implementation measures, identified as IM 30 through IM 55 in Table 4-1 and Section 4.1.
    - Existing implementation measures include projects/programs/strategies that have already been put into place and thus, are considered part of the baseline conditions. As such, direct and indirect impacts of the existing implementation measures (i.e. identified as IM 1 through IM 29 in Table 4-1) were only considered in the assessment of cumulative impacts by virtue of being part of the baseline conditions, as discussed further in Section 7.

2. Increased use of recycled water for irrigation in the CBWCB
    - Recycled water use for non-potable reuse (NPR) applications (i.e. irrigation and industrial operations) is expected to increase in the basins through the SNMP future planning period. For the purposes of the SNMP, irrigation is the primary consideration since it can contribute to S/N loading to the groundwater basins. In the Central Basin, recycled water used for irrigation is projected to increase from about 7,600 AFY in WY 2009-10 to 17,200 AFY in WY 2024-25. In the West Coast Basin, recycled water used for irrigation is projected to increase from about 3,900 AFY in WY 2009-10 to 5,800 AFY in WY 2024-25. For a further description of this proposed project, refer to Recycled Water Project No. RW 3 in Section 4.2 and Table 4-3.

3. Recycled water quality limits at the SMCLs for TDS and chloride and the MCL for nitrate
    - Upon approval of the SNMP, the CBWCB stakeholders plan to pursue modification of existing permit requirements for non-potable reuse. Currently, permitted recycled water quality limits established for non-potable reuse (irrigation, industrial and recreational activities) are generally more conservative than the SMCLs established for TDS and chloride. SNMP mixing model results show minimal potential impacts to the basins when utilizing recycled water for irrigation, even at increased volumes, at the SMCLs for TDS and chloride and at the MCL for nitrate. For a further description of this proposed project, refer to Recycled Water Project No. RW 4 in Section 4.2 and Table 4-3.

4. GRIP A

    - This proposed recycled water project will completely replace imported water used for recharge at the MFSG with a combination of 11,000 AFY of tertiary-treated recycled water produced by SDLAC's San Jose Creek Water Reclamation Plant and 10,000 AFY of AWT recycled water produced by a new treatment plant to be constructed by WRD. In addition, a new pipeline is proposed for construction to deliver the AWT recycled water from the new treatment plant to the MFSG (AECOM, 2014). For a further description of this proposed project, refer to Recycled Water Project No. RW 2A in Section 4.2 and Table 4-3.

Although the implementation of projects associated with Program 2 would require resources (materials, labor, and energy), it is not anticipated that these projects will require a substantial irreversible commitment of resources. Rather, Program 2 promotes the use of a renewable resource, namely recycled water. In addition, the proposed implementation measures are expected to have substantial benefits to groundwater quality and preserve beneficial uses. Enhancement of groundwater for reuse will have positive social and economic effects by reducing S/N loading, reducing existing S/N concentrations in groundwater, and/or increasing the use of recycled water in the basins, which reduces the dependency on expensive, energy-intensive (due to pumping, distribution, and other costs), and increasingly unreliable imported water supplies.

In accordance with CCR, Title 23, Section 3777(a), a completed Environmental Checklist is presented in Section 6.2. To support the Environmental Checklist, Section 6.3 discusses the potential environmental impacts relative to the baseline conditions in the CBWCB and identifies mitigation measures for potentially significant impacts, and determines that such impacts can be mitigated to less-than-significant levels.

6.1 Approach to Environmental Impact Analysis

The program-level evaluation of potential environmental impacts associated with Program 2 is organized and presented according to the environmental resource categories in the Environmental Checklist (see Section 6.2) and discussed in detail in Section 6.3. Potential reasonably foreseeable environmental impacts were evaluated with respect to earth, air, water, plant life, animal life, noise, light, land use, natural resources, risk of upset, population, housing, transportation, public services, energy, utilities and services systems, human health, aesthetics, recreation, and archeological/historical concerns. For each environmental resource identified in the Environmental Checklist, the level of significance of the impact is provided, including:

- Potentially Significant Impact – Substantial adverse impacts on the environment are identified that cannot be feasibly mitigated or avoided.
- Less Than Significant Impact with Mitigation Incorporated – Substantial adverse impact(s) on the environment are identified, but could be avoided or feasibly mitigated to a less than a significant level. Mitigation measures are indicated in parentheses in the Environmental Checklist and described in Section 6.3.
- Less Than Significant Impact – No substantial adverse effects on the environment are identified.
- No Impact – No adverse effects on the environment are expected.

Additionally, the Environmental Checklist includes mandatory findings of significance regarding short-term, long-term, and cumulative impacts associated with the implementation of Program 2. This evaluation considered whether construction activities or operation of new facilities associated with Program 2 would cause a substantial, adverse change in any of the physical baseline conditions within the CBWCB. In addition, the evaluation considered environmental effects in proportion to their severity and probability of occurrence.

Construction-related impacts could be caused by projects/programs requiring new facilities and infrastructure (including but not limited to treatment plant expansions, pipelines, pump stations, production wells, injection wells, stormwater capture facilities) or otherwise requiring ground disturbance (such as sediment removal and vegetation removal). Operational impacts vary widely, but primarily could include direct/indirect effects to groundwater quality and levels, as well as other long-term impacts due to disturbance of lands for new facilities and use of renewable or non-renewable resources during operation of new facilities.

Measures that can mitigate (e.g., minimize, reduce, or avoid) potentially significant adverse environmental impacts have been proposed and are described in Section 6.3 and indicated in the Environmental Checklist by their Mitigation Measure number. Mitigation could include but not be limited to the following:

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing the impact by limiting the degree or magnitude of the action and its implementation;
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and/or
- Compensating for the impact by replacing or providing substitute resources or environments.

The LARWQCB recommends that appropriate compliance and mitigation measures, as discussed herein, which are readily available and generally considered to be consistent with industry standards and common practices, be applied in order to reduce, and if possible avoid, potential environmental impacts, such that there is no significant impact. Since the decision to perform these measures is strictly within the responsibility and jurisdiction of the individual implementing agency, such measures can and should be adopted by these parties (CCR, Title 14, Section 15091(a)(2)). It is expected that the CBWCB stakeholders will design, install, and maintain projects following all applicable laws, regulations, ordinances, and formally adopted municipal and/or agency codes, standards, and practices.

Actual environmental impacts will depend on the specific compliance strategies and projects/programs to be implemented by the CBWCB stakeholders, most of which are public agencies subject to fulfilling their responsibilities under CEQA (PRC, Section 21159.2). Consistent with PRC Section 21159, this SED does not engage in speculation or conjecture, but rather considers the reasonably foreseeable environmental impacts of the foreseeable methods of compliance, the reasonably foreseeable, feasible mitigation measures, and the reasonably foreseeable alternative means of compliance, which could avoid or reduce the identified environmental impacts.

As previously mentioned, WRD released the project-level Draft EIR for GRIP on March 23, 2014 and made it available for public review and comment through May 9, 2014 (AECOM, 2014). Program 2 includes GRIP A, which was designated as the proposed project and analyzed in the Draft EIR. The program-level assessment of environmental impacts presented herein is consistent with the impact analysis and mitigation measures presented in the GRIP Draft EIR.

6.2 CEQA Environmental Checklist

TABLE 6-1
ENVIRONMENTAL CHECKLIST

No.	Environmental Resource	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated*	Less Than Significant Impact	No Impact
1.	**Earth. Will the proposal result in:**				
1A	Unstable earth conditions or in changes in geologic substructures?		X (EARTH-1)		
1B	Disruptions, displacements, compaction or overcoming of the soil?		X (EARTH-1)		
1C	Change in topography or ground surface relief features?		X (EARTH-2)		
1D	The destruction, covering or modification of any unique geologic or physical features?				X
1E	Any increase in wind or water erosion of soils, either on or off the site?			X	
1F	Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?			X	
1G	Exposure of people or property to geologic hazards, such as earthquakes, landslides, mudslides, ground failure, or similar hazards?		X (EARTH-1)		
2.	**Air. Will the proposal result in:**				
2A	Substantial air emissions or deterioration of ambient air quality?		X Due to Construction (AQ-1 to AQ-8)	X Due to Operations	
2B	The creation of objectionable odors?			X	
2C	Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally?			X	
3.	**Water. Will the proposal result in:**				
3A	Changes in currents, or the course of direction or water movements, in either marine or fresh waters?			X	

TABLE 6-1
ENVIRONMENTAL CHECKLIST

No.	Environmental Resource	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated*	Less Than Significant Impact	No Impact
3B	Changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff?			X	
3C	Alterations to the course of flow of flood waters?			X	
3D	Change in the amount of surface water in any water body?			X	
3E	Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity?			X	
3F	Alteration of the direction or rate of flow of groundwaters?			X	
3G	Change in the quantity or quality of groundwaters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?			X	
3H	Substantial reduction in the amount of water otherwise available for public water supplies?			X	
3I	Exposure of people or property to water related hazards such as flooding or tidal waves?			X	
4.	**Plant Life. Will the proposal result in:**				
4A	Change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, microflora and aquatic plants)?		X (BIO-1 to BIO-8)		
4B	Reduction of the numbers of any unique, rare or endangered species of plants?		X (BIO-1 to BIO-8)		
4C	Introduction of new species of plants into an area or in a barrier to the normal replenishment of existing species?		X (BIO-5)		
4D	Reduction in acreage of any agricultural crop?				X

TABLE 6-1
ENVIRONMENTAL CHECKLIST

No.	Environmental Resource	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated*	Less Than Significant Impact	No Impact
5.	**Animal Life. Will the proposal result in:**				
5A	Change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, insects or microfauna)?		X (BIO-9 to BIO-14)		
5B	Reduction of the numbers of any unique, rare or endangered species of animals?		X (BIO-9 to BIO-14)		
5C	Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?		X (BIO-15 to BIO-17)		
5D	Deterioration to existing fish or wildlife habitat?		X (BIO-1 to BIO-17)		
6.	**Noise. Will the proposal result in:**				
6A	Increases in existing noise levels?		X Due to Construction (Noise-1 to Noise-11)	X Due to Operations	
6B	Exposure of people to severe noise levels?		X Due to Construction (Noise-1 to Noise-11)	X Due to Operations	
7.	**Light and Glare. Will the proposal:**				
7A	Produce new light or glare?		X (LIGHT-1 & LIGHT-2)		
8.	**Land Use. Will the proposal result in:**				
8A	Substantial alteration of the present or planned land use of an area?			X	
9.	**Natural Resources. Will the proposal result in:**				
9A	Increase in the rate of use of any natural resources?			X	
9B	Substantial depletion of any nonrenewable natural resource?			X	
10.	**Risk of Upset. Will the proposal involve:**				
10A	A risk of an explosion or the release of hazardous substances (including, but not limited to: oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions?		X (HAZ-1 & HAZ-2)		

TABLE 6-1
ENVIRONMENTAL CHECKLIST

No.	Environmental Resource	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated*	Less Than Significant Impact	No Impact
11.	**Population. Will the proposal:**				
11A	Alter the location, distribution, density, or growth rate of the human population of an area?				X
12.	**Housing. Will the proposal:**				
12A	Affect existing housing, or create a demand for additional housing?				X
13.	**Transportation/Circulation. Will the proposal result in:**				
13A	Generation of substantial additional vehicular movement?			X	
13B	Effects on existing parking facilities, or demand for new parking?			X	
13C	Substantial impact upon existing transportation systems?		X (TR-1 to TR-7)		
13D	Alterations to present patterns of circulation or movement of people and/or goods?		X (TR-1 to TR-7)		
13E	Alterations to waterborne, rail or air traffic?				X
13F	Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?		X (TR-8 & TR-9)		
14.	**Public Service. Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas:**				
14A	Fire protection?				X
14B	Police protection?				X
14C	Schools?				X
14D	Parks or other recreational facilities?				X
14E	Maintenance of public facilities, including roads?				X
14F	Other governmental services?				X
15.	**Energy. Will the proposal result in:**				
15A	Use of substantial amounts of fuel or energy?			X	
15B	Substantial increase in demand upon existing sources of energy, or require the development of new sources of energy?			X	
16.	**Utilities and Service Systems. Will the proposal result in a need for new systems, or substantial alterations to the following utilities:**				
16A	Power or natural gas?			X	

TABLE 6-1
ENVIRONMENTAL CHECKLIST

No.	Environmental Resource	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated*	Less Than Significant Impact	No Impact
16B	Communications systems?			X	
16C	Water?			X	
16D	Sewer or septic tanks?			X	
16E	Stormwater drainage?		X (EARTH-2, BIO-5, and AES-3)		
16F	Solid waste and disposal?		X (UTIL-1 & UTIL-2)		
17.	**Human Health. Will the proposal result in:**				
17A	Creation of any health hazard or potential health hazard (excluding mental health)?		X (HAZ-1 & HAZ-2)		
17B	Exposure of people to potential health hazards?		X (HAZ-1 & HAZ-2)		
18.	**Aesthetics. Will the proposal result in:**				
18A	The obstruction of any scenic vista or view open to the public?		X (AES-1 & AES-2)		
18B	The creation of an aesthetically offensive site open to public view?		X (AES-1 to AES-3)		
19.	**Recreation. Will the proposal result in:**				
19A	Impact upon the quality or quantity of existing recreational opportunities?			X	
20.	**Archeological/Historical. Will the proposal:**				
20A	Result in the alteration of a significant archeological or historical site structure, object or building?		X (CUL-1 to CUL-6)		
21.	**Mandatory Findings of Significance**				
21A	**Potential to Degrade:** Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		X		

TABLE 6-1 ENVIRONMENTAL CHECKLIST					
No.	**Environmental Resource**	**Potentially Significant Impact**	**Less Than Significant Impact with Mitigation Incorporated***	**Less Than Significant Impact**	**No Impact**
21B	**Short-Term:** Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time, while long-term impacts will endure well into the future.)				X
21C	**Cumulative:** Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant.)		X		
21D	**Substantial Adverse:** Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		X		

*Mitigation Measures are indicated in parentheses and described in Section 6.3.

6.3 Results of Environmental Evaluation

6.3.1 Earth

Resource 1A: Will the proposal result in unstable earth conditions or in changes in geologic substructures?

Significance Determination: Less Than Significant Impact with Mitigation Incorporated.

Unstable geologic units or soils can result in several geologic manifestations. Program 2 would be located in areas of relatively low relief, thereby reducing the potential for soil creep, landslides, or lateral spreading. Sinkholes are generally dependent on localized geological conditions, and can occur rapidly. Projects associated with Program 2 may be located in an area of the Los Angeles Basin currently experiencing human-caused subsidence. Two of the five dominant soil series (Oakley and Chino) throughout the CBWCB show the potential to corrode steel materials, and one of the five (Oakley) has a high concrete corrosion potential. For Program 2 projects that require construction of new facilities and infrastructure, exposure of steel and concrete materials to highly corrosive soils could result in an eventual degradation in structural stability.

Sinkholes, subsidence, corrosive soils, and other geologic phenomena could damage the structure of and inhibit operation of new facilities and infrastructure, as well as affect the safety of any potential on-site workers. Therefore, impacts related to unstable earth conditions could be significant. However, implementation of **Mitigation Measure EARTH-1** described below would ensure that site-specific geologic studies would be performed that would detect the potential of these geologic events. With implementation of Mitigation Measure EARTH-1, potential impacts would be reduced to a less than significant level.

Mitigation Measure

- **EARTH -1:** Prior to construction of new facilities and infrastructure, a design-level geotechnical investigation, including collection of site specific subsurface data if appropriate, shall be completed. The geotechnical evaluation shall identify all potential seismic hazards including fault rupture, and characterize the soil profiles, including liquefaction potential and expansive soil potential. In addition, the design-level geotechnical investigation shall identify potential geologic hazards, including sinkholes, subsidence, and soil corrosivity, and characterize the soil profiles for their potential to lead to the aforementioned hazards. The geotechnical investigation shall recommend site-specific design criteria to mitigate for seismic and geologic hazards, such as special foundations, avoidance of problem areas, and structural setbacks. These recommendations shall be incorporated into the design of individual proposed projects.

Resource 1B: Will the proposal result in disruptions, displacements, compaction or overcoming of the soil?

Significance Determination: Less Than Significant Impact with Mitigation Incorporated.

Soils throughout the CBWCB mainly consist of sandy loams that show little change with moisture variation, and thus do not typically exhibit expansive soil characteristics. Projects associated with Program 2 would generally be located in areas of low soil expansion potential. However, the specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The presence of expansive soils at project sites could decrease the structural stability of proposed new facilities, which could result in structural or operational failure or threaten the health and safety of on-site workers. Such impacts are considered potentially significant unless mitigated.

The locations of projects associated with Program 2 are subject to change. As the projects are implemented at selected sites, subsequent project-specific CEQA analyses will identify the corresponding site-specific soil characteristics. In addition, with implementation of Mitigation Measure EARTH-1, soils prone to expansiveness at project sites would be identified per a geotechnical report and properly addressed or mitigated prior to the construction of proposed facilities, if necessary. Therefore, impacts related to risks associated with expansive soils would be reduced to a less than significant level with mitigation.

Mitigation Measure

- Implement **Mitigation Measure EARTH-1** (see Resource 1A discussed earlier).

Resource 1C: Will the proposal result in changes in topography or ground surface relief features?

Significance Determination: Less Than Significant Impact with Mitigation Incorporated.

Implementation of Program 2 could result in construction activities that would alter existing localized topography or ground surface relief at proposed project sites. The construction activities may include pavement breaking, ditching, and excavation, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the statewide Construction General Permit (SWRCB, 2009b) or Los Angeles County Municipal Separate Storm Sewer System (MS4) Permit (LARWQCB, 2012) would require the implementation of best management practices (BMPs) that manage overland runoff from changes in topography and ground surface and restoration of disturbed areas to pre-construction conditions, including topography.

Once proposed projects are implemented, they would not further alter existing topography and ground surface. The presence of new or altered facilities at project sites could change the extent of permeable or impermeable surfaces and could alter the direction and volume of overland flows during both wet and dry periods. However, during project design, overland flows and drainage at each project site would be assessed and drainage facilities designed such that no net increase in runoff would occur, in accordance with the Los Angeles County MS4 Permit or an equivalent permit. As required by **Mitigation Measure EARTH-2** described below, a grading and drainage plan would be developed during project design and implemented prior to fieldwork to ensure no increase in off-site discharges, thus preventing increased erosion and sedimentation and further alteration of topography or ground surfaces. Impacts would be less than significant with mitigation.

Mitigation Measure

- **EARTH-2: Implementation of a Grading and Drainage Plan.** Prior to construction of new facilities and infrastructure, a grading and drainage plan shall be prepared that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County of Los Angeles and/or the city in which the facility would be located. In addition, all new drainage facilities shall be designed in accordance with standards and regulations set forth in the Hydrology Manual published by the Los Angeles County Department of Public Works (County of Los Angeles, 2006). The grading and drainage plan shall identify and implement retention basins, best management practices, and other measures to ensure that potential increases in stormwater flows and erosion would be minimized, in accordance with regulatory requirements.

Resource 1D: Will the proposal result in the destruction, covering or modification of any unique geologic or physical features?

Significance Determination: No Impact.

None of projects associated with Program 2 would be of the size or scale to result in destruction, covering, or modification of any unique geologic or physical features.

Resource 1E: Will the proposal result in any increase in wind or water erosion of soils, either on or off the site?

Significance Determination: Less than Significant Impact.

Construction activities associated with Program 2 projects could include excavation and grading and could result in soil erosion during rain or high wind events, resulting in potentially significant impacts. Such construction activities would need to comply with South Coast Air Quality Management District[10] (SCAQMD) Rule 403 for dust control that would ensure the prevention and/or management of wind erosion and subsequent topsoil loss. Compliance with SCAQMD Rule 403 would ensure that construction activities generating wind-induced soil erosion are below SCAQMD significance thresholds.

To prevent erosion associated with runoff from construction sites, the implementing agency for each project would be required to prepare and carry out a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the requirements of the statewide Construction General Permit (CGP) (SWRCB, 2009b). The SWPPP would identify BMPs to control erosion, sedimentation, and hazardous materials potentially released from construction sites into surface waters. Compliance with the CGP, required SWPPP, and identified BMPs would ensure reduction of soil erosion and loss of topsoil to less than significant levels.

Should the Program 2 project result in disturbance of less than one acre during construction activities, then the CGP would not apply to this particular project. Instead, compliance with minimum BMPs, as specified by the Los Angeles County MS4 Permit (LARWQCB, 2012) or an equivalent permit would be required, including erosion and sediment control for the construction site. Adherence to these conditions would ensure that wind or water erosion of soils would be minimized to less than significant levels.

Compliance with the above-mentioned permits during construction of proposed projects would minimize potential soil erosion during high wind or rain events and minimize loss of topsoil. Impacts would be considered less than significant. No mitigation is required.

Resource 1F: Will the proposal result in changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?

Significance Determination: Less than Significant Impact.

The projects associated with Program 2 would not alter the course of a stream or river. The surface waters located adjacent to proposed facilities are channelized and thus have a set drainage pattern. Proposed facility operations would not involve the alteration of these channels, nor are they expected to increase the flow within these channels. As a result, there would be no increase in

[10] The CBWCB is located within the South Coast Air Basin, which is managed by the South Coast Air Quality Management District (SCAQMD). The SCAQMD attains and maintains air quality conditions in the South Coast Air Basin through a comprehensive program of planning, regulation, enforcement, and promotion of the understanding of air quality issues.

siltation, deposition, or erosion along river or stream channels. Impacts would be less than significant. No mitigation is required.

Stormwater capture and runoff management projects have the potential to reduce surface water flows and sediment loads and improve runoff water quality. As such, Program 2 may reduce flows to bays and inlets; however, flow quality would be improved. Impacts would be less than significant.

Resource 1G: Will the proposal result in exposure of people or property to geologic hazards, such as earthquakes, landslides, mudslides, ground failure, or similar hazards?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

The CBWCB lies in a region that is seismically active. In the event of an earthquake in Southern California, some seismic ground shaking may be experienced in portions of the Study Area. The historically active Newport-Inglewood Uplift runs through the Study Area, separating the West Coast Basin and Central Basin. Because Newport-Inglewood Uplift is a series of discontinuous faults and folds, there is increased potential for proposed project facilities to be exposed to seismic ground shaking. Ground shaking could result in structural damage to facilities, which in turn could affect operation of related systems, including wastewater treatment, recycled water conveyance, groundwater replenishment/extraction, and potable water conveyance. All of the proposed facilities are non-habitable; however, some facilities would require full time employees on site. Therefore, structural and mechanical failure of facilities onset by seismic ground shaking could potentially threaten the safety of on-site workers, which is considered a potentially significant impact. However, all projects associated with Program 2 would be designed in accordance with the recommendations of a site-specific geotechnical investigation (see Mitigation Measure EARTH-1) and in compliance with the California Building Code seismic requirements that have criteria to prevent any such seismic damage. These building codes provide requirements for construction, grading, excavation, use of fill, and foundation work, including type of materials, design, procedures, etc., which are intended to limit the probability of occurrence and the severity of consequences from geologic hazards.

The CBWCB consists of mainly flat terrain interspersed with some hills of relatively low relief. Project facilities are not anticipated to be located within zones indicating potential susceptibility to landslides, as designated by the California Geological Survey Seismic Hazard Zone maps published by the California Department of Conservation.

Liquefaction occurs in saturated soils and the susceptibility decreases with groundwater depth. According to the California Department of Conservation, parts of the CBWCB are susceptible to liquefaction due to proximity to a number of faults, including the Newport-Inglewood Uplift. Some proposed facilities may be either partially or entirely within liquefaction zones. Similar to ground shaking, liquefaction can lead to structural damage. Also, on-site workers at the proposed facilities may face threats of injury or death resulting from liquefaction-caused structural damage. Therefore, impacts related to liquefaction could be potentially significant. However, implementation of Mitigation Measure EARTH-1 would ensure that geotechnical investigations are conducted for proposed facilities (i.e., conveyance pipelines, wells, treatment plants) within these seismic hazard zones to identify liquefaction zones and incorporate site-specific project designs that mitigate such

hazards. With implementation of Mitigation Measure EARTH-1, impacts would be reduced to a less than significant level.

Mitigation Measure

- Implement **Mitigation Measure EARTH-1** (see Resource 1A discussed earlier).

6.3.2 Air

Resource 2A: Will the proposal result in substantial air emissions or deterioration of ambient air quality?

Potential air emissions from construction activities differ from those generated by the operation of new facilities/equipment, so the impact assessment of these two activities is discussed separately below.

Construction

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

Construction of projects associated with Program 2 would generally proceed in phases including the following as applicable: site clearing and preparation, excavation, demolition, construction of structures, installation of piping and equipment, paving, and landscaping. Construction activities associated with each project within the CBWCB could generate pollutant emissions from the following construction activities: (1) site preparation, grading, and excavation; (2) construction workers traveling to and from the construction site; (3) delivery and hauling of construction supplies to and debris from the construction site; (4) fuel combustion by on-site construction equipment; and (5) building/structure construction; application of architectural coatings, where necessary; and paving. These construction activities would temporarily create emissions of dust, fumes, equipment exhaust, and other air contaminants. Construction activities involving site preparation and grading could primarily generate emissions of respirable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM_{10}) and 2.5 micrometers or less ($PM_{2.5}$). Mobile source emissions (use of diesel-fueled equipment on site, and traveling to and from a construction site) could primarily generate nitrous oxides (NO_X). Asphalt paving and the application of architectural coatings, where necessary, could primarily result in the release of reactive organic gases (ROGs).

The amount of emissions generated on a daily basis would vary, depending on the intensity and types of construction activities occurring at the same time. It is expected that construction of Program 2 projects in the CBWCB would occur intermittently throughout the SNMP future planning period. Construction impacts would be short-term and limited to the period of time when construction activities are taking place. The maximum daily construction emissions will be estimated in the future on a project-specific basis during the environmental review process. If necessary, mitigation measures to minimize air emissions and reduce potentially significant impacts would be implemented in accordance with regulatory requirements. Daily construction emissions would be compared to suggested thresholds of the SCAQMD. The SCAQMD monitors air quality conditions in the South Coast Air Basin, which includes the CBWCB, through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The

amount of emissions generated for a particular project would vary depending on its size, the area of disturbance, and the length of the construction schedule.

In terms of impacts/improvements to S/N groundwater quality, the most significant projects proposed as part of Program 2 are GRIP A and increased injection of AWT recycled water at the three seawater intrusion barriers. GRIP A would completely replace imported water currently used for groundwater recharge at the MFSG with a blend of tertiary-treated and AWT recycled water. At all three seawater intrusion barriers, imported water would be completely replaced with AWT recycled water during the SNMP future planning period. Of these two proposed projects, GRIP A is anticipated to have more significant construction-related impacts due to the complexity and large size of this project.

As described in the GRIP Draft EIR (AECOM, 2014), construction emissions for GRIP A were modeled based on a worst-case scenario representing an intensive day of construction to conservatively estimate the maximum daily emissions. The GRIP Draft EIR concluded that the following criteria pollutant emissions from construction activities would not exceed thresholds of significance: ROG, carbon monoxide (CO), sulfur oxides (Sox), PM_{10}, and $PM_{2.5}$ (AECOM, 2014). However, construction-generated NOx emissions would exceed the applicable mass emission threshold of 100 pounds per day (AECOM, 2014). Implementation of **Mitigation Measures AQ-1 through AQ-8**, as described below, would reduce such impacts to less than significant levels.

Relative to GRIP A, the other proposed projects associated with Program 2, including recycled water projects and implementation measures, are smaller and less complex and therefore, anticipated to result in fewer air emissions due to construction activities and have less impact to ambient air quality. For other construction projects associated with Program 2, implementation of Mitigation Measures AQ-1 through AQ-8 would similarly reduce any potentially significant air emissions to less than significant levels.

Mitigation Measures

- **AQ-1:** The construction contractor shall maintain and properly tune all construction equipment in accordance with manufacturer's specifications.

- **AQ-2:** The construction contractors shall minimize idling times either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points.

- **AQ-3:** The construction contractor shall use off-road diesel-powered construction equipment (greater than 50 horsepower) that meets the Tier 3 emission standards, where available. In the event equipment that meets Tier 3 emission standards is not available, diesel-powered construction equipment shall meet a minimum of Tier 2 emission standards.

- **AQ-4:** The construction contractor shall use alternative fueled (e.g., compressed natural gas, liquefied natural gas, propane), or electric-powered construction equipment, as available.

- **AQ-5:** The construction contractor shall implement activity management (e.g. rescheduling activities to avoid overlap of construction phases, which would reduce short-term impacts).
- **AQ-6:** All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds shall have a 2007 model year engine or newer, or be equipped with a particulate matter trap.
- **AQ-7:** All trucks hauling loose material, such as debris or fill, shall fully cover their loads while operating off-site.
- **AQ-8:** Construction trucks shall be routed away from congested streets or sensitive receptor areas to the greatest extent possible.

Operations

Significance Determination: Less than Significant Impact.

Program 2 would not result in long-term emissions from operations at newly-constructed facilities. Potential emission sources resulting from operational activities could include air emissions from powering of new facilities, testing and potential use of emergency generators, operation of stationary source equipment associated with project facilities, and vehicular trips for facility maintenance and employee commutes. Emissions from generators and stationary source equipment would be local in nature, while emissions from motor vehicles could be regional. The proposed Program 2 projects are not anticipated to result in large numbers of new employees. Thus, related vehicle emissions would be negligible. Additional trips associated with occasional deliveries would also be minimal. Recharge operations at the MFSG would be limited to water storage and percolation, and would not generate emissions. All pipelines would be located below grade and there would be periodic inspections. Operation of injection and extraction wells would be powered by electric pumps and emergency generators. The electricity will be provided by the existing electrical grid and thus, would not generate local emissions. However, emissions would be generated at distant power plants. Power plant emissions are subject to the rules and regulations of the air district in which they are located and are subject to their own CEQA review. In the CBWCB, stationary source equipment would be subject to SCAQMD permitting.

Collectively, facility operations under Program 2 are not expected to significantly affect air quality over the long-term. The analyses of operational impacts in the GRIP Draft EIR support such a conclusion, finding operational emissions to be less than significant, requiring no mitigation (AECOM, 2014). Relative to GRIP A, the remaining proposed projects associated with Program 2, including other recycled water projects and implementation measures, are smaller in scope and less complex and therefore, anticipated to result in fewer air emissions and have less than significant impacts to ambient air quality.

Resource 2B: Will the proposal result in the creation of objectionable odors?

Significance Determination: Less than Significant Impact.

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety)

to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). Offensive odors are unpleasant and can lead to public distress generating citizen complaints to local governments. Although unpleasant, offensive odors rarely cause physical harm. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source, wind speed, direction, and the sensitivity of receptors.

According to SCAQMD's CEQA Air Quality Handbook (SCAQMD, 1993), land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. Program 2 would involve the construction of new or upgraded treatment facilities to treat recycled water for the purposes of replenishing the groundwater basins. Odors may be emitted that could be perceptible at nearby off-site locations. However, similar to existing water treatment facilities, these new or upgraded treatment facilities would be designed with odor control systems and would implement standard odor control measures and monitoring to reduce and avoid odor impacts to off-site receptors. Thus, odor impacts would be considered less than significant.

During the construction of proposed Program 2 projects, exhaust from equipment may produce discernible odors typical of most construction sites. Such odors would be a temporary nuisance to adjacent land uses and receptors, but because they are temporary and intermittent in nature, would not be considered a significant environmental impact.

Resource 2C: Will the proposal result in alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally?

Significance Determination: Less than Significant Impact.

It is not anticipated that Program 2 would result in the alteration of air movement, moisture or temperature. However, several of the proposed projects may generate greenhouse gases (GHG) from a variety of sources, and GHG emissions are known to cause climate changes at various scales including local and regional. Direct GHG emissions could be generated from construction equipment and worker vehicles. Once the newly-constructed facility is fully operational, direct GHG emissions would be generated by mobile sources (i.e., worker commute trips, periodic facility inspection and maintenance visits, routine chemical deliveries, etc.). Indirect GHG emissions would be associated with the production of electricity off site (depending on the source) to meet the electrical demand of proposed projects.

GHG emissions are measured and evaluated in terms of carbon dioxide (CO_2) equivalence (CO_2e). CO_2e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. Expressing emissions in CO_2e involves the conversion of all GHG emissions contributing to the greenhouse effect into an equivalent effect that would occur if only CO_2 were being emitted. This measurement, known as the global warming potential (GWP) of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. If the total GHG emissions generated by an individual project exceed 10,000 metric tons of CO_2e per year, which is the threshold established by the SCAQMD, then impacts would be potentially significant.

The majority of proposed infrastructure projects associated with Program 2 would replace the current use of imported water with recycled water. As described below in Section 6.3.15 *Energy*, the energy demand per million gallons of water (MG) for the supply and conveyance of imported water (approximately 8,900 kWh/MG) is substantially higher than for the supply and treatment of recycled water (approximately 1,200 kWh/MG). This energy offset would produce a commensurate relative reduction in indirect GHG emissions. As a result, overall GHG emissions during the life of the proposed projects would be less than significant, due to an estimated reduction in baseline GHG emissions from indirect operational sources.

Of the proposed Program 2 projects, the highest GHG emissions are anticipated from GRIP A due to the large size and complexity of this project. As described in the GRIP Draft EIR (AECOM, 2014), construction activities associated with GRIP A is anticipated to generate GHG emissions on a short-term basis, primarily CO_2. Construction-related GHG emissions would be generated by vehicle engine exhaust from construction equipment, haul trips, material delivery trips, and construction worker trips. The primary source of operational GHG emissions would be electricity consumption, which would require over 22 million kilowatt hours (kWh) per year. In addition, mobile source emissions would be related to the worker trips for the operators and maintenance staff, as well as chemical delivery truck trips.

Overall, GHG emissions associated with GRIP A have been determined to be below SCAQMD significance thresholds (AECOM, 2014). Relative to GRIP A, the remaining proposed projects associated with Program 2, including other recycled water projects and implementation measures, are smaller in scope and less complex and therefore, anticipated to result in fewer GHG emissions and have less than significant impacts to air movement, moisture, and temperature.

6.3.3 Water

Resource 3A: Will the proposal result in changes in currents, or the course of direction or water movements, in either marine or fresh waters?

Significance Determination: Less than Significant Impact.

The Program 2 projects proposed to increase recycled water recharged at the seawater intrusion barriers and the MFSG are designed to completely replace the current use of imported water for recharge and thus, these projects are not expected to cause changes in current groundwater flow. However, increased groundwater pump and treat by the existing desalters will affect localized groundwater flows, specifically around the extraction wells. These extraction wells are intended to remediate the saline plume and thus, improve groundwater quality and help slow the migration of the saline plume inland, which would prevent further contamination of drinking water aquifers. Accordingly, this proposed project is considered an environmental benefit. Program 2 also includes stormwater capture and runoff management projects, which would reduce surface water flows, but would not affect the current, course, or direction of surface water flows.

Resource 3B: Will the proposal result in changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff?

Significance Determination: Less than Significant Impact.

Program 2 includes stormwater capture and runoff management projects, which would increase adsorption rates, reduce runoff, and reduce the rate and amount of surface water flows. These projects would also improve surface water quality. Accordingly, these projects are considered an environmental benefit.

Resource 3C: Will the proposal result in alterations to the course of flow of flood waters?

Significance Determination: Less than Significant Impact.

Program 2 includes stormwater capture and runoff management projects, which would reduce the rate and amount of surface water flows in existing channelized surface waterways. These projects would not change the course of flood waters but would reduce flood flows. Accordingly, these projects are considered an environmental benefit.

Resource 3D: Will the proposal change the amount of surface water in any water body?

Significance Determination: Less than Significant Impact.

Program 2 includes stormwater capture and runoff management projects, which would reduce the amount of surface water flows in existing channelized surface waterways, as well as discharges to bays and the ocean. Reductions in surface water flows would be considered environmental benefits in terms of: (1) flood reduction and protection; (2) water quality improvement related to percolation of stormwater flows into the underlying aquifers for management of S/Ns and retention of runoff to minimize transport of potential pollutants to receiving waters; and (3) groundwater recharge also related to percolation of stormwater flow into the underlying aquifers to replenish the CBWCB.

In addition, the reduction of surface water flow to downstream bays and the Pacific Ocean would not be considered a significant impact due to the timing of such reductions. Stormwater capture would occur primarily during high-flow periods, during winter months and wet weather events, when the resulting reduction in flow would be relatively small as a percentage of total storm flow volumes. In addition, the surface waterbodies in CBWCB that discharge to bays and the Pacific Ocean are largely concrete lined and managed by Los Angeles County Flood Control District. The main purposes of the Flood Control District are to provide flood risk management and water conservation measures. Stormwater capture would serve both purposes, simultaneously increasing groundwater recharge while reducing downstream flows. Therefore, impacts associated with changes in surface water flow would be less than significant.

Resource 3E: Will the proposal result in discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity?

Significance Determination: Less than Significant Impact.

Program 2 includes stormwater capture and runoff management projects, which would improve surface water quality as well as the quality of water discharged to bays and the ocean. Accordingly, these projects are considered an environmental benefit.

Resource 3F: Will the proposal result in alteration of the direction or rate of flow of groundwaters?

Significance Determination: Less than Significant Impact.

Same as response for Resource 3A described earlier.

Resource 3G: Will the proposal change the quantity or quality of groundwaters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?

Significance Determination: Less than Significant Impact.

The implementation measures listed in Table 4-1, by definition, are expected to improve groundwater quality and preserve beneficial uses. The benefits of implementation measures in terms of reducing S/N loading and/or concentrations in groundwater are presented in Table 4-1 in Section 4.

Major recycled water projects proposed in the CBWCB are listed in Table 4-3 in Section 4. These recycled water projects were proposed by the CBWCB stakeholders to meet one of the main goals of the Recycled Water Policy, which is to increase the use of recycled water in order to reduce reliance on expensive, energy-intensive (due to pumping, distribution, and other costs), and increasingly unreliable imported water supplies, while still protecting groundwater quality and preserving beneficial uses.

The SNMP mixing model was used to quantitatively assess, in terms of impacts on S/N groundwater quality, the proposed recycled water projects, as well as some major implementation measures. Various scenarios were modeled to determine water quality impacts of individual projects in isolation and some combinations of these projects, since this is more likely to occur in the future. As discussed in Section 4.2, GRIP A involves the complete replacement of imported water for recharge at the MFSG with 11,000 AFY of tertiary-treated recycled water and 10,000 AFY of AWT recycled water. Modeling results show that there were no significant changes to S/N loading or concentrations in groundwater due to the implementation of GRIP A because the AWT/tertiary-treated recycled water blend ratio mirrors the average imported water quality that it is replacing. Overall, the SNMP modeling results indicate that the combination of proposed recycled water projects and major implementation measures would result in groundwater quality remaining well below WQOs in the Central Basin and WQOs being achieved (improving groundwater quality) in the future in the West Coast Basin.

Additionally, the SNMP analysis demonstrated that major recycled water projects that slightly degrade groundwater quality (e.g. increased use of recycled water used for irrigation) are more than offset by projects/implementation measures that improve groundwater quality (e.g. replacing

imported water with AWT recycled water at the seawater intrusion barriers). Thus, overall impacts to groundwater quality due to Program 2 in both basins would either improve or remain well below WQOs, thereby continuing the preservation of beneficial uses.

Resource 3H: Will the proposal result in substantial reduction in the amount of water otherwise available for public water supplies?

Significance Determination: Less than Significant Impact.

In recognition of the water supply implications of climate change and uncertainties and increasing costs associated with imported water supplies, the CBWCB stakeholders have been planning and implementing projects to maximize the use of recycled water and stormwater, encourage conservation, and address seawater intrusion (which impacts the use of groundwater in the basins). Under Program 2, the major recycled water projects would increase reliance on local, reliable, safe, and sustainable recycled water supplies to replace more unreliable and energy-intensive (due to pumping, distribution, and other costs) imported water. Increased use of recycled water for irrigation to replace imported water and groundwater is also planned, which further reduces reliance on potable water supplies.

Program 2 also includes implementation measures that maximize stormwater capture and include low impact development (LID) projects, new retention basins, new rubber dams in the San Gabriel River, increasing the height of water storage behind the Whittier Narrows Dam, and the MFSG interconnection pipeline, among others. As such, Program 2 would increase the reliability of available public water supplies and thus, would be an environmental benefit.

Resource 3I: Will the proposal result in exposure of people or property to water related hazards such as flooding or tidal waves?

Significance Determination: Less than Significant Impact.

Program 2 includes stormwater capture and runoff management projects, which would reduce the rate and amount of surface water flows in existing channelized surface waterways. These projects would reduce flood flows. Accordingly, these projects are considered an environmental benefit.

6.3.4 Plant Life

Resource 4A: Will the proposal change the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, microflora and aquatic plants)?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

The California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB; http://www.dfg.ca.gov/biogeodata/cnddb/) is a program that inventories the status and locations of rare or special-status plants and animals in California and the California Native Plant Society's (CNPS) online Inventory of Rare, Threatened, and Endangered Plants of California (http://www.rareplants.cnps.org/) lists historical and recent occurrences of special-status plant species. These databases were queried for special-status plant species records in the United States Geological Survey (USGS) 7.5-minute quadrangle maps for Anaheim, Baldwin Park, El Monte, Hollywood, Inglewood, La Habra, Los Alamitos, Los Angeles, Long Beach, Redondo Beach, San

Pedro, South Gate, Torrance, Venice, and Whittier, which encompass the entire CBWCB. The CNDDB and CNPS database searches identified 47 special-status plant species within the CBWCB and this list is provided in **Appendix C**.

Implementation of Program 2 would result in construction of new facilities, primarily within the boundaries of existing facilities or within developed and disturbed areas at existing treatment plants and existing right-of-ways that do not support native vegetation or where very little managed non-native vegetation exist. However, some potential construction may occur in or adjacent to natural communities that may have the potential to support special-status plant species. The exact locations of many proposed projects have not been finalized and surveys would be conducted prior to construction activities to ensure that plant species would not be impacted. Impacts to special-status plant species would be reduced to less than significant levels with the implementation of **Mitigation Measures BIO-1 through BIO-7**, as described below.

Projects with the potential to impact oak trees within Los Angeles County are required to comply with the Oak Tree Preservation Ordinance (or other similar tree ordinances established by the local city). A tree permit may be required if impacts to oak trees or other protected trees are determined to be necessary. As described by **Mitigation Measure BIO-8** below, the implementing agency would comply with the terms and conditions of the permit to mitigate any impacts to oak trees to less than significant levels.

The exact locations of many projects associated with Program 2 have not been established. Potential impacts to plant species would be determined in the future during the project-specific environmental analyses. These environmental review processes would ascertain whether an individual project would impact the diversity or number of plant species, or special-status plant species, and where it is necessary, will require the implementation of mitigation measures to minimize and reduce potentially significant impacts. Implementation of Mitigation Measures BIO-1 through BIO-8 would reduce any potential impacts to plant species to less than significant levels.

Mitigation Measures

- **BIO-1:** Prior to construction in areas that could support special-status plants, a qualified biologist shall conduct a pre-construction floristic inventory and, if deemed necessary, a focused rare plant survey of project areas to determine and map the location and extent of special-status plant species populations within disturbed areas. This survey shall be conducted during the typical blooming periods of the identified potentially-occurring special-status plants. The plant survey shall follow the CDFW Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFW, 2009).

- **BIO-2:** The limits of construction shall be staked, flagged, fenced, or otherwise clearly delineated to avoid and minimize impacts on adjacent habitats that have been determined to support special-status plant species.

- **BIO-3:** To the extent feasible, the implementing agencies shall avoid and/or reduce the footprint of construction and staging areas in areas having potential occurrences of special-status plant species.

- **BIO-4:** Earth-moving equipment shall avoid maneuvering in areas outside the identified limits of construction in order to avoid disturbing areas that would remain undeveloped. Where natural open space areas are located adjacent to construction areas, the limits of construction shall be identified on the site plans.

- **BIO-5:** Once projects are completed, vegetated areas disturbed due to construction activity shall be restored to pre-construction conditions. Re-vegetation plans shall be developed and included in project design specifications. The plant palette shall include native plants, when feasible, and exotic or invasive plants shall be avoided.

- **BIO-6:** If permanent unavoidable impacts to special-status plant populations are identified within a disturbance area, the implementing agencies shall retain a qualified biologist to develop and implement a plant mitigation and restoration program. This program shall contain the following items: responsibilities and qualifications of the personnel to implement and supervise the program; site selection; site preparation and planting implementation; schedule; maintenance plan/guidelines; monitoring plan; long-term preservation; and performance standards.

- **BIO-7:** If temporary construction-related impacts to special-status plant populations are identified within a disturbance area, the implementing agencies shall retain a qualified biologist to prepare and implement a special-status species salvage and replanting plan. The salvage and replanting plan shall include measures to salvage (if feasible), replant, and monitor the disturbance area until native vegetation is re-established, in accordance with requirements of the CDFW and United States Fish and Wildlife Service (USFWS).

- **BIO-8:** If trees could be impacted by project construction, an arborist shall conduct a tree survey. If any Oak trees or other protected trees will be impacted by Program 2, the required county or city permits shall be obtained, as directed by the arborist. All terms and conditions of the permits shall be implemented.

Resource 4B: Will the proposal result in a reduction of the numbers of any unique, rare or endangered species of plants?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

Same as response for Resource 4A above.

Resource 4C: Will the proposal result in the introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

The construction of projects associated with Program 2 has the potential to spread invasive species by the entering and exiting of construction equipment contaminated by invasive species, the inclusion of invasive species in seed mixtures and mulch, and the improper removal and disposal of invasive species so that its seed is spread during transport. Invasive species can move on vehicles and in the loads they carry. Invasive plants can be moved from site to site during spraying and mowing

operations. There are likely exotic plant species in the CBWCB within non-native plant communities, within patches of native plant communities, and in areas that have been disturbed by human activity. Exotic plant species are typically more numerous adjacent to roads and developed areas and frequently border ornamental landscape. The plant palette used for re-vegetation of disturbed areas shall not include exotic or invasive species, as described by **Mitigation Measure BIO-5**. Therefore, Program 2 would not introduce invasive or exotic plants into the project areas or create a barrier to the normal replenishment of existing plant species.

Mitigation Measure

- Implementation of **Mitigation Measure BIO-5** (see Resource 4A discussed earlier).

Resource 4D: Will the proposal result in a reduction in acreage of any agricultural crop?

Significance Determination: No Impact.

Land uses within the CBWCB, as defined by the Los Angeles County General Plan (County of Los Angeles, 2014) and the Southern California Association of Governments (SCAG), are predominantly residential, commercial, industrial, recreational, and public facilities (see Figure 2). There are no designated agricultural land uses within the Central Basin and West Coast Basin, as defined by the California Department of Conservation (CDOC; http://www.conservation.ca.gov/dlrp/fmmp/Pages/Index.aspx). CDOC's Important Farmland Map for Los Angeles County does not identity any land as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore, projects associated with Program 2 would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. Similarly, no land within the Central Basin and West Coast Basin is enrolled under the California Land Conservation Act of 1965 (also referred to as the Williamson Act; http://www.conservation.ca.gov/dlrp/lca/Pages/Index.aspx). As a result, Program 2 would have no impact to agriculture, would not convert agricultural land to non-agricultural use, and would not reduce acreage of an agricultural crop.

6.3.5 Animal Life

Resource 5A: Will the proposal change the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, insects or microfauna)?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

The CNDDB lists the status and locations of rare animals and plants in California. A query of the CNDDB identified 52 wildlife species within the CBWCB and this list is provided in **Appendix C.** Some formally-listed wildlife species (those either deemed threatened or endangered by USFWS or CDFW) are known to occur where proposed projects may be constructed. Projects associated with Program 2 would result in construction of new facilities primarily within the boundaries of existing facilities or within developed and disturbed areas adjacent to existing treatment plants and existing right-of-ways that do not support native vegetation undisturbed habitat. However, some projects may be constructed in or adjacent to natural communities that may have the potential to support animal species. The ultimate locations of many projects have not been finalized and surveys would be conducted prior to construction activities to ensure that animal species would not be impacted. The

future project-level environmental review processes will consider all proposed projects on a case-by-case basis to ascertain whether an individual project would impact animal species and, where it is necessary, will require the implementation of mitigation measures to minimize and reduce potentially significant impacts to animal species. There would be no significant impacts to the diversity of, or number of, animal species with implementation of **Mitigation Measures BIO-9 through BIO-14**, as described below.

Mitigation Measures

- **BIO-9:** Prior to ground disturbing activities in areas that could support sensitive biological resources, a habitat assessment shall be conducted by a qualified biologist to determine the potential for special-status wildlife species to occur within affected areas. If the habitat assessment determines that a special-status wildlife species has the potential to be present within 500 feet of the construction zone, the qualified biologist shall consult with the implementing agency to determine whether a focused survey shall be conducted prior to project implementation to determine the presence or absence of the species.

- **BIO-10:** If a special-status wildlife species is determined present within the limits of construction activities, a qualified biologist shall conduct pre-construction surveys of proposed work zones and the 500-foot buffer around each area within 14 days prior to ground disturbing activities. Any potential habitat capable of supporting a special-status wildlife species, such as burrows, shall be flagged for avoidance, as necessary; any additional habitat features, if any, shall also be identified and flagged as necessary.

- **BIO-11:** If the habitat assessment concludes that there is potential for listed special-status wildlife species to occur and the area of potential presence cannot be avoided, appropriate protocol-level surveys shall be conducted by a qualified biologist in accordance with the requirements of the appropriate regulating agency (USFWS or CDFW). If a listed species is determined to have the potential to be present in or adjacent to the area of disturbance, a mitigation plan shall be prepared by a qualified biologist and, if necessary, approved by the USFWS and/or the CDFW prior to any ground disturbing activities.

- **BIO-12:** Every effort shall be made to avoid potential impacts to special-status wildlife species by eliminating construction activities to the greatest extent possible within areas where those species are detected through surveys. Tunneling or jack and bore construction methods under drainages that may support listed special-status wildlife species shall be recommended in areas where those species have the potential to occur or where presence has been confirmed.

- **BIO-13:** All construction areas, staging areas, and right-of-ways shall be staked, flagged, fenced, or otherwise clearly delineated to restrict the limits of construction to the minimum necessary near areas that may support special-status wildlife species as determined by a qualified biologist.

- **BIO-14:** Silt fencing or similar impermeable barriers to exclude small wildlife species from entering the active work areas shall be installed around future work areas that occur within or adjacent to undisturbed habitats, or near areas of documented occurrences of special-status

wildlife as determined during pre-construction surveys by a qualified biologist. Such impermeable barriers shall be verified by a qualified biologist prior to initiating construction activities.

Resource 5B: Will the proposal reduce the numbers of any unique, rare or endangered species of animals?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

Same as response to Resource 5A above.

Resource 5C: Will the proposal introduce new species of animals into an area, or result in a barrier to the migration or movement of animals?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

There are no established wildlife movement corridors within the CBWCB, as described in the Los Angeles County General Plan (County of Los Angeles, 2014). It is anticipated that projects associated with Program 2 would be constructed within the boundaries of existing facilities or developed within disturbed areas that do not support native vegetation or undisturbed habitat. The Program 2 projects would not interfere with wildlife movement or any native resident or migratory wildlife species and would not be constructed within a native wildlife nursery site.

However, common and special-status migratory birds are likely to nest or forage in habitats found within or near the proposed project sites. The Significant Ecological Areas (SEAs) within the CBWCB provide ideal pockets of habitat for several migratory and resident bird species. As part of the Los Angeles County General Plan's Conservation and Open Space Element and Land Use Element, policies for SEAs have been identified and adopted. The purpose of establishing a SEA is to maintain biological diversity by establishing natural biological parameters, including species, habitat types, and linkages. The Los Angeles County General Plan includes recommended management practices for each SEA. Seven SEAs fall within the CBWCB: Palos Verdes Peninsula and Coastline SEA, Harbor Lake Regional Park SEA, Alamitos Bay SEA, Terminal Island SEA, Madrona Wash SEA, El Segundo Dune SEA, and Puente Hills SEA. The exact locations of proposed Program 2 projects have not been established. Therefore, focused surveys would be performed by a qualified biologist prior to any construction activities that could result in direct or indirect impacts to breeding or nesting birds. **Mitigation Measures BIO-15 and BIO-16**, as described below, would reduce impacts on nesting birds to less than significant levels.

Implementation of Program 2 may result in temporary or permanent loss of foraging habitat for migratory birds, including raptor species. Similarly, proposed construction activities could impact roosting bats. Potential bat roost sites in the vicinity of the project areas may include abandoned structures. Implementation of **Mitigation Measures BIO-15 through BIO-17** would reduce potential direct and indirect impacts to migratory birds, raptor species, and bats to a level of less than significant. Additionally, there would be no significant impact to the migration or movement of animals.

Mitigation Measures

- **BIO-15:** If construction is initiated or vegetation removal is proposed between February 1 and August 31, then a qualified biologist shall conduct a pre-construction survey for breeding and nesting birds within 500 feet of the construction area limits to determine and map the location and extent of breeding birds that could be affected by the project. Active nest sites located during the pre-construction surveys shall be avoided and a non-disturbance buffer zone shall be established, consisting of 300 feet for any passerine (or similar) species and 500 feet for any raptor or special-status species, or distances otherwise determined by a qualified biologist. Nest sites shall be avoided with approved non-disturbance buffer zones until the adults and young are no longer reliant on the nest site for survival, as determined by a qualified biologist.

- **BIO-16:** All active bird nest buffer areas shall be clearly demarcated with stakes, flags, or fence material. The installation of buffer areas shall be verified by a qualified biologist prior to the initiation of ground disturbing activities.

- **BIO-17:** A qualified biologist shall conduct a survey for bat roost sites prior to the initiation of any construction activities in areas where potential roost sites may occur, such as abandoned structures, bridges, or hollow trees. If a bat roost is identified, a minimum 300-foot buffer shall be established by a qualified biologist or as otherwise determined in consultation with the CDFW.

Resource 5D: Will the proposal result in deterioration to existing fish or wildlife habitat?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

Three natural communities identified in the CNDDB occur within the CBWCB. Southern Coastal Bluff Scrub occurs along the coast and within the boundaries of the Palos Verde Peninsula and Coastline SEA; Southern Coastal Salt Marsh occurs within the boundaries of the Alamitos Bay SEA; and Southern Dune Scrub occurs within the beach near the Hyperion Water Treatment Plant, which is located at the western coast of the West Coast Basin. These communities are not expected to occur within the disturbance areas of the projects associated with Program 2. However, the exact location of each proposed project has not been established. Impacts to existing fish or wildlife habitat would be estimated in the future on a project specific basis. The future project-level environmental review processes would consider all proposed projects on a case-by-case basis to ascertain whether an individual project would impact existing fish and wildlife habitat and where it is necessary, will require the implementation of mitigation measures to minimize and reduce potentially significant impacts to fish and wildlife habitat. Implementation of Mitigation Measures BIO-1 through BIO-17 would reduce potential direct and indirect impacts to fish and wildlife habitat to a level of less than significant.

Mitigation Measures

- Implementation of **Mitigation Measures BIO-1 through BIO-17** (see Resources 5A and 5C discussed above)**.**

6.3.6 Noise

Resource 6A: Will the proposal result in increases in existing noise levels?

Sound is technically described in terms of the loudness (amplitude) and frequency (pitch). The standard unit of measurement for sound is the decibel (dB). The "A-weighted" decibel scale, abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA. Studies have shown that the smallest perceptible change in sound level for a person with normal hearing sensitivity is approximately 3 dBA. Equivalent Noise Level (Leq) is the average noise level on an energy basis for any specific time period. The Leq for one hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. Leq can be thought of as the level of a continuous noise that has the same energy content as the fluctuating noise level. The equivalent noise level is expressed in units of dBA (AECOM, 2014).

Noise levels decrease as the distance from the noise source to the receiver increases. Noise generated by a stationary noise source, or "point source," will decrease by approximately 6 dBA over hard surfaces (e.g., reflective surfaces such as parking lots or smooth bodies of water) and 7.5 dBA over soft surfaces (e.g., absorptive surfaces such as soft dirt, grass, or scattered bushes and trees) for each doubling of the distance. Generally, noise is most audible when there is an unobstructed visual path between the noise source and the noise receptor. Barriers, such as walls, berms, or buildings that break the line-of sight between the source and the receiver greatly reduce noise levels from the source (AECOM, 2014).

Noise levels generated from construction activities differ from those generated by the operation of new facilities/equipment, so the impact assessment of these two activities is discussed separately below.

Construction

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

Program 2 would involve the installation of new or upgraded treatment facilities, pipelines, pump stations, basins, and groundwater wells within the CBWCB. Construction activities would include drilling of wells, trenching for new pipelines, and installation of any additional supporting infrastructure. It is expected that construction activities would occur intermittently in the future. Specific construction equipment lists, material lists, construction methods, construction schedules, and workforce details would be developed in the future as specific major recycled water projects and implementation measures are planned and designed. The construction noise impacts associated with each individual project would be short-term in nature and limited to the period of time when the construction activity is taking place. Construction-related noise levels at and near construction sites would fluctuate depending on the particular type, number, and duration of usage of various pieces of construction equipment. The use of heavy construction equipment may be required for activities such as site preparation, grading and excavation, trenching, installation of piping and equipment, paving, and erection of structural elements and mechanical systems. Construction activities could also involve the use of smaller power tools, generators, and other sources of noise. During each stage of development for individual projects, there would be a different mix of equipment operating and varying associated noise levels. Potential impacts related to construction noise are dependent on proximity to noise-sensitive receptors as well.

Of the proposed Program 2 projects, the greatest impacts to noise may be associated with GRIP A construction activities due to the complexity and large size of this project. Relative to GRIP A, the remaining proposed Program 2 projects, including other recycled water projects and implementation measures, are smaller in scope and less complex and therefore, anticipated to result in fewer noise impacts due to construction activities.

As described in the GRIP Draft EIR (AECOM, 2014), a new AWT recycled water plant will be constructed, as well as an associated pipeline that would deliver AWT recycled water from the new plant to the MFSG for recharge. The GRIP Draft EIR evaluates potential noise impacts for both the AWT recycled water plant, which is a point feature, and the AWT recycled water pipeline, which is a linear feature. Given the proximity of the AWT recycled water plant to neighboring noise-sensitive receptors, construction noise was determined to be less than significant (AECOM, 2014). Neighboring residential land uses would be 400 to 500 feet from the construction area.

As a linear feature, the AWT recycled water pipeline would vary in its proximity to receptors as construction progresses along the alignment. It would pass through industrial, residential, commercial, and open space areas. Although construction noise associated with pipelines would be experienced by receptors for short durations as installation progresses (typically 100 to 200 feet per day), noise can exceed thresholds for daytime noise levels at property boundaries when residences are within 50 to 100 feet or less of the construction zone. The GRIP Draft EIR identified potentially significant noise impacts when certain construction techniques are used in close proximity (less than 50 feet) to residences. At these noise sensitive receptors, construction activity would increase ambient noise by more than 5 dBA, which is the threshold established by the Los Angeles County Noise Ordinance (AECOM, 2014).

Implementation of **Mitigation Measures NOISE-1 through NOISE-10** would reduce such construction noise impacts to less than significant levels. Mitigation Measures NOISE-1 through NOISE-10 require construction activities to be conducted in accordance with the applicable local noise regulations and standards, with implementation of noise reduction devices and techniques during construction activities, and with advance notification to surrounding noise-sensitive receptors about upcoming construction activities and hours of operation. This would serve to reduce the construction-related noise levels at nearby receptors to the maximum extent feasible.

There may be circumstances where construction activities are unable to comply with local noise regulations and/or standards; for example, there may be instances where construction methods such as pile-driving or rock blasting are required in proximity to sensitive receptors or 24-hour drilling is required for a new groundwater well. While the majority of the construction activities would occur during daytime hours, the construction of groundwater wells may require drilling that occurs over 24 hours. Most jurisdictions in the CBWCB do not have provisions that would allow for nighttime construction activities, so a noise waiver would need to be obtained for these activities. Accordingly, **Mitigation Measure NOISE-11** would be implemented.

Mitigation Measures

Projects where construction noise impacts exceed allowable standards and thresholds, or construction is scheduled on days/times not allowed by the local noise ordinance, the following mitigation measures shall be applied.

- **NOISE-1:** If necessary, include design measures where feasible to reduce the construction noise levels to comply with local noise ordinances. These measures may include, but are not limited to, the erection of noise barriers/curtains, use of advanced or state-of-the-art mufflers on construction equipment, and/or reduction in the amount of equipment that would operate concurrently at the construction site. The construction contractor shall keep equipment properly maintained. Provide noise shielding and muffling devices on construction equipment per the manufacturer's specifications.

- **NOISE -2:** The construction contractor shall use rubber-tired equipment rather than track equipment.

- **NOISE -3:** The construction contractor shall turn off noise-generating equipment when not in use. Minimize the effects of equipment with the greatest peak noise generation potential via shrouding or shielding to the extent feasible. Examples include the use of drills, pavement breakers, and jackhammers.

- **NOISE -4:** The construction contractor shall ensure that all stockpiling and vehicle staging areas are located away from noise-sensitive land uses.

- **NOISE -5:** The construction contractor shall establish a public liaison for project construction that shall be responsible for addressing public concerns about construction activities, including excessive noise. The liaison shall determine the cause of the concern (e.g., starting too early, bad muffler, etc.) and shall work with the construction contractor to implement reasonable measures to address the concern.

- **NOISE -6:** The construction contractor shall develop a construction schedule to ensure that activity shall be completed quickly to minimize the time noise-sensitive land uses that would be exposed to construction noise. Locate stationary construction noise sources as far from adjacent noise-sensitive receptors as possible, and require that these noise sources be muffled and enclosed within temporary sheds, insulation barriers if necessary to comply with local noise ordinances.

- **NOISE -7:** The construction contractor shall use electric- and hydraulic-powered rather than diesel- and pneumatic-powered equipment, as feasible. Place noise and groundborne vibration-generating construction equipment whose specific location on a construction site may be flexible (e.g., operation of compressors and generators, cement mixing, general truck idling) as far as possible from the nearest noise- and vibration-sensitive land uses such as residences, schools, and hospitals.

- **NOISE -8:** Prior to construction work, residences, businesses, and other properties located along the pipeline alignment shall be notified of the location and dates of construction. For

major construction projects, identify a liaison for surrounding residents and property owners to contact with concerns regarding construction noise and vibration. The liaison's telephone number(s) shall be prominently displayed at construction locations.

- **NOISE -9:** Haul routes shall be on major arterial roads within non-residential areas, as feasible.

- **NOISE -10:** The construction contractor shall coordinate with the site administrators for institutional land uses (e.g., schools) along the alignment to discuss construction activities that generate high noise levels. Coordination between the site administrator and construction contractor shall continue on an as-needed basis to mitigate potential disruption of classroom activities.

- **NOISE-11:** For construction activities during non-standard working hours or hours that are not exempt from compliance with applicable city or county noise ordinances (e.g., 24-hour well drilling), the implementing agency will secure a noise waiver from the appropriate jurisdiction if available.

Operations

Significance Determination: Less than Significant Impact.

Once installed, operation of newly constructed pipelines and other underground facilities would not result in any increases in ambient noise levels. Of the aboveground facilities associated with Program 2, such as pumps, fans, air compressors, chillers, turbines, etc., have the potential to generate the most noise due to operation of mechanical equipment. For example, given the urbanized environment of the CBWCB, there is potential for aboveground facilities to operate in proximity or adjacent to existing noise-sensitive land uses, such as residential properties, schools, hospitals, etc., although many projects would be located within the boundaries of existing facilities, such as the new AWT recycled water plant associated with GRIP A. The proposed treatment process, which includes reverse osmosis (RO), microfiltration/ultrafiltration, (MF/UF), and ultraviolet advanced oxidation process (UV-AOP), would not generate audible noise past the property line since no mechanical equipment is required to operate the RO, MF/UF, UV-AOP facilities.

To reduce operational noise impacts to less-than-significant levels, the implementing agency for each project would design new facilities such that applicable city or county noise level requirements are met at neighboring property lines. Design features to mitigate noise include locating stationary noise-generating equipment away from noise-sensitive receptors, including acoustical shielding for equipment, and incorporating the use of parapets into building design. Operational noise impacts associated with proposed Program 2 projects would be less than significant.

Resource 6B: Will the proposal result in exposure of people to severe noise levels?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

Same as response for Resource 6A described earlier.

6.3.7 Light and Glare

Resource 7A: Will the proposal produce new light or glare?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

There are two types of light intrusion: the first source emanates from the interior of structures and passes through windows, while the second type projects from exterior sources such as parking lot lighting and street lamp lighting. Glare is the result of sunlight or an artificial light source being reflected on a flat surface or reflective exterior coatings. Light and glare can disturb wildlife in natural habitat areas and act as a nuisance to adjacent residential areas and motorists. Light and glare are typical features of urbanized settings, such as the CBWCB. The primary sources of light within the CBWCB are associated with predominantly residential, commercial, industrial, and public facilities. Car headlights associated with vehicular traffic also contribute to light and glare as do roadway lights.

Security lighting used during the construction activities may introduce new sources of light and glare to the immediate project areas. Nighttime construction, such as 24-hour drilling required for wells, would need nighttime lighting that could spill over onto neighboring properties and potentially impact neighboring sensitive receptors, such as residential land uses. However, typical measures, such as those discussed as **Mitigation Measure LIGHT-1** below, would shield and direct light spillover away from surrounding light-sensitive land uses. Temporary impacts associated with light and glare during construction activities would be reduced to less than significant levels with implementation of Mitigation Measure LIGHT-1.

Once proposed facilities are designed and constructed, significant impacts related to light and glare would occur if there were substantial permanent increases in ambient daytime or nighttime light levels near light-sensitive land uses, such as residential areas. Proposed underground facilities, such as pipelines, would not create a new source of light and glare. Aboveground facilities and infrastructure may require new exterior daytime and nighttime lighting for operational and security purposes. Implementation of **Mitigation Measure LIGHT-2**, as described below, would require any permanent exterior lighting on buildings/structures to be shielded and directed downward to avoid light intrusion onto surrounding land uses. Operational impacts associated with light and glare would be reduced to a less than significant level with implementation of Mitigation Measure LIGHT-2.

Mitigation Measures

- **LIGHT-1:** Lighting used during nighttime construction shall be shielded and pointed away from surrounding light-sensitive land uses.

- **LIGHT-2:** All new permanent exterior lighting associated with proposed project components shall be shielded and directed downward to avoid any light spill onto neighboring lands or into nighttime skies.

6.3.8 Land Use

Resource 8A: Will the proposal result in substantial alteration of the present or planned land use of an area?

Significance Determination: Less than Significant Impact.

The projects associated with Program 2 would be installed primarily within existing right of ways, utility easements, or on lands already owned by water, wastewater, utility and other local agencies to the extent feasible and would not conflict with land use designations or be incompatible with neighboring land uses. Some projects may result in installation of facilities across other designated land uses, such as General Commercial and Open Space land uses. Per California Government Code Section 53091, building ordinances of local cities or counties do not apply to the location or construction of facilities for the projection, generation, storage, treatment, or transmission of water or wastewater. Therefore, any project facilities that conflict with local General Plan land use designations would not be subject to a conditional use permit or General Plan Amendment.

Implementation measures related to land use regulation provide mechanisms to support landscape conservation incentives and enactment of landscape ordinances. Landscape conservation incentives provide rebates for weather-based irrigation controls and turf removal programs for residential and commercial customers. Public education includes information provided via websites and non-profit organizations. However, the landscape conservation incentives and public education programs would not result in alteration of the present or planned land uses of the CBWCB. Similarly BMPs associated with LID projects may alter the materials and vegetation of the site to facilitate groundwater recharge and reduced stormwater runoff, but not result in alteration of land use at the surface of a site. Thus, impacts to present and planned uses would be less than significant.

6.3.9 Natural Resources

Resource 9A: Will the proposal increase the rate of use of any natural resources?

Significance Determination: Less than Significant Impact.

It is not reasonably foreseeable that construction activities and operations at new facilities associated with Program 2 would significantly increase the rate of use of any natural resources or cause substantial depletion of any nonrenewable natural resource. Rather, Program 2 would increase the rate of use of a renewable natural resource, namely recycled water. Program 2 would not require quarrying, mining, dredging, or extraction of locally important mineral resources. Some projects may consume electricity to operate infrastructure, but not at levels that would cause significant adverse impacts. Fuel and energy consumption are discussed in greater detail in Section 6.3.15 *Energy*. Furthermore, some components of Program 2 can be designed to operate hydraulically without the need for pumps and leveraging gravity flow for water conveyance. Thus, impacts to the rate of use of natural resources would be less than significant.

Resource 9B: Will the proposal result in substantial depletion of any nonrenewable natural resource?

Significance Determination: Less than Significant Impact.

Same as response for Resource 9A above.

6.3.10 Risk of Upset

Resource 10A: Will the proposal result in a risk of an explosion or the release of hazardous substances (including, but not limited to: oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

Construction activities and operations at new facilities associated with Program 2 could create new significant hazards to the public or the environment through reasonably foreseeable upset conditions and accidents involving the release of hazardous materials. The potential exists for accidents to occur during construction activities and through routine operation and maintenance activities.

Construction of proposed projects could result in the exposure of construction workers and nearby residents to potentially contaminated soils or groundwater due to improper use, storage, or disposal of hazardous materials and/or leakage from underground storage tanks or other chemical containers on site. Implementation of **Mitigation Measures HAZ-1 and HAZ-2** would reduce these potentially hazardous impacts from construction activities to a less than significant level.

Once constructed, operations at new facilities, such as upgraded or expanded treatment plants, that use regulated and hazardous materials, would be required to operate in accordance with all State and Federal laws and regulations that oversee the use and disposal of hazardous substances. For example, the California Accidental Release Prevention (CalARP) Program requires facilities that use regulated substances to develop a Risk Management Plan (RMP). Existing treatment plants that undergo expansion or upgrade would require an updated RMP to include new facilities and any associated hazardous materials use, storage, or transport. The RMP is a public document that reflects a facility's overall effort to manage and prevent risks associated with the storage, use, and/or processing of regulated substances.

The California Hazardous Materials Release Response Plans and Inventory Program (CCR Title 19, Division 2, Chapter 4) requires facilities that store hazardous materials on site to prepare a Hazardous Materials Business Plan (HMBP) that includes an inventory of hazardous substances and an Emergency Response Plan (ERP). The HMBP is submitted to local health and fire departments. In the event of an accident, the release of hazardous materials must be immediately reported to local fire and emergency personnel and appropriate county and State agencies.

Expansion of existing treatment plants may require delivery of chemicals. The transport of hazardous materials is regulated by the California Department of Transportation (Caltrans). Transporters of hazardous waste would be required to be certified by Caltrans. All transport of hazardous materials would be tracked by Caltrans and delivery vehicles would be required to utilize roadways approved for transportation of hazardous materials. Thus, the proposed applicable

Program 2 projects would not create a significant hazard to the public due to the extensive regulations already in place regarding the transport of hazardous materials.

Implementation of the RMP, HMBP, and ERP, as required, and compliance with all laws and regulations governing the use, transport, and disposal of hazardous substances would reduce potential risks to the public and environment to less than significant levels in the event of an accidental release of hazardous materials during operations at newly-constructed facilities associated with Program 2.

Mitigation Measures

- **HAZ-1: Contingency Plan for Contaminated Soil or Groundwater.** Prior to commencement of any proposed construction activities requiring excavation, the implementing agency shall require its construction contractor to consult with appropriate regulatory agencies to prepare a Contingency Plan that outlines how to dispose of any contaminated soil or groundwater that may be encountered. If contaminated soil and/or groundwater are encountered or if suspected contamination is encountered during project construction, work shall be halted in the area, and the Contingency Plan shall be implemented.

- **HAZ-2: Hazardous Materials Management Spill Prevention and Control Plan.** Before commencement of construction activities requiring the storage of hazardous materials on site, the implementing agency shall require its construction contractor to prepare a Hazardous Materials Management Spill Prevention and Control Plan that includes a project-specific Contingency Plan for hazardous materials and waste operations. The Contingency Plan shall be applicable to all construction activities, and shall establish policies and procedures according to Federal and California Occupational Safety and Health Administration (OSHA) regulations for hazardous materials. Elements of the Contingency Plan shall include, but not be limited to the following:
  - A discussion of hazardous materials management, including delineation of hazardous material storage areas, access and egress routes, waterways, emergency assembly areas, and temporary hazardous waste storage areas;
  - Notification and documentation of procedures; and
  - Spill control and countermeasures, including employee spill prevention/response training.

6.3.11 Population

Resource 11A: Will the proposal alter the location, distribution, density, or growth rate of the human population of an area?

Significance Determination: No Impact.

Program 2 would not directly build new housing that would result in an increase in population or create substantial numbers of jobs due to construction activities or operations at new facilities that would have a noticeable effect on population. Future new staff required to operate proposed

facilities are expected to be drawn from the existing population. In addition, Program 2 would not displace existing housing or substantial numbers of people such that replacement housing would be required. The majority of Program 2 projects would be located within existing ROWs, utility easements, or on lands already owned by water, wastewater, utility, and other local agencies. There would be no direct impacts on population. However, Program 2 may have indirect effects on population growth, which is further discussed in Section 7.2 *Growth Inducing Impacts*.

6.3.12 Housing

Resource 12A: Will the proposal affect existing housing, or create a demand for additional housing?

Significance Determination: No Impact.

Program 2 would not directly build new housing nor create substantial numbers of jobs. As such, construction activities or operations at new facilities would not result in an increase in population that would in turn create demand for additional housing. Construction contractors and their employees and future staff required to operate proposed new facilities are expected to be drawn from the existing population. Thus, proposed Program 2 projects would have no effect on existing housing and would not create a need for additional housing.

6.4.13 Transportation/Circulation

Resource 13A: Will the proposal result in generation of substantial additional vehicular movement?

Significance Determination: Less than Significant Impact.

Some projects associated with Program 2 would generate construction-related traffic. Activities that generate traffic consist of the daily arrival and departure of construction workers, trucks hauling equipment and materials to construction sites, the hauling of excavated soils, and importing of new fill. Construction may require the movement of oversized loads, such as trucks carrying pipes. The increase in the number of vehicles on local and regional roadways would be temporary and therefore would not result in any long-term degradation in operating conditions or permanent increase in vehicular movement. Potential impacts from the use of construction-related vehicles would include short-term and intermittent reduction of roadway capacities due to slower movements and larger turning radii of construction trucks as compared to passenger vehicles. Once material and equipment are delivered to construction sites, they would be staged on site and thus, construction-related deliveries are not expected to have an effect on daily vehicular movements on roadways. Only construction worker commutes are anticipated to add vehicles to local roadways. However, as mentioned previously under Resource 12A, construction workers are expected to be drawn from the existing regional population, and as such construction crews are currently accounted for in the existing traffic conditions. Impacts to traffic movement and circulation on roadways would be less than significant.

Operation of new facilities, such as pipelines, pump stations, treatment systems, and groundwater wells, would not impact traffic and transportation patterns because, once constructed, they would be located underground or outside of active lanes of traffic on roadways. Operation of upgraded or expanded treatment facilities may require additional chemical deliveries and haul trips for disposal

of solids/wastes generated by new treatment systems; the number of trips would vary by facility. Additional employees may also be required to operate expanded treatment facilities. However, workers already commute to and from existing treatment plants and the increase in new employees is not expected to be significant, if at all, at facilities that undergo small upgrades. Overall, the amount of additional trips associated with the expansion and upgrade of treatment plants would not significantly increase vehicular movement on roadways. Thus, such effects would be less than significant.

Resource 13B: Will the proposal result in effects on existing parking facilities, or demand for new parking?

Significance Determination: Less than Significant Impact.

Construction of projects associated with Program 2 may require staging areas to accommodate demand for parking of equipment, materials, and worker vehicles. However, these parking facilities would be temporary and would cease upon construction completion. Operations at new facilities associated with Program 2 would have a less than significant impact on demand for existing and new parking facilities. Operations at new facilities may result in additional employees, but such demand would be anticipated and any additional parking would be included in project designs where needed. Overall, there would be no significant effects on existing parking and any demand for new parking would be accommodated. Thus, impacts to existing parking facilities and demand for new parking would be less than significant.

Resource 13C: Will the proposal result in a substantial impact upon existing transportation systems?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

Levels of Service (LOS) is a quality measure describing operational conditions within a traffic stream, generally in terms of service measures such as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS is used to define the quality of traffic flow through a specific street, road segments, or individual intersections. LOS standards for roadways that are part of the Los Angeles County Congestion Management Program (CMP) network are intended to regulate long-term traffic increases resulting from operations at new facilities, and do not apply to temporary construction projects. Therefore, construction of projects associated with Program 2 in both the West Coast Basin and Central Basin would not conflict with the Los Angeles County CMP and would have no impact on LOS standards in the local project area. However, certain facilities, such as pipelines and pump stations, may be constructed within or cross roadways or ROWs, which could result in temporary lane or roadway closures. Such effects could be considered potentially significant to existing transportation systems. **Mitigation Measures TR-1 through TR-7** would implement a Traffic Control/Management Plan and other measures to ensure appropriate actions are taken to reduce traffic congestion, local roadway impacts, and disruption of existing transportation systems during construction, thus reducing traffic impacts to a less than significant level. This conclusion is supported by the GRIP Draft EIR, which finds construction-related traffic impacts similarly to be less than significant (AECOM, 2014).

Operations at facilities would have little to no impact on traffic as the only associated operational vehicle trips would be periodic maintenance trips, possible chemical and other operational deliveries, haul trips for disposal of solids/wastes generated by new treatment systems, and minimal

additional employee commutes. Such operational vehicle trips would be associated with GRIP A. The GRIP Draft EIR finds that due to the low volume of additional average daily vehicle trips during facility operation, there would be no significant impact to the intersections or roadway segments within the CBWCB (AECOM, 2014).

Mitigation Measures

- **TR-1:** A Traffic Control/Management Plan, subject to approval by appropriate local jurisdictions, shall be prepared and implemented by the construction contractor prior to commencement of any construction activities. The Traffic Control/Management Plan shall include the following as applicable.
  - Identify hours of construction activities and for associated deliveries
  - Identify roadway segment or lane closures and coordinate appropriate detours
  - Include a discussion of haul routes, limits on the length of open trench where applicable, work area delineation, traffic control and flagging
  - Identify all access and parking restrictions, pavement markings and signage requirements (e.g., speed limit, temporary loading zones, etc.)
  - Maintain access to residence and business driveways at all times to the extent feasible; minimize access disruptions to businesses and residences
  - Develop a plan for notifications and a process for communication with affected residents and businesses prior to the start of construction. Advance public notification may include posting of notices and appropriate signage of construction activities. Notification may include the construction schedule, the exact location and duration of activities within each street (i.e., which lanes and access points/driveways would be blocked on which days and for how long), and a toll-free telephone number for receiving questions or complaints.
  - Include a plan to coordinate with emergency service providers in the area at least one month in advance of construction. Emergency service providers shall be notified of the timing, location, and duration of construction activities. All roads shall remain passable to emergency service vehicles at all times.
  - Include a plan to coordinate all construction activities with school districts when construction zones would be located within ¼-mile of an occupied school facility. School districts shall be notified of the timing, location, and duration of construction activities. The implementing agencies shall require its construction contractor to maintain vehicle, pedestrian, and school bus service during construction through inclusion of such provisions in the construction contract. The assignment of temporary crossing guards at designated intersections may be needed to enhance pedestrian safety during project construction. Additional provisions of this plan may include:
    - The requirement that all open trenches be covered with metal plates at the end of each workday to accommodate traffic and access; and
    - Street restoration requirements pursuant to agreements with local jurisdictions.

- **TR-2:** The implementing agency of the project shall identify all roadway locations where special construction techniques (e.g., horizontal boring, directional drilling or night construction) could be used to minimize impacts to traffic flow, and implement such techniques when feasible.

- **TR-3:** The implementing agency of the project shall develop traffic management and detour plans to minimize impacts to local street circulation, including bikeways. This may include the use of signing and flagging to guide vehicles and cyclists through and/or around the construction zone.

- **TR-4:** The implementing agency of the project shall encourage construction crews to park at staging areas to limit lane closures in the public ROW.

- **TR-5:** Peak travel periods shall be avoided where possible when implementing partial road closures.

- **TR-6:** The implementing agency of the project shall consult with nearby school districts at least one month prior to construction to coordinate bus stop relocations (if necessary), alternative busing routes, alternative safe routes to school programs, and other traffic circulation provisions to reduce potential interruption of student transit services.

- **TR-7:** The implementing agency of the project shall consult with Caltrans to obtain permits for the transport of oversized loads, and to obtain encroachment permits for any work along roadways.

Resource 13D: Will the proposal result in alterations to present patterns of circulation or movement of people and/or goods?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

Construction of facilities such as pipelines or pump stations within or across roadways/ROWs could cause lane or street closures, which would affect current patterns of traffic circulation. Construction within the ROW could also impact public transit routes or bicycle lanes. Mitigation Measures TR-1 through TR-7 would implement a Traffic Control/Management Plan and other measures to ensure appropriate actions are taken to reduce congestion, local roadway impacts, and disruption of alternative transportation routes during construction. Impacts to the circulation or movement of people and/or goods during project construction would be less than significant level with mitigation.

Mitigation Measures

- Implementation of **Mitigation Measures TR-1 through TR-7** (see Resource 13C discussed earlier).

Resource 13E: Will the proposal result in alterations to waterborne, rail or air traffic?

Significance Determination: No Impact.

Construction activities and operations at new facilities associated with Program 2 would not affect waterborne, rail, or air traffic patterns because they will not be occurring at ports, rail lines, or airports. Thus, there would be no impact to waterborne, rail, or air traffic.

Resource 13F: Will the proposal result in an increase in traffic hazards to motor vehicles, bicyclists or pedestrians?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

Operations at newly-constructed facilities associated with Program 2 would have no long-term impact on demand for alternative transportation or on alternative transportation systems (i.e., for transit and bicyclists). However, construction of proposed facilities could disrupt bus routes due to construction activities within roadways/ROWs that may result in partial lane closures or street closures and traffic delays. Furthermore, construction activities could result in bike pathway and sidewalk closures in the project areas. For example, for GRIP A, construction of the AWT recycled water pipeline would necessitate the closure of sidewalks and crosswalks located within the construction zone. As a result, construction activities may potentially create unsafe conditions for pedestrians under restricted capacity conditions. Implementation of **Mitigation Measure TR -8** would require consultation with local jurisdictions to develop plans to minimize any potential impacts to bicycle or pedestrian facilities. Implementation of **Mitigation Measure TR -9** would require consultation with local transit agencies, such as the Los Angeles County Metropolitan Transportation Authority (Metro), to minimize impacts to alternative public transportation facilities and service.

Additionally, Mitigation Measures TR-1 through TR-7 would implement a Traffic Control/Management Plan and other measures to ensure appropriate actions are taken to reduce congestion, local roadway impacts, and disruption of alternative transportation routes during construction. Thus, impacts to motor vehicles, bicyclists, and pedestrians during project construction would be less than significant level with mitigation.

Mitigation Measures

- Implementation of **Mitigation Measures TR-1 through TR-7** (see Resource 13C discussed earlier).

- **TR-8:** The implementing agency of the project shall require the construction contractor to consult with local jurisdictions if bicycle or pedestrian facilities would be directly affected by construction activities. If required, the construction contractor shall develop circulation and detour plans to minimize impacts to bikeways and pedestrian facilities. This may include the use of signing and flagging to guide vehicles, cyclists, and pedestrians through and/or around the construction zone. After construction is complete, implementing agencies shall ensure that bicycle or pedestrian facilities are restored to pre-construction conditions.

- **TR-9:** The implementing agency of the project shall require the construction contractor to consult and coordinate with Metro and/or other local transit agencies at least one month

prior to construction activities within roadways that coincide with bus routes, to determine whether construction of the proposed project would affect bus stop locations or otherwise disrupt public transit routes. A plan shall be developed to relocate bus stops or reroute buses to avoid disruption of the public transit service.

6.3.14 Public Services

Resource 14A: Will the proposal result in a need for new or altered governmental services for fire protection, police services, schools, parks and other recreational facilities, maintenance of public facilities, including roads, or other governmental services?

Significance Determination: No Impact.

Program 2 includes projects/programs related to groundwater recharge, seawater intrusion control, recycled water reuse, stormwater/runoff management, groundwater monitoring, wastewater salinity/nutrient source control, source water salinity control, and public education. Such projects and programs may result in construction of treatment facilities, some of which may require chemicals and other hazardous materials on site, within urban developed areas already managed under various jurisdictions and therefore, would not warrant additional emergency response services or providers, such as fire and police protection. As discussed earlier, Program 2 would not have a direct effect on population or housing. As such, there would be no need for additional school services or park facilities that would otherwise be required to accommodate an increase in local population. Therefore Program 2 would have no impact to existing public services in the CBWCB.

6.3.15 Energy

Resource 15A: Will the proposal result in use of substantial amounts of fuel or energy?

Significance Determination: Less than Significant Impact.

Energy intensity, in units of kilowatt hours (kWh) per million gallons (MG), is a measure of the amount of energy required to perform water management activities, such as treating and conveying potable water; collecting, treating, and discharging wastewater; or treating and distributing recycled water. Some of the projects associated with Program 2 involve the replacement of imported water with recycled water for groundwater replenishment, i.e. the use of lower energy intensity water supplies to displace higher energy intensity water supplies. The potential impact of this action is based largely on the amount of energy required to convey imported water (from Northern California, the Owens River Valley, and the Colorado River via an extensive system of pipelines, aqueducts, and canals) to the points of use versus the amount of energy required to treat and convey locally-produced recycled water to the points of use.

As shown in **Table 6-2**, the California Energy Commission has calculated the range of energy intensities for water use cycle segments. Energy intensity is expressed in terms of the amount of energy in kWh required for managing 1 MG of water. The range of energy intensity for potable

water supply and conveyance is from zero to 14,000 kWh/MG and the range of energy intensity for recycled water treatment and distribution is 400 to 1,200 kWh/MG.

TABLE 6-2
ENERGY INTENSITIES FOR WATER USE CYCLES

	Range of Energy Intensity (kWh/MG)	
Water-Use Cycle Segments	**Low**	**High**
Potable Water Supply and Conveyance	0	14,000
Potable Water Treatment	100	16,000
Potable Water Distribution	700	1,200
Wastewater Collection and Treatment	1,100	4,600
Wastewater Discharge	0	400
Recycled Water Treatment and Distribution	400	1,200

kWh – kilowatt hours

MG – million gallons

SOURCE: California Energy Commission, *California's Water – Energy Relationship, Final Staff Report*, November 2005.

More specifically, the California Energy Commission has estimated the differential energy intensity for water management activities in Northern California and Southern California. In Southern California, the energy intensity for water supply and conveyance is estimated to be 8,900 kWh/MG. Comparing this energy requirement to the maximum energy requirement for recycled water treatment and distribution, which is 1,200 kWh/MG, clearly demonstrates that Program 2 would result in a decrease in the energy demand per million gallons of water, related to the increased use of recycled water associated with the proposed Program 2 projects.

In general, the production and use of recycled water is more energy efficient in comparison to imported water, although unit electricity consumption rises as the degree of treatment and complexity of the processes increases (California Energy Commission, 2005). Program 2 would decrease reliance on imported water and thus, reduce the energy requirements otherwise associated with utilizing imported water for groundwater replenishment. As a result, overall impacts to energy supplies would be considered less than significant.

Resource 15B: Will the proposal result in a substantial increase in demand upon existing sources of energy, or require the development of new sources of energy?

Significance Determination: Less than Significant Impact.

Program 2 would require energy to operate proposed pipelines/pump stations, extraction wells, and new, expanded, or upgraded treatment systems. In the CBWCB, the local energy providers for these facilities would be either Southern California Edison (SCE) or LADWP. Even though more

power would be required for facility construction and operation, this power would otherwise be used to convey imported water to the CBWCB for groundwater replenishment. As discussed above, energy associated with the production of recycled water would be significantly less than conveying the same amount of imported water to the region. As such, implementation of Program 2 projects would constitute an energy offset and thus, impacts to regional energy supplies and energy consumption would be less than significant.

6.3.16 Utilities and Service Systems

Resource 16A: Will the proposal result in a need for new systems, or substantial alterations to power or natural gas?

Significance Determination: Less than Significant Impact.

Same as response to Resource 15A discussed in Section 6.3.15. Existing facilities in the CBWCB are currently powered using electricity generated by SCE or LADWP. Construction activities associated with proposed Program 2 projects would require connections to existing power sources, which would slightly increase short-term electricity demand. Most of the construction activities would involve excavation, grading, and drilling, which would be serviced by diesel fuels, not electricity. Construction activities would not result in a substantial increase in energy consumption or wasteful energy consumption or the need for new energy infrastructure at individual sites.

Operation of newly-constructed facilities/equipment associated with Program 2 would result in a net increase in electricity consumption. For example, GRIP A is anticipated to require over 22 million kWh per year (AECOM, 2014) for which the primary source of power would be electricity. Although energy consumption would increase, the proposed Program 2 projects would result in increased reliable local water supplies and thus decrease imported water demand, which would reduce the overall energy requirements otherwise utilized for conveying imported water for groundwater replenishment (see discussion for Resource 15A in Section 6.3.15). As a result, energy consumption for implementation of Program 2 would be neither wasteful nor unnecessary and would not be considered a substantial increase when considered on a regional basis. Thus, impacts to power or natural gas usage would be less than significant.

Resource 16B: Will the proposal result in a need for new systems, or substantial alterations to communications systems?

Significance Determination: Less than Significant Impact.

New systems or alterations to communications systems are not considered necessary for projects associated with Program 2. Construction and maintenance crews would employ various existing communication systems such as telephones, cell phones, and radios. These types of communication devices and systems are used daily by construction and maintenance personnel as part of regular business activities.

Construction activities could require temporary disconnecting and reconnecting or relocating existing underground cables for communication. The relocations would be short-term and temporary. Any necessary relocation of utility lines would be coordinated with the local parties or

service districts responsible for managing the affected utilities prior to project construction. Thus, impacts to communication systems would be less than significant.

Resource 16C: Will the proposal result in a need for new systems, or substantial alterations to water?

Significance Determination: Less than Significant Impact.

As discussed earlier, Program 2 includes projects that will involve construction and operation of new facilities/equipment. During construction, water would be required for activities such as dust control. However, these activities are limited and temporary and would not consume large amounts of water such that require new or altered water facilities. Operations at newly-constructed facilities are anticipated to result in a nominal increase in demand for water, if at all. Since Program 2 would not require or result in the construction of new water systems, the impact to water systems would be less than significant.

Resource 16D: Will the proposal result in a need for new systems, or substantial alterations to sewer or septic tanks?

Significance Determination: Less than Significant Impact.

As discussed earlier, Program 2 includes projects that will involve construction and operation of new facilities/equipment. During construction, wastewater primarily would be generated by various construction activities and construction workers would be conveyed from the project site to existing wastewater treatment facilities. Due to the temporary nature of the construction activities and the anticipated low number of construction workers, the amount of construction-related wastewater generated is not expected to have a significant impact on existing sewer systems. Operations at newly-constructed facilities are anticipated to result in a nominal increase in amount of wastewater generated, if at all. Since, Program 2 would not require or result in the construction of new sewer systems, the impact to sewer systems would be less than significant.

Resource 16E: Will the proposal result in a need for new systems, or substantial alterations to stormwater drainage?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

The construction of some Program 2 projects would affect local site drainage patterns. Proposed pipelines would generally be located underground and, with commitments to restore disturbed areas along pipeline alignments to pre-construction conditions (per Mitigation Measures BIO-5 and AES-3 described in Sections 6.3.4 and 6.3.18, respectively), would not permanently alter existing site drainage patterns. Proposed aboveground facilities would be located primarily in existing developed or urbanized areas. The presence of new facilities at each project site and changes in the extent of permeable or impermeable surfaces may alter the direction and volume of overland flows during both wet and dry periods. As a result, during project design, overland flows and drainage at each project site would be assessed and designed such that no net increase in runoff would occur, in accordance with the Los Angeles County MS4 Permit (LARWQCB, 2012b). As required by the Los Angeles County MS4 Permit, a grading and drainage plan would be developed during project design and implemented to ensure no increase in off-site surficial discharges (see Mitigation Measure EARTH-2 described in Section 6.3.1). This also would ensure no substantial increases in on-site or

off-site flooding would occur and that the existing capacity of stormwater drainage systems would not be exceeded. Thus, impacts to stormwater drainage at proposed project sites would be less than significant due to compliance with the Los Angeles County MS4 Permit.

Mitigation Measures

- Implementation of **Mitigation Measures EARTH-2, BIO-5, and AES-3** (see Resources 1C, 4A, and 18B, respectively)**.**

Resource 16F: Will the proposal result in a need for new systems, or substantial alterations to solid waste and disposal?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

Construction of facilities associated with Program 2 projects may generate some solid waste, such as excavated soils, old equipment, building materials, etc., removed during construction, which would need to be transported to one or landfills; however, the amount of solid waste would not be enough to affect the permitted capacity of a landfill. Excavated soils would be stockpiled and reused on site to the extent feasible to minimize the need for off-site disposal. Proposed facilities located in Los Angeles County would be subject to Los Angeles County's Green Building Standards Code (https://library.municode.com/HTML/16274/level2/TIT31GRBUSTCO_CH1AD.html), which requires at least 65 percent of the non-hazardous construction and demolition debris to be recycled and/or salvaged for reuse on large construction projects. Additionally, all proposed facilities would be regulated by the California Integrated Waste Management Act of 1989, which requires 50 percent diversion of all solid waste streams from landfills through source reduction, recycling, and composting activities. A contractor who would haul solid waste to a local landfill for disposal would also export non-recyclable construction waste for the project. Implementation of **Mitigation Measures UTIL-1 and UTIL-2** would reduce the amount of solid waste expected to be generated by Program 2 and minimize the need for solid waste disposal. With implementation of Mitigation Measures UTIL-1 and UTIL-2, impacts to landfill capacities and solid waste disposal would be less than significant.

Operations at some facilities associated with Program 2 would generate additional solid waste, including biosolids as a byproduct of the wastewater treatment process, which would need to be transported to one or more landfills; however, the amount of solid waste would not be enough to affect the permitted capacity of a landfill. As stipulated by the Code of Federal Regulations (CFR), Title 40, Part 503, biosolids may be disposed in a landfill or applied to the land for beneficial uses. Landfills provide a year-round disposal outlet for the biosolids associated with the proposed project. Landfills serving the proposed project would require a minimum Class III sanitary level to accommodate Class B biosolids. In the Los Angeles Region, the Puente Hills Landfill, owned and operated by SDLAC, is a Class III landfill that could accept biosolids. Thus, impacts to solid waste disposal would be less than significant.

Mitigation Measures

- **UTIL-1:** Project facility design and construction methods that produce less waste or that produce waste that could be recycled or reused more readily, shall be encouraged by the implementing agency.

- **UTIL-2:** The contractor shall be required to develop plans for recovering, reusing, and recycling wastes produced through any proposed construction, demolition, and excavation activities.

6.3.17 Human Health

Resource 17A: Will the proposal result in the creation of any health hazard or potential health hazard (excluding mental health)?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

As stated earlier, Program 2 includes projects related to groundwater recharge, seawater intrusion control, recycled water reuse, stormwater/runoff management, groundwater monitoring, wastewater salinity/nutrient source control, and source water salinity control. Construction activities and operations at new facilities associated with Program 2 could create human health hazards through chemical exposure or accidents involving the release of hazardous materials. The potential exists for accidents to occur during construction activities and through routine operation and maintenance activities.

Construction of proposed projects could result in the exposure of construction workers and nearby residents to potentially contaminated soils or groundwater due to improper use, storage, or disposal of hazardous materials and/or leakage from underground storage tanks or other chemical containers on site. Implementation of Mitigation Measures HAZ-1 and HAZ-2 would reduce these potentially hazardous impacts from construction activities to a less than significant level. Other measures to minimize human health hazards are further discussed in Section 6.3.10 (see Resource 10A).

The use of recycled water in the State is regulated under California Code of Regulations, Title 22, Division 4, Chapter 3 Water Recycling Criteria. These requirements were established to protect human health and the environment. Currently in the CBWCB, recycled water has many uses, including groundwater recharge, urban landscape irrigation, agricultural irrigation, industrial and commercial process water, recreational facilities, and wildlife habitat maintenance. At the MFSG, groundwater recharge using recycled water has been performed for over 50 years. During this time, recycled water has been proven to be a safe and reliable resource while ensuring the protection of the water supply for humans and the environment. Hence, the proposed Program 2 projects that will increase the use of recycled water for irrigation and groundwater recharge are expected to have a less than significant impact to human health.

Some proposed Program 2 projects would be considered indirect potable reuse because they are groundwater recharge projects (MFSG and the seawater intrusion barriers) that will replace imported water with recycled water. These groundwater recharge projects would continue to comply with State recycled water regulations, specifically California Code of Regulations, Title 22, Sections 60301, 60320, and 60323. These regulations not only set limits for recycled water quality and quantity used for recharge, but also establish recycled water and groundwater monitoring requirements and require a minimum retention time for recycled water to remain underground to further protect human health. Public health requirements are established by the SWRCB Division of

Drinking Water (formerly the California Department of Public Health) and included in the groundwater recharge permits issued for specific projects by the Regional Water Quality Control Boards.

Mitigation Measures

- Implementation of **Mitigation Measures HAZ-1 and HAZ-2** (see Resource 10A discussed in Section 6.3.10)**.**

Resource 17B: Will the proposal result in exposure of people to potential health hazards?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

Same as response for Resource 17A above.

6.3.18 Aesthetics

Resource 18A: Will the proposal result in the obstruction of any scenic vista or view open to the public?

Significance Determination: Less than Significant with Mitigation Incorporated.

A scenic vista can be described as an expansive view of a highly valued landscape for the benefit of the general public. There are portions of the West Coast Basin and Central Basin that could be characterized as having scenic vistas including undeveloped hillsides, ridgelines, and open space areas that provide a unifying visual backdrop to the urban environment of the Los Angeles Basin. Examples of scenic vistas visible from public vantage points in the CBWCB include the Palos Verdes Estates Bluffs and the Puente Hills. Impacts to scenic vistas can occur when the visible scenic landscape itself is altered or when a new contrasting object is introduced that blocks or obstructs a scenic vista from a particular public vantage point.

The exact locations of proposed conveyance pipelines for projects associated with Program 2 have not yet been finalized. Temporary ground disturbance will be required as pipeline installation progresses for construction projects. The presence of construction equipment and materials may be visible from public vantage points but would not affect any scenic views or vistas for longer than the temporary construction periods. It is anticipated that pipelines would be located underground and not visible once construction is complete. Therefore, construction and operation of pipelines associated with a project would not permanently affect views or scenic vistas.

The exact locations of proposed pump stations have not yet been finalized. Similar to pipeline construction, site disturbance and the presence of construction equipment and materials during construction of pump stations could temporarily introduce contrasting elements into scenic views and vistas. Based on the typical function and exterior design of pump stations, they would not significantly affect views or scenic vistas from publically-accessible vantage points. Pump stations typically consist of single-story buildings. For the proposed Program 2 projects, pump stations would generally be located in urban developed areas. As such, pump stations could be designed similar to and compatible with surrounding architecture and neighborhood character, if necessary.

With implementation of **Mitigation Measures AES-1 and AES-2**, pump stations would not be expected to obstruct scenic vistas or views from public vantage points.

The exact locations of proposed groundwater wells have not yet been finalized. Similar to pipeline construction, site disturbance and the presence of construction equipment and materials during drilling and installation of wells could temporarily introduce contrasting elements into scenic views and vistas. The proposed wells would mostly be underground; however, a small portion (up to several feet) of each well could be visible aboveground. Associated aboveground structures could vary in size from low-profile vaults or well pumps to single-story buildings. It is anticipated that a majority of future wells would be located within existing roadways/ROWs or existing facilities. Although proposed wells could be visible from public vantage points, the well housing likely would be located adjacent to roadways and proximate to land already developed and not expected to obstruct scenic vistas. Additionally, wells proposed near the Los Angeles River are not expected to obstruct scenic views because this river is currently channelized. Nonetheless, in order to ensure that aboveground well facilities would not introduce contrasting elements into the visual landscape that would obstruct scenic views or vistas, Mitigation Measures AES-1 and AES-2 would be implemented to ensure that wellhead housing is designed to be compatible with surrounding buildings and neighborhood character and is appropriately screened with vegetation as necessary. Mitigation Measure AES-2 also includes restoration of disturbed landscape areas.

Mitigation Measures

- **AES-1:** Proposed aboveground buildings/structures shall be designed to be consistent with the aesthetic qualities of existing structures in the vicinity to minimize contrasting features.

- **AES-2:** During project design, the implementing agency shall require preparation of a landscape plan for aboveground facilities that restores disturbed areas and minimizes effects to scenic vistas.

Resource 18B: Will the proposal result in the creation of an aesthetically offensive site open to public view?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

Construction activities associated with Program 2 would require the use of construction equipment and storage of materials on site, thus introducing contrasting features into the visual landscape that could affect the visual quality of project sites and/or their surroundings. Contrasting features would include excavated areas and stockpiled soils and other materials generated and stored on site during construction. However, adverse effects to visual character associated with project construction would be temporary and thus, would be considered less than significant.

Once constructed, project facilities would be located in predominantly urban areas. Underground facilities, such as pipelines and wells, are not expected to have a permanent effect on the visual character of an area. Implementation of **Mitigation Measure AES-3** would ensure disturbed areas are restored to pre-construction to conditions. Aboveground structures within urban areas would be constructed on or adjacent to existing developed and built-up landscapes. Small aboveground structures, such as wellhead pumps, would have no significant effect on the visual character of the area. Large aboveground structures, such as single-story pump stations, water tanks, and treatment

facilities, would be compatible with the existing visual character of the area with implementation of Mitigation Measures AES-1, AES-2 and AES-3. Additionally, implementation of LID projects may improve the visual character of sites due to installation of rain gardens and greenways.

Mitigation Measures

- Implementation of **Mitigation Measures AES-1 and AES-2** (see Resource 18A above).
- **AES-3:** After installation of project components is complete, disturbed areas, including pipeline alignments, construction easements, and staging areas, shall be restored to pre-construction conditions by the construction contractor.

6.3.19 Recreation

Resource 19A: Will the proposal impact upon the quality or quantity of existing recreational opportunities?

Significance Determination: Less than Significant Impact.

Most proposed Program 2 projects would not affect recreational facilities or recreation activities within the CBWCB, with the exception of the expansion of the Goldsworthy Desalter for increased groundwater pump and treat of the saline plume. One of the proposed extraction wells for this project is located within an existing recreational park in the City of Torrance. The well and conveyance piping to the desalter will be underground, while wellhead equipment will be completely enclosed in a small, single-story well house to be constructed on the park site. The implementing agency, WRD, is currently working with the City of Torrance to design a low-impact facility that will minimize any potential impacts to the quality of recreational activities at the park and a project-level CEQA analysis will be conducted before this project is fully implemented.

As discussed earlier, projects associated with Program 2 would not have a direct effect on population or housing. As such, there would be no increase in use of existing parks or other recreational facilities relative to existing conditions. There also would be no need to construct additional park or recreational facilities. As a result, there would be no deterioration of existing recreational facilities and no adverse physical effects on the environment associated with constructing new recreational facilities. Overall, Program 2 would have a less than significant impact on recreation.

6.3.20 Archaeological/Historical

Resource 20A: Will the proposal result in the alteration of a significant archaeological or historical site structure, object or building?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

Archaeological resources are places where human activity has measurably altered the earth or left deposits of physical remains. Archaeological resources may be either prehistoric-era (before European contact) or historic-era (after European contact). The majority of such places in California are associated with either Native American or Euro-American occupation of the area. The most

frequently encountered prehistoric or historic Native American archaeological sites are village settlements with residential areas and sometimes cemeteries; temporary camps where food and raw materials were collected; smaller, briefly occupied sites where tools were manufactured or repaired; and special-use areas like caves, rock shelters, and rock art sites. Historic-era archaeological sites may include foundations or features such as privies, corrals, and trash dumps.

Historic resources include standing structures, infrastructure, and landscapes of historic or aesthetic significance that are generally 50 years of age or older. In California, historic resources considered for protection tend to focus on architectural sites dating from the Spanish Period (1529-1822) through the early years of the Depression (1929-1930), although there has been recent attention paid to World War II (WWII) and Post WWII era facilities. Earlier historic resources are often associated with archaeological deposits of the same age. Some resources, however, may have achieved significance within the past 50 years if they meet the criteria for exceptional significance.

The CBWCB has a long history of human occupation, dating to at least 9,000 years before the present. The abundant natural resources within these basins, including rivers, creeks, the Pacific Ocean, and the flora and fauna associated with these water features, would have attracted and sustained human settlement. Significant archaeological resources have been recorded throughout the CBWCB, and at least 18 Gabrielino village sites are known to have existed (Altschul et al., 2003; Gumprecht, 2001; McCawley, 1996). Despite heavy urbanization, the CBWCB should nonetheless be considered to have a high archaeological sensitivity. Because of this, previously unknown and unrecorded archaeological resources may be unearthed during excavation and grading activities for individual projects. This can occur even in already developed areas, as older buildings are known to have often been built on top of or within archaeological deposits. If previously undiscovered artifacts or buried archaeological resources are uncovered during excavation or construction, significant impacts could occur without implementation of mitigation measures.

Many proposed Program 2 project locations and specific design elements have yet to be finalized. As such, impacts to specific cultural resources are not addressed here. However, as proposed Program 2 projects move forward, individual projects would undergo additional CEQA review prior to construction, and thus specific potential impacts to cultural resources will be addressed for each project.

Numerous historic structures exist within the CBWCB. Were a project to cause an alteration or demolition of a significant historic structure, this could result in a significant archaeological impact. Since the CBWCB is considered sensitive for cultural resources, this would be taken into consideration during the future project-level CEQA reviews. Implementation of **Mitigation Measures CUL-1 through CUL-6** would reduce impacts to cultural/archaeological resources to less than significant levels.

Mitigation Measures

- **CUL-1:** The implementing agency shall retain a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Standards for professional qualifications in archaeology, to conduct a study of the potentially impacted area(s) for all individual projects that involve ground disturbance. The archaeologist shall conduct a

cultural resources inventory designed to identify potentially significant resources. This inventory would be developed based on a cultural resources records search conducted at the South Central Coastal Information Center located at California State University Fullerton and a field survey of the area deemed appropriate by the archaeologist. The archaeologist shall also provide recommendations for additional work for those resources that may be affected by a proposed project.

- **CUL-2:** For project components that include or affect existing structures that are 50 years old or greater, the implementing agency shall retain a qualified architectural historian, defined as meeting the Secretary of the Interior's Standards for historic preservation, to determine the need for a project-specific historic architectural study. If warranted, the architectural historian shall identify and evaluate potentially affected historic resources (eligible for the National Register, California Register, or local designation) prior to project implementation.

- **CUL-3:** The implementing agency shall avoid impacts, if feasible, to identified cultural resources that are eligible for listing in the National Register, California Register, or local designation, or that qualify as a unique archaeological resource under CEQA, including prehistoric and historic archaeological sites, locations of importance to Native Americans, human remains, and historical buildings, structures and landscapes. Methods of avoidance may include, but should not be limited to, project re-route or re-design, project cancellation, or identification of protection measures such as capping or fencing. If avoidance is determined not to be feasible, then a qualified archaeologist shall develop and implement a cultural resources treatment plan. This treatment plan shall include provisions for analysis of data in a regional context, curation of artifacts and data at an approved facility, and dissemination of reports to Local and State repositories, libraries, and interested professionals.

- **CUL-4:** The implementing agency shall retain archaeological monitors (and Native American monitors, where deemed appropriate) to assess project-related ground-disturbing activities that have the potential to impact significant archaeological resources as determined by a qualified archaeologist. If appropriate, a qualified archaeologist shall develop a Cultural Resources Monitoring and Mitigation Plan (CRMMP). The CRMMP shall specify the location, duration and timing of monitoring and establish emergency procedures applicable upon the potential discovery of unanticipated significant archaeological resources. The CRMMP shall include, at a minimum, procedures for: the re-direction of ground disturbing activities in the event of a discovery of unanticipated significant archaeological resources; the evaluation and protection of archaeological resources encountered; notification protocols; treatment options in the event avoidance is determined to be infeasible; and reporting.

- **CUL-5:** For all individual projects that involve ground disturbance, construction workers will receive paleontological awareness training prior to commencement of fieldwork. This training shall emphasize applicable State, Federal, and Local laws, and include information on what to do in case an unanticipated discovery is made by a field worker. All construction personnel shall be informed of the possibility of encountering fossils, and instructed to immediately inform the field supervisor if any bones or other potential fossils are unearthed

in the project area and a paleontological monitor is not present (for example, if a sensitive formation is encountered subsurface that is not mapped at the surface, thus not necessitating the presence of a paleontological monitor for this work). In such a case, workers shall immediately cease all activity within a 20-foot radius of the discovery site and notify the Construction Manager.

- **CUL-6**: For all individual projects that involve ground disturbance, if human remains are discovered, work in the immediate vicinity of the discovery site shall promptly be suspended and the Los Angeles County Coroner shall be contacted. If the remains are deemed Native American in origin, the Coroner shall contact the Native American Heritage Commission (NAHC) and identify a Most Likely Descendant (MLD) pursuant to Section 5097.98 of the Public Resources Code and CEQA Guidelines (CCR, Title 14, Section 15064.5). Work may commence only after consultation and treatment have been completed. Work may continue on other parts of the project while consultation and treatment are conducted.

6.3.21 Mandatory Findings of Significance

Resource 21A: Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

Same as responses for Resources 1A through 1C, 1G, 2A, 4A through 4C, 5A through 5D, 6B, 10A, 18A and 18B, and 20A**.**

Resource 21B: Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time, while long-term impacts will endure well into the future.)

Significance Determination: No Impact.

The objective of Program 2 is to manage S/Ns in a sustainable manner that assists attainment of water quality objectives and preservation of beneficial uses over the long-term SNMP planning period through the year 2025. Thus, Program 2 does not achieve short-term goals to the disadvantage of long-term goals.

Resource 21C: Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant.)

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

Refer to Section 7 for the analysis of cumulative impacts on the environment.

Resource 21D: Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Significance Determination: Less than Significant Impact with Mitigation Incorporated.

As described above, Program 2 does not result in any unmitigated significant environmental effects, and therefore no identified substantial adverse effect on human beings would occur. Therefore, impacts to human beings both directly and indirectly would not occur from implementation of Program 2. See responses to Resources 6A, 10A, 13F, and 17A.

SECTION 7

Other Environmental Considerations for the Recommended Program Alternative

In accordance with CEQA Guidelines (CCR, Section 15126.2), this section provides an overview of other environmental considerations for the Recommended Program Alternative (Program 2), including unavoidable significant environmental effects, cumulative impacts, growth-inducing impacts, and significant irreversible environmental changes. The subsections below describe these potential environmental impacts in detail.

7.1 Unavoidable Significant Environmental Effects

Unavoidable significant environmental effects, as defined by the CEQA Guidelines (CCR, Section 15126.2(b)), are any significant environmental impacts that cannot be avoided if the Recommended Program Alternative is implemented. These potential impacts include those that can be mitigated but cannot be reduced to a less than significant level. According to the environmental impact analysis presented in Section 6 of this SED, Program 2 would not result in significant unavoidable impacts during the construction or operations phases with implementation of the identified mitigation measures.

7.2 Program-Level Cumulative Impact Assessment

Cumulative impacts, as defined in the CEQA Guidelines (CCR, Section 15355), refer to two or more individual effects, that when considered together, are considerable or that increase other environmental impacts. Cumulative impact assessments must consider not only the impacts of Program 2, but also the impacts from other proposed municipal and private projects, which could occur in the CBWCB during the SNMP future planning period. Per CEQA Guidelines (CCR, Section 15064(h)(4)), the existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that any incremental effects caused by the proposed Program 2 projects are cumulatively considerable.

The subsections below provide a program-level assessment of the cumulative environmental impacts of the proposed projects associated with Program 2. Project-level environmental analyses of individual projects and their cumulative effects will be the purview of the implementing agency. Such project-level assessments will be conducted in the future, as appropriate, as projects are developed, designed, and implemented. This program-level CEQA assessment identifies all reasonably foreseeable impacts and provides mitigation measures that can be applied to individual projects associated with Program 2 in order to reduce impacts below significance thresholds.

The program-level cumulative impact analysis conducted for this SED includes consideration of construction activities of other reasonably foreseeable future projects (i.e. non-SNMP projects) that may occur in the vicinity and in the same general timeframe as the proposed Program 2 projects. In addition, potential cumulative impacts resulting from operational activities associated with Program 2, in conjunction with non-SNMP projects in the CBWCB, were also considered in this program-level assessment.

7.2.1 Earth

As discussed in Section 6.3.1, potential impacts to proposed facilities due to geology, soils, and seismic conditions and hazards due to Program 2 would be less than significant with the implementation of the identified Mitigation Measures EARTH-1 and EARTH-2, which require geotechnical investigations and grading and drainage plans to inform facility designs. For non-SNMP projects, any similar potentially significant impacts due to local geology, soils, and seismic conditions would be identified during appropriate CEQA assessments and could be similarly mitigated. These projects, as well as the proposed Program 2 projects, would be required to comply with all applicable Local and State standards. As such, impacts related to geology and soils would be minimized to less than significant levels through required regulatory compliance and mitigation, and would not combine to create cumulatively significant impacts. Therefore, Program 2, in combination with non-SNMP projects in the CBWCB, would have a less than significant cumulative impact related earth, including geology, soils and seismicity.

7.2.2 Air Quality and Climate Change

Emissions from construction and facility operations that exceed the SCAQMD recommended daily thresholds for criteria air pollutants[11] would be cumulatively considerable, especially for those pollutants that are currently in nonattainment under an applicable Federal or State ambient air quality standard. As discussed in Section 6.3.2 *Air*, the identified Mitigation Measures AQ-1 through AQ-8 would reduce potential construction-related emissions associated with Program 2 to a less than significant level. For non-SNMP projects in the CBWCB, any potentially significant impacts to air quality also would be evaluated during CEQA assessments, as appropriate, and would be similarly mitigated. In addition, these projects would be required to comply with all applicable regulatory air quality standards. As such, impacts related to air quality would be minimized to less than significant levels through required regulatory compliance and mitigation, and would not combine to create cumulatively significant impacts. Therefore, the proposed Program 2 projects, in combination with non-SNMP projects, would have a less than significant cumulative impact on air quality.

GHG impacts to global climate change are inherently cumulative. GHG emissions from many projects would affect global concentrations and the climate system, and small contributions to this cumulative impact of global climate change may be potentially significant. However, no single project would measurably contribute to a noticeable incremental change in the global average temperature, or to global, local, or microclimates. Therefore, the analysis of the environmental effects of GHG emissions

11 Criteria air pollutants are the most prevalent air pollutants known to be harmful to human health and have extensive health-effects criteria documentation.

from the implementation of Program 2 discussed in Section 6.3.2 is addressed cumulatively. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative and as discussed in Section 6.3.2, construction and operational GHG emissions associated with the implementation of Program 2 would be less than significant. Therefore, Program 2, in combination with non-SNMP projects in the CBWCB, would not have a less than significant cumulative GHG impact.

7.2.3 Water

The main objective of the CBWCB SNMP is to manage S/N loading to groundwater in the basins on a sustainable basis. As a result, the analysis of potential groundwater impacts due to the implementation of Program 2 is inherently cumulative. As discussed in Section 6.3.3 *Water*, Program 2 would be considered an environmental benefit with respect to water and as such, would have a less than significant impact on water quality and hydrology, including groundwater quality, drainage, surface water runoff, and flood hazards. There are no potentially significant adverse effects associated with Program 2 that would combine with other non-SNMP projects to create significant adverse cumulative effects. Therefore, Program 2 and its associated projects, in combination with non-SNMP projects in the CBWCB, would have a less than significant cumulative impact on hydrology and water quality.

7.2.4 Plant and Animal Life

The proposed Program 2 projects and non-SNMP projects would occur in highly urbanized and developed areas that are unlikely to include substantial habitats for biological resources. As discussed in Sections 6.3.4 and 6.3.5, the identified Mitigation Measures BIO-1 through BIO-17 would reduce potential impacts of Program 2 on plant and animal life to a less than significant level. For non-SNMP projects, any potentially significant impacts to special species, riparian habitats, protected wetlands, migratory wildlife, and other local biological resources would be evaluated through project-level CEQA and other assessments, as appropriate, and could be similarly mitigated. In addition, all projects in the CBWCB, including the proposed Program 2 projects, would be required to comply with applicable State, Federal, and Local regulations concerning biological resources. As such, impacts related to plant and animal life would be minimized to less than significant levels through required regulatory compliance and mitigation and would not combine to create cumulatively significant impacts. Therefore, Program 2, in combination with non-SNMP projects in the CBWCB, would have a less than significant cumulative impact on plant and animal life.

As discussed in Section 6.3.4 *Plant Life*, there is no farmland designated by the California Department of Conservation in the CBWCB. So Program 2 would have no impact to agricultural lands or crop acreage and as such would not contribute to any cumulative effects to agriculture.

7.2.5 Noise

As discussed in Section 6.3.6 *Noise*, noise levels generated from construction activities and operations at new facilities associated with Program 2 would be reduced to a less than significant level with the implementation of the identified Mitigation Measures NOISE-1 through NOISE-11. The assessment of the cumulative noise impacts related to these two activities is discussed separately below.

Construction

Sensitive receptors such as residential land uses in the immediate vicinity of proposed Program 2 projects temporarily may be exposed to significant noise levels during construction. Also, noise levels from simultaneous construction of non-SNMP projects occurring in the immediate vicinity of proposed Program 2 projects when combined could result in a cumulatively considerable impact to sensitive receptors. However, implementation of **Mitigation Measure CUMULATIVE-1** described below would ensure cumulative noise impacts are reduced to less than significant levels because implementing agencies would coordinate construction of proposed Program 2 projects with other agencies/municipalities, as appropriate. In addition, construction activities associated with the proposed Program 2 projects, as well as non-SNMP projects in the CBWCB, would be subject to applicable municipal and/or Los Angeles County codes, depending on location. As such, Program 2, in combination with non-SNMP projects in the CBWCB, would have a less than significant cumulative impact on existing ambient noise conditions in the region and would not result in cumulatively considerable noise impacts.

Mitigation Measure

- **CUMULATIVE-1**: Implementing agencies shall communicate and coordinate project construction activities with other municipalities and agencies in the CBWCB as appropriate. Phasing of project construction activities shall be coordinated to minimize cumulative impacts related to noise, traffic, and transportation systems.

Operations

Operation of newly-constructed facilities associated with Program 2 and non-SNMP projects would not result in significant noise impacts, as these facilities would be designed to be in compliance with noise thresholds at the property boundary in accordance with local city and county noise ordinances. Thus, the incremental increase in noise due to the operation of new facilities/equipment would have a less than significant cumulative impact on existing ambient noise conditions in the region and would not result in cumulatively considerable noise impacts.

7.2.6 Light, Glare, and Aesthetics

The proposed Program 2 projects and non-SNMP projects would occur in areas that have already been impacted by urban development. Construction activities associated with these projects could result in temporary changes to light, glare, and the visual character of the project sites and possibly the surrounding areas, primarily due to the presence of construction equipment and materials that may be visible from public vantage points. Any visual effects would be temporary and short-term, i.e. limited to the construction period, as discussed further in Sections 6.3.7 and 6.3.18. Implementation of Mitigation Measure LIGHT-1 would reduce impacts related to nighttime construction lighting to less than significant levels. In addition, many of the proposed Program 2 projects would occur at existing facilities, so any new structures or equipment would be aesthetically consistent with the visual character of the existing facilities and surrounding areas with implementation of Mitigation Measures AES-1 through AES-3. In addition, Mitigation Measure LIGHT-2 would ensure permanent exterior lighting associated with new facilities would not affect neighboring land uses or nighttime skies.

For non-SNMP projects in the CBWCB, any potentially significant impacts associated with light, glare, and aesthetics would be identified during CEQA and other assessments, as appropriate, and could be similarly mitigated. As such, impacts related to light, glare, and aesthetics would be minimized to less than significant levels through mitigation and would not combine to create cumulatively significant impacts. Therefore, Program 2, in combination with non-SNMP projects in the CBWCB, would have a less than significant cumulative impact on light, glare, and aesthetics.

7.2.7 Land Use

Cumulative land use impacts could occur if non-SNMP projects in the vicinity of the proposed projects associated with Program 2 resulted in land use impacts, especially if the projects were implemented in combination. However, each individual Program 2 project and non-SNMP project would be required to either generally conform to the land use designations and zoning for their respective project sites or be subject to findings and conditions based on maintaining general conformance with the land use plans applicable to the area. As such, the proposed Program 2 projects and non-SNMP projects are not anticipated to substantially conflict with the intent of the General Plans of Los Angeles County or the applicable cities, or with other land use regulations required to be consistent with these General Plans. Conformance with these land use plans and regulations would ensure that any proposed project would not result in incompatible land uses. Therefore, Program 2, in combination with non-SNMP projects, would have a less than significant cumulative land use impact.

7.2.8 Natural Resources

As discussed in Section 6.3.9 *Natural Resources*, construction activities and operations at new facilities associated with Program 2 would result in a less than significant impact on the rate of use of natural resources. There are no potentially significant adverse effects associated with Program 2 that would combine with other non-SNMP projects to create significant cumulative effects. Therefore, Program 2 and its associated projects, in combination with non-SNMP projects in the CBWCB, would have a less than significant cumulative impact on natural resources.

7.2.9 Risk of Upset and Human Health

Implementation of Program 2 has the potential to increase the use, storage, transport, and/or risk of accidental release of hazardous materials during construction and operations. As discussed in Section 6.3.10 and 6.3.17, the identified Mitigation Measures HAZ-1 and HAZ-2 would reduce risk of upset of hazardous materials and associated human health risks associated with Program 2 to a less than significant level. For non-SNMP projects, any potentially significant impacts associated with the routine transport, use, or disposal of hazardous materials would be assessed during CEQA and other assessments, as appropriate, and could be similarly mitigated. Both Program 2 projects and non-SNMP projects would be required to comply with Federal, State and Local rules and regulations related to hazardous materials. As such, impacts related to risk of upset and human health would be minimized to less than significant levels through required regulatory compliance and mitigation and would not combine to create cumulatively significant impacts. Therefore, Program 2, in combination with non-SNMP projects in the CBWCB, would have a less than significant cumulative risk of upset and would not contribute to a cumulatively considerable impact to human health.

7.2.10 Population and Housing

As discussed in Sections 6.3.11 and 6.3.12, Program 2 would not involve the removal of housing or require the construction of replacement housing elsewhere, or otherwise generate population growth. There are no potentially significant impacts associated with Program 2 that would combine with other non-SNMP projects to create significant cumulative impacts related to population and housing. Individual Program 2 projects and non-SNMP projects would be required to comply with local policies related to growth. Therefore, Program 2 and its associated projects, in combination with non-SNMP projects in the CBWCB, would have a less than significant cumulative impact on population and housing.

7.2.11 Transportation/Circulation

As discussed in Section 6.3.13 *Transportation/Circulation*, potential traffic impacts and alterations to the circulation of people/goods due to Program 2 would be reduced to a less than significant level with the implementation of the identified Mitigation Measures TR-1 through TR-9. However, construction activities associated with the proposed Program 2 projects may be occurring in the same general time and space as non-SNMP projects, which could produce cumulative significant effects on traffic and circulation, depending upon a range of factors including the specific project location and the precise nature of the conditions created by the simultaneous construction activities. For example, construction of some non-SNMP projects, such as roadway and storm drain projects, could occur simultaneously and within the same streets as the proposed Program 2 projects, particularly installation of new pipelines within roadways and ROWs (many of the pipeline alignments associated with Program 2 have yet to be finalized). The effects of construction activities on traffic are due to an increase in the number of vehicles on local roadways (due to material delivery and worker commutes) and physical constraints on roadways if lane or street closures are required. Implementation of **Mitigation Measure CUMULATIVE-1** would ensure cumulative impacts to traffic and circulation are reduced to less than significant levels because implementing agencies would coordinate construction of proposed Program 2 projects with other agencies/municipalities, as appropriate.

Mitigation Measure

- Implement **Mitigation Measure CUMULATIVE-1** (see Section 7.2.5 *Noise*).

7.2.12 Public Services and Recreation

Based on the analysis presented in Sections 6.3.14 and 6.3.19, Program 2 would have a less than significant contribution to the cumulative impacts on public services and recreation in the CBWCB. There are no potentially significant impacts associated with Program 2 that would combine with other non-SNMP projects to create significant cumulative impacts related to public services and recreation. Therefore, Program 2, in combination with non-SNMP projects, would have a less than significant cumulative impact on public services and recreation.

7.2.13 Utilities, Service Systems, and Energy

As discussed in Section 6.3.16 *Utilities and Service Systems*, Program 2 would not generate substantial amounts of wastewater and would require minimal amounts of water. The solid waste generated during construction and operation would be sent to one or more landfills in the area; however, the amount would not be enough to affect the permitted capacity of a landfill. In addition, materials would be reused and recycled to the extent possible. Thus, with implementation of the identified Mitigation Measures EARTH-2, BIO-5, AES-3, UTIL-1, and UTIL-2, impacts to utilities and service systems would be less than significant during construction and operations. For non-SNMP projects, any potential impacts on utilities and service systems would be evaluated during CEQA and other assessments, as appropriate, and could be similarly mitigated. Therefore, Program 2, in combination with non-SNMP projects, would not contribute to a cumulatively considerable impact to utilities and service systems.

As described Section 6.3.15 *Energy*, the production and use of recycled water generally is more energy efficient in comparison to imported water, although unit electricity consumption rises as the degree of treatment and complexity of the processes increases (California Energy Commission, 2005). Program 2 would decrease reliance on imported water and thus, reduce the energy requirements otherwise associated with utilizing imported water for groundwater replenishment. Overall, Program 2 would have a less than significant impact on energy supplies and would not result in impacts that would combine with effects of other non-SNMP projects to create a cumulatively considerable impact on energy supplies.

7.2.14 Archaeological/Historical

As discussed in Section 6.3.20 *Archaeological/Historical*, potential impacts to cultural resources due to Program 2 would be less than significant with the implementation of the identified Mitigation Measures CUL-1 through CUL-6. As with Program 2, non-SNMP projects in the CBWCB would be required to comply with applicable Federal, State, and Local regulations concerning cultural resources, and any potential effects could be similarly mitigated. Therefore, Program 2, in combination with non-SNMP projects in the CBWCB, would have a less than significant cumulative cultural resources impact.

7.3 Growth-Inducing Impacts

Growth-inducing impacts are described by the CEQA Guidelines (CCR, Section 15126.2(d)) as follows:

> [T]he ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are impacts which would remove obstacles to population growth. Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. [In addition,] the characteristics of some projects . . . may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

In accordance with the CEQA Guidelines, the following subsections describe the types of growth that can occur in the CBWCB and the potential for Program 2 to induce direct and indirect growth in the CBWCB.

7.3.1 Types of Growth

The primary types of growth that can occur within the CBWCB are:

1) Growth in land development and
2) Population growth (economic growth, such as the creation of additional job opportunities, generally would lead to population growth and, therefore, is included indirectly as part of population growth.)

Growth in Land Development

Growth in land development is the physical development or construction of residential, commercial, and industrial properties in the CBWCB. Land use growth is subject to General Plans, community plans, parcel zoning, and applicable entitlements and is dependent on adequate infrastructure to support the development.

Population Growth

Population growth is the increase in the number of persons that live and work in the CBWCB, specifically in the various jurisdictions within the boundaries of the CBWCB. Population growth occurs from natural causes (births minus deaths), net emigration, and immigration from other geographical areas. Emigration or immigration can occur in response to economic opportunities, lifestyle choices, or for other personal reasons.

Although land use growth and population growth are interrelated, land use and population growth could occur independently from each other. This has occurred in the past where the housing growth is minimal, but population within the area continues to increase. Such a situation results in increasing population densities with a corresponding demand for public services, despite minimal land use growth.

Overall development in the CBWCB is governed by the Los Angeles County General Plan and other similar planning documents (e.g. master plans and land use plans) established by the various cities and other entities within the basins. These planning documents are intended to guide land use development in an orderly manner and thus, are the framework under which development occurs. Within this framework, land use entitlements (e.g. variances and conditional use permits) can be obtained, so the General Plan and other similar planning documents do not represent an obstacle to land use growth. Obstacles to growth are identified in Section 7.3.2 below.

7.3.2 Direct and Indirect Growth Inducement

A project can have direct and/or indirect growth inducement potential. An example of direct growth inducement is construction of new housing. An example of indirect growth inducement is a project that establishes substantial new permanent employment opportunities that result in immigration to the project area and in turn stimulate the need for additional housing and services to support the new employment demand. Similarly, a project could indirectly induce growth if it removes an obstacle to

growth, such as removing a constraint on a required public service, such as water supply, roadway infrastructure, wastewater treatment or sewer services, or solid waste disposal services.

While public services are needed to support growth and community development, they are not the single determinant of such growth. Other factors, including General Plan policies, land use plans, and zoning, also influence business and residential population growth. Economic factors, in particular, greatly affect development rates and locations. Typically, the growth-inducing potential of a project, either direct or indirect, would be considered significant if it results in growth or a population increase that exceeds those assumptions included in pertinent master plans, land use plans, or projections made by regional planning authorities.

Growth inducement itself is not necessarily an adverse impact. It is the potential consequences of growth, the secondary effects of growth, which may result in environmental impacts. Potential secondary effects of growth could include increased demand on other public services; increased traffic and noise; degradation of air quality; loss of plant and animal habitats; and the conversion of agriculture and open space to developed uses. Growth inducement may result in adverse impacts if the growth is not consistent with the land use plans and growth management plans and policies for the area, as "disorderly" growth could indirectly result in additional adverse environmental impacts. Thus, it may be important to assess the degree to which the growth accommodated by a project would or would not be consistent with applicable land use plans.

The potential for Program 2 to induce direct and indirect growth was evaluated and is discussed separately in detail below.

Direct Growth Inducement

To meet the objectives of the SNMP and the Recycled Water Policy, the proposed Program 2 projects focus on seawater intrusion control, groundwater recharge, stormwater capture/runoff management, and non-potable recycled water reuse. These proposed projects would not include construction of new housing and, therefore, would not result in direct significant growth-inducing impacts in the CBWCB.

Indirect Growth Inducement

Program 2 has the potential to induce growth indirectly in two ways: (1) generate economic opportunities that could lead to an increase in population, and/or (2) remove an obstacle to land use or population growth. An obstacle to growth could include inadequate infrastructure, such as an insufficient water supply that results in rationing or deficient wastewater treatment capacity that results in restrictions in land use development. Policies that discourage either natural population growth or immigration also are considered to be obstacles to growth.

Implementation of the proposed Program 2 projects would occur over a 15-year timeframe, through 2025. Construction, operations, and maintenance activities associated with these proposed projects would generate jobs throughout the CBWCB and possibly elsewhere for purposes of manufacturing durable goods. The creation of jobs in the region and elsewhere is considered a benefit. However, the creation of jobs would not be substantial and the majority of the new jobs are expected to be filled by persons already residing in the CBWCB, based on the existing surplus of unemployed persons.

Therefore, economic opportunities created as a result of the proposed Program 2 projects would not indirectly result in significant growth-inducing impacts.

Regarding the potential for indirect growth inducement through the removal of obstacles to growth, Program 2 is intended to increase the use of recycled water throughout the CBWCB, while maintaining WQOs, in accordance with the Basin Plan and Recycled Water Policy. Program 2 includes projects that would completely replace the use of imported water with locally-produced recycled water for purposes of groundwater recharge at the MFSG and injection at the seawater intrusion barriers and projects that would increase stormwater capture and replenishment. Such projects would provide a sustainable, local source of water (i.e., recycled water) to replenish the groundwater basins, which serve as a vital source of drinking water supply. Since the CBWCB are adjudicated, the maximum amount of groundwater pumped each year is limited and would not change. As a result, the use of recycled water to replace unreliable imported water means Program 2 would meet necessary groundwater replenishment obligations and support existing and planned future demands for water through 2025. Therefore, Program 2 would not remove an obstacle to growth of the water supply and would not be considered growth inducing.

One of the proposed Program 2 projects is the judgment amendments (see Implementation Measure No. 35 in Section 4.1.2), which would expand the use of the CBWCB for storage and groundwater banking. As part of this project, additional recharge and extraction in excess of the current adjudicated rights would be allowed, to take advantage of the available storage space in the underlying aquifers. The CBWCB stakeholders expect that increased water demand from anticipated future growth would be addressed with recharge of additional recycled water and stormwater. The judgment amendments are part of WRD's GBMP, which proposes phasing of project implementation in a step-wise fashion, allowing for the development of water supplies in a manner that would keep up with anticipated future demand. The GBMP does not propose implementation of projects that would result in a water supply that exceeds estimated future demand. The local water supply would replace the need to import water to meet the anticipated water demands. A judgment amendment for the Central Basin was approved on December 23, 2013. After several court challenges, a final decision on the judgment amendment for the West Coast Basin is still pending. The limited growth anticipated in the CBWCB and the regional policies in place to reduce imported water as much as possible suggest that any additional water supplies would not directly or indirectly induce growth or remove any obstacle to growth since the use of imported water remains available, albeit likely at higher prices, if local supplies are insufficient.

7.4 Significant Irreversible Environmental Changes

CEQA Guidelines (CCR, Section 15126.2(c)) requires identification of potential significant, irreversible environmental changes that could result from the implementation of Program 2. Examples of such changes include the commitment of nonrenewable resources to uses that future generations will not be able to reverse, irreversible damage that may result from accidents associated with a project, or irretrievable commitment of resources. Although the proposed Program 2 projects would require resources (materials, labor, and energy) they do not represent a substantial irreversible commitment of resources. In accordance with the Recycled Water Policy and the Governor's recent drought proclamations, implementation of Program 2 is both necessary and beneficial because it reduces reliance on limited potable water supplies by increasing the use of recycled water in the CBWCB in a

manner that attains WQOs and preserves beneficial uses. In addition, recycled water is a renewable resource, and therefore, the implementation of Program 2 would not result in an irretrievable commitment of nonrenewable resources or significant irreversible environmental changes in the CBWCB.

SECTION 8

Analysis of Alternatives

The analysis of alternatives (Programs 1 and 3) to the Recommended Program Alternative (Program 2) was conducted pursuant to LARWQCB's SNMP Assistance Document (Appendix B); CCR Title 23, Section 3777(a); and PRC Section 21159. Programs 1 and 3 were developed by the LARWQCB and CBWCB as reasonable options that could feasibly avoid or substantially lessen the identified significant environmental effects of the Program 2 while still attaining most of the basic objectives of the SNMP and Recycled Water Policy (CCR, Title 14, Section 15126.6). Section 5 of this SED provides details regarding Programs 1 through 3.

Program 2 includes implementation measures and proposed major recycled water projects in the CBWCB, so construction activities and operational modifications to existing facilities are anticipated. As the Recommended Program Alternative, a complete environmental analysis (including an Environmental Checklist) of Program 2 was conducted and results are presented in Section 6. As discussed in Section 6, implementation of Program 2 potentially could result in significant environmental impacts related to earth, air, plant life, animal life, noise, light and glare, risk of upset, transportation/circulation, utilities and service systems, human health, aesthetics, and archaeological/historical resources. These potential impacts would be reduced to a less than significant level with implementation of the mitigation measures identified in Section 6.3.

As described in Section 5, Program 1 is the No Future Projects alternative, so it does not include any planned implementation measures or proposed major recycled water projects. Programs 2 and 3 are similar; both alternatives include implementation measures and the proposed major recycled water projects, with the exception of the GRIP Recycled Water Projects, specifically GRIP A and GRIP B. Program 2 includes GRIP A, while Program 3 includes GRIP B. The alternatives analysis presented in this section is based on the GRIP Draft EIR (AECOM, 2014).

8.1 Program 1: No Future Projects

Program 1, the No Future Projects alternative, assumes that the CBWCB stakeholders will not carry out any of the planned implementation measures or proposed major recycled water projects, which were described in Section 4. Hence, no construction activities would occur under Program 1 and operational activities at existing facilities would continue under current conditions.

Program 1 is contrary to the Recycled Water Policy, which requires development of an SNMP that must include implementation measures to manage S/N loading on a sustainable basis. An SNMP that does not contain implementation measures would not be in compliance with the Recycled Water Policy and thus, Program 1 would not be feasible for implementation.

The following subsections describe the potential environmental effects of Program 1 relative to those of the Recommended Program Alternative (Program 2).

8.1.1 Earth

Under Program 1, no construction activity would occur, so there would be no alterations of geology or soils. Since current conditions at existing facilities would remain the same, there would be no impacts to geology or soils under Program 1, which would be less than Program 2 (see Section 6.3.1).

8.1.2 Air

Under Program 1, no construction activity would occur, so current operational activities at existing facilities sites would remain the same and no additional regional or localized air or GHG emissions would be generated. Therefore, Program 1 would result in no new impacts to air, which would be less than any potential impacts due to Program 2 Program 2 (see Section 6.3.2).

8.1.3 Water

Under Program 1, no construction activity would occur, so no construction-related polluted stormwater runoff would be generated. Since current conditions/operations at existing facilities would remain the same, imported water would continue to be used for groundwater replenishment in the CBWCB, in particular at the MFSG and the three seawater intrusion barriers.

For Program 2, some implementation measures and proposed recycled water projects will directly improve groundwater quality, such as the following:

- Seawater Intrusion Barriers – This planned implementation measure will completely replace imported water with AWT recycled water at the seawater intrusion barriers. This will greatly reduce TDS and chloride loading to the basins because AWT recycled water has significantly lower TDS and chloride concentrations than imported water. Nitrate concentrations are very low and similar for both imported water and AWT recycled water, so there would be no impact on nitrate loading.
- Desalters – This planned implementation measure involves increased groundwater pump and treat by the two existing desalters, which will reduce TDS and chloride concentrations in groundwater. Additionally, the Goldsworthy Desalter will be expanded to treat the increased pumping volumes.
- GRIP A – This proposed recycled water project will completely replace imported water with a combination of AWT recycled water and tertiary-treated recycled water used for groundwater recharge at the MFSG. This project will reduce TDS and chloride loading to the basin because AWT recycled water has significantly lower TDS and chloride concentrations than imported water.

Additionally, Program 2 includes stormwater capture and runoff management projects, which would increase adsorption rates, reduce runoff, and reduce the rate and amount of surface water flows in existing channelized surface waterways, as well as discharges to bays and the ocean. Changes in

amounts would not be significant and are considered environmental benefits in terms of flood reduction, water quality improvement, and groundwater recharge.

Based on the analysis presented in the SNMP, Program 2 would result in greater improvements to groundwater quality in comparison to Program 1. Therefore, due to foregone benefits, any potential impacts to groundwater quality due to Program 1 would be greater than Program 2 (see Section 6.3.3).

8.1.4 Plant and Animal Life

Under Program 1, no construction activity would occur, so there would be no temporary impacts to riparian/upland habitat or migratory birds, bats, or special status plant and wildlife species and no vegetation removal. Since current conditions at existing facilities would remain the same, any potential direct or indirect impacts to plant or animal life due to Program 1 would be less than Program 2 (see Sections 6.3.4 and 6.3.5).

As discussed in Section 6.3.4 *Plant Life*, there is no farmland designated by the California Department of Conservation in the CBWCB, so similar to Program 2, Program 1 would have no impact to agriculture lands or uses or crop acreage.

8.1.5 Noise

Under Program 1, no construction activity would occur, so operational activities at existing facilities would remain the same. Therefore, any current noise impacts due to Program 1 would be less than Program 2 (see Section 6.3.6).

8.1.6 Light, Glare, and Aesthetics

Under Program 1, no construction activity would occur, so there would be no change in the visual environment and no additional impacts to light, glare, or aesthetics. Since the current visual characteristics at existing facilities would remain the same, any potential impacts to light, glare, and aesthetics due to Program 1 would be less than Program 2 (see Sections 6.3.7 and 6.3.18).

8.1.7 Land Use

Under Program 1, no major recycled water projects or planned implementation measures would occur, so there would be no changes to land uses at existing facilities. Therefore, no impacts to land use would occur under Program 1, which would be less than any potential impacts due to Program 2 (see Section 6.3.8).

8.1.8 Natural Resources

Under Program 1, no major recycled water projects or planned implementation measures would occur, so there would be no changes to the rate of use of renewable and nonrenewable natural resources at existing facilities. Since conditions at existing facilities will remain the same, Program 1 would result in no new impacts to natural resources, which would be less than any potential impacts due to Program 2 (see Section 6.3.9).

8.1.9 Risk of Upset and Human Health

Under Program 1, no major recycled water projects or planned implementation measures would occur, so conditions at existing facilities would remain the same and there would be no new risks associated with any current uses of hazardous materials or creation of new human health hazards. Therefore, Program 1 would result in no new impacts to human health or risks associated with hazardous substances, which would be less than any potential impacts due to Program 2 (see Section 6.3.10).

8.1.10 Population and Housing

Under Program 1, no major recycled water projects or planned implementation measures would occur, so this program alternative would not alter or induce growth of the human population that could affect existing housing or the need to construct additional housing. As discussed in Sections 6.3.11 and 6.3.12, Program 2 also would not alter the human population or affect existing housing. Thus, both Programs 1 and 2 are similar and would not impact population or housing.

8.1.11 Transportation/Circulation

Under Program 1, no construction activity would occur, so there would be no construction-related traffic and no disruption to roadway segments or bicycle, pedestrian, or transit facilities. Since conditions at existing facilities will remain the same, current operational activities will not alter any existing effects on transportation systems, parking facilities, vehicular movement, traffic hazards, or the circulation of people and goods. Therefore, Program 1 would result in no new impacts to transportation or circulation, which would be less than any potential impacts due to Program 2 (see Section 6.4.13).

8.1.12 Public Services and Recreation

Under Program 1, no construction activity would occur, so there would be no temporary disruption of public facilities (e.g. roads) or recreational facilities (e.g. parks). Since there would be no changes to current conditions at existing sites, there would be no increased need for police, fire, schools, libraries, recreation facilities, or other public services. Thus, no new impacts to public services and recreation would occur under Program 1, which would be less than any potential impacts due to Program 2 (see Sections 6.3.14 and 6.3.19).

8.1.13 Utilities, Service Systems, and Energy

Under Program 1, no major recycled water projects or planned implementation measures would occur, so there would be no need for new or substantial alterations to power, natural gas, communication systems, water, sewer, landfills, stormwater drainage, or wastewater treatment facilities. Since conditions at existing facilities will remain the same, there would be no change in demand for energy or other public utilities. However, under Program 2 there would be a regional benefit to energy demand due to the replacement of imported water with recycled water for groundwater replenishment. Since imported water is more energy intensive to produce/deliver than recycled water, under Program 1 the continued use of imported water would forego any potential benefit to energy demand associated with the use recycled water under Program 2. As a result, impacts energy would be greater under Program 1

than Program 2; impacts to utilities and service systems would be less under Program 1 than Program 2 (see Sections 6.3.15 and 6.3.16).

8.1.14 Archaeological/Historical

Under Program 1, no construction activity would occur, so no ground disturbing activities would occur that could impact archaeological or historical resources. Since current conditions at existing facilities would remain the same, any potential impacts to cultural resources due to Program 1 would be less than Program 2 (see Section 6.3.20).

8.1.15 Conclusion

As discussed in Section 6, potentially significant environmental impacts related to earth, air, plant life, animal life, noise, light and glare, risk of upset, transportation/circulation, utilities and service systems, human health, aesthetics, and archaeological/historical resources were identified in association with Program 2; however, mitigation measures also were identified to minimize these potential impacts to a less than significant level. Although these potential impacts would be entirely avoided under Program 1 (due to no future projects), this program alternative would have a greater impact on groundwater quality than Program 2 since no major recycled water projects or planned implementation measures would occur under Program 1. As a result, average TDS and chloride concentrations in the West Coast Basin would not meet WQOs as quickly under Program 1 as they would under Program 2. In addition, Program 1 would not meet the objective of the SNMP, which is to manage S/N loading on a sustainable basis, and would not be in compliance with the Recycled Water Policy.

8.2 Program 3: Implementation Measures, Recycled Water – Volume & Quality, and GRIP B

Program 3 includes all the implementation measures (listed in Table 4-1) identified in the SNMP, as well as some major recycled water projects (summarized in Table 4-3) proposed in the basins, including GRIP B and the increased use of recycled water for irrigation at concentrations at the SMCLs for TDS and chloride and the MCL for nitrate. GRIP B would completely replace imported water (total of 21,000 AFY) with tertiary-treated recycled water produced by SDLAC's San Jose Creek WRP for recharge at the MFSG. The tertiary-treated recycled water from the San Jose Creek WRP would be conveyed via the existing pipeline to the MFSG. Unlike GRIP A (under Program 2) where an AWT recycled water plant and an AWT recycled water pipeline are proposed for construction, no new infrastructure or facilities would be required to implement GRIP B, so there would be no physical changes to the environment at existing facilities. Similar to Program 2, Program 3 does include the increased use of recycled water for irrigation at concentrations at the SMCLs for TDS and chloride and the MCL for nitrate. As a result, Program 3 meets the objectives of the CBWCB SNMP, which is to manage S/N loading on a sustainable basis, and complies with the Recycled Water Policy.

The only difference between Programs 2 and 3 is the GRIP Recycled Water Projects, specifically GRIP A and GRIP B, respectively. Given that GRIP is one of the largest projects proposed in the SNMP, the relative difference in the environmental impacts associated with the two program alternatives is solely dependent on the differences between GRIP A and GRIP B. Therefore, the environmental analysis of

Program 3, as discussed in the subsections below, focuses just on GRIP B and discusses the overall potential impacts due to the implementation of Program 3 relative to those of the Recommended Program Alternative (Program 2). The environmental analysis of Program 3 is based on the GRIP Draft EIR (AECOM, 2014).

8.2.1 Earth

Under Program 3, GRIP B would not require any construction activity or new infrastructure and existing operational conditions at SDLAC's San Jose Creek WRP would remain the same, so there would be no alterations of geology or soils. Therefore, any overall potential impacts to geology and soils due to the implementation of Program 3 would be less than Program 2 (see Section 6.3.1).

8.2.2 Air

Under Program 3, GRIP B would not require any construction activity or new infrastructure, so no construction-related regional or localized GHG emissions would be generated. Additionally, since existing operational conditions at SDLAC's San Jose Creek WRP would remain the same, no new air or GHG emissions would be generated. As a result, any overall potential air impacts due to the implementation of Program 3 would be less than Program 2 (see Section 6.3.2).

8.2.3 Water

Under Program 3, GRIP B would not require any construction activity or new infrastructure, so no construction-related polluted stormwater runoff would be generated. Since recharge volumes will remain the same as existing conditions at the MFSG, GRIP B would not alter current surface water or groundwater hydrology.

As discussed in Section 6.3.3, GRIP A, under Program 2, involves the complete replacement of imported water for recharge at the MFSG with 11,000 AFY of tertiary-treated recycled water and 10,000 AFY of AWT recycled water. SNMP mixing model results show that there are no significant changes to S/N loading or concentrations in groundwater due to the implementation of GRIP A because the AWT/tertiary-treated recycled water blend ratio mirrors the average imported water quality that it is replacing.

GRIP B, under Program 3, involves the complete replacement of imported water for recharge at the MFSG with 21,000 AFY of tertiary-treated recycled water. In contrast to GRIP A, SNMP mixing model results show that implementation of GRIP B will increase S/N loading and increase S/N concentrations in groundwater. GRIP B will not cause S/N concentrations to exceed WQOs nor utilize more than 10% of the available assimilative capacity in the Central Basin. Additionally, any negative groundwater quality impacts associated with GRIP B are more than offset by positive impacts of the environmental benefit of this project and of other projects and implementation measures. Thus, overall groundwater quality will remain well below WQOs in the Central Basin and WQOs will be achieved (improving groundwater quality) in the future in the West Coast Basin.

In comparison to GRIP A, GRIP B results in greater S/N loading and would increase S/N concentrations in groundwater. Therefore, any overall water impacts due to the implementation of Program 3 would be greater than Program 2 (see Section 6.3.3).

8.2.4 Plant and Animal Life

Under Program 3, GRIP B would not require any construction activity or new infrastructure, so there would be no temporary impacts to riparian/upland habitat or migratory birds, bats, or special status plant and wildlife species and no vegetation removal. Since existing operational conditions at SDLAC's San Jose Creek WRP would remain the same, any potential impacts to plant and animal life due to the implementation of Program 3 would be less than Program 2 (see Sections 6.3.4 and 6.3.5).

As discussed in Section 6.3.4, there is no farmland designated by the California Department of Conservation in the CBWCB, so similar to Program 2, Program 3 would have no impact to agriculture lands or uses or crop acreage.

8.2.5 Noise

Under Program 3, GRIP B would not require any construction activity or new infrastructure and existing operational conditions at SDLAC's San Jose Creek WRP would remain the same, so there would be no increase in current noise levels. Therefore, any overall potential impacts related to noise due to the implementation of Program 3 would be less than Program 2 (see Section 6.3.6).

8.2.6 Light, Glare, and Aesthetics

Under Program 3, GRIP B would not require any construction activity or new infrastructure and existing operational conditions at SDLAC's San Jose Creek WRP would remain the same. Therefore, Program 3 would result in fewer physical changes to the environment, so any overall potential impacts to light, glare, and aesthetics would be less than Program 2 (see Sections 6.3.7 and 6.3.18).

8.2.7 Land Use

Under Program 3, GRIP B would not require any construction activity or new infrastructure, so there would be no alterations of existing land uses or designations/zoning. Therefore, any overall potential impacts to existing and planned land uses due to the implementation of Program 3 would be less than Program 2 (see Section 6.3.8).

8.2.8 Natural Resources

Under Program 3, GRIP B would not require any construction activity or new infrastructure and existing operational conditions at SDLAC's San Jose Creek WRP would remain the same, so there would be no increase in the rate of use of natural resources. Therefore, any overall potential impacts to natural resources due to the implementation of Program 3 would be less than Program 2 (see Section 6.3.9).

8.2.9 Risk of Upset and Human Health

Under Program 3, GRIP B would not require any construction activity or new infrastructure, so there would be no new risks associated with any current uses of hazardous materials or creation of new human health hazards at SDLAC's San Jose Creek WRP. Therefore, any overall potential health risks and other risks associated with hazardous substances due to the implementation of Program 3 would be less than Program 2 (see Section 6.3.10).

8.2.10 Population and Housing

Under Program 3, GRIP B would not require any construction activity or new infrastructure and existing operational conditions at SDLAC's San Jose Creek WRP would remain the same, so no additional personnel would be required to operate the WRP. As a result, Program 3 would not induce population growth or generate growth that was not planned and there would be no displacement of existing housing or the need to construct replacement housing elsewhere. Therefore, similar to Program 2, there would be no impacts to population or housing due to the implementation of Program 3 (see Sections 6.3.11 and 6.3.12).

8.2.11 Transportation/Circulation

Under Program 3, GRIP B would not require any construction activity, so there would be no construction-related traffic and no disruption to roadway segments or bicycle, pedestrian, or transit facilities. Since current operational conditions at SDLAC's San Jose Creek WRP will remain the same, there would be no alterations of any existing effects on transportation systems, parking facilities, vehicular movement, traffic hazards, or the circulation of people and goods. Therefore, any overall potential impacts to transportation or circulation due to the implementation of Program 3 would be less than Program 2 (see Section 6.4.13).

8.2.12 Public Service and Recreation

Under Program 3, GRIP B would not require any construction activity or new infrastructure and existing operational conditions at SDLAC's San Jose Creek WRP would remain the same, so there would be no temporary disruptions to public services or recreational facilities (e.g. parks, trails, or bike paths). The San Jose Creek WRP is already managed under various jurisdictions and therefore, would not warrant additional emergency response services or providers, such as fire and police protection. No population growth would result from implementation of Program 3, so there would be no increased need for police, fire, schools, libraries, recreation facilities, or other public services. Thus, any overall potential impacts to public services or recreation due to the implementation of Program 3 would be similar to Program 2 (see Sections 6.3.14 and 6.3.19).

8.2.13 Utilities, Service Systems, and Energy

Under Program 3, GRIP B would not require any construction activity or new infrastructure, so there would be no need for new or substantial alterations to power, natural gas, communication systems, water, sewer, landfills, stormwater drainage, or wastewater treatment facilities. Since existing operational conditions at SDLAC's San Jose Creek WRP would remain the same, there would be no

change in demand for energy or other public utilities. Therefore, any overall potential impacts to utilities, service systems, and energy demand due to the implementation of Program 3 would be less than Program 2 (see Sections 6.3.15 and 6.3.1).

8.2.14 Archaeological/Historical

Under Program 3, GRIP B would not require any construction activity or new infrastructure and existing operational conditions at SDLAC's San Jose Creek WRP would remain the same, so no ground disturbing activities would occur that could impact archaeological or historical resources. Therefore, any overall potential impacts to cultural resources due to the implementation of Program 3 would be less than Program 2 (see Section 6.3.20).

8.2.15 Conclusion

As stated earlier, the only difference between Programs 2 and 3 is the GRIP Recycled Water Projects, specifically GRIP A and GRIP B, respectively. Under Program 2, GRIP A includes construction of a new AWT recycled water plant and potentially a new pipeline to deliver the AWT recycled water to the MFSG. Under Program 3, GRIP B utilizes existing infrastructure to produce and deliver tertiary-treated recycled water to the MFSG, so no construction activities or new infrastructure would be required. Given that GRIP is one of the largest projects proposed in the SNMP, the relative difference in the environmental impacts associated with Programs 2 and 3 is solely dependent on the differences between GRIP A and GRIP B.

In comparison to Program 2, Program 3 (mainly due to the lack of construction activity for GRIP B) would result in less environmental impacts to earth; air; plant life; animal life; noise; light, glare, and aesthetics; risk of upset and human health; transportation/circulation; utilities, service systems, and energy; and archaeological/historical resources. However, Program 3 would have potentially greater impacts to water due to the use of tertiary-treated recycled water for GRIP B. The SNMP mixing model results show that implementation of GRIP B will increase S/N loading and increase S/N concentrations in groundwater. However, GRIP B will not cause S/N concentrations to exceed WQOs or utilize more than 10% of the available assimilative capacity in the Central Basin. Additionally, any negative groundwater quality impacts associated with GRIP B are more than offset by positive impacts of this project and other projects and implementation measures. Thus, overall groundwater quality will remain well below WQOs in the Central Basin and WQOs will be achieved (improving groundwater quality) in the future in the West Coast Basin.

8.3 Environmentally Superior Program Alternative

Among the alternatives to the Recommended Program Alternative, Program 3 would be environmentally superior (as defined in the CEQA Guidelines; CCR, Section 15126.6(e)(2)), primarily because it includes GRIP B, which requires no new construction, and thus avoids all potential construction-related impacts associated with GRIP A (included under Program 2). Additionally, unlike Program 1, Program 3 would meet the objectives of the SNMP and Recycled Water Policy because it includes implementation measures that would manage S/N loading on a sustainable basis. As described in Section 8.2, Program 3 would result in lessened environmental impacts to earth; air; plant life; animal

life; noise; light, glare and aesthetics; risk of upset and human health; transportation/circulation; utilities, service systems and energy; and archaeological/historical resources. **Table 8-1** provides a comparison of the potential environmental impacts of the alternatives to the Recommended Program Alternative.

TABLE 8-1
COMPARISON OF POTENTIAL ENVIRONMENTAL IMPACTS FOR THE PROGRAM ALTERNATIVES

Environmental Resource	Program 1 – No Future Projects	Program 2 – Recommended Program Alternative	Program 3
Earth	(Less)	2, 3, 4	(Less)
Air	(Less)	2, 3	(Less)
Water	(More)	3	(More)
Plant Life	(Less)	2, 4	(Less)
Animal Life	(Less)	2	(Less)
Noise	(Less)	2, 3	(Less)
Light and Glare	(Less)	2	(Less)
Land Use	(Less)	3	(Less)
Natural Resources	(Less)	3	(Less)
Risk of Upset	(Less)	2	(Less)
Population	(Similar)	4	(Similar)
Housing	(Similar)	4	(Similar)
Transportation/Circulation	(Less)	2, 3, 4	(Less)
Public Services	(Similar)	4	(Similar)
Energy	(More)	3	(Less)
Utilities and Service Systems	(Less)	2, 3, 4	(Less)
Human Health	(Less)	2	(Less)
Aesthetics	(Less)	2	(Less)
Recreation	(Less)	3	(Similar)
Archaeological/Historical	(Less)	2	(Less)

1 – Potentially significant impact

2 – Less than significant impact with mitigation incorporated

3 – Less than significant impact

4 – No impact

(Indicates the impact relative to the Recommended Program Alternative, so Less, More, or Similar)

SECTION 9

Determination

The LARWQCB, with assistance from the CBWCB stakeholders, has balanced the economic, legal, social, technological, and other benefits of the Recommended Program Alternative (Program 2) against the potentially significant environmental effects identified in this SED in determining whether to recommend that the LARWQCB approves this program alternative. Upon review of the environmental information generated for this program-level CEQA analysis and in view of the entire record supporting Program 2, LARWQCB has determined that the identified potential environmental effects can be mitigated such that significant adverse environmental impacts associated with the implementation of Program 2 would be less than significant.

The implementation of the Basin Plan Amendment will result in improved groundwater quality in the CBWCB and will have significant positive impacts to the environment (including the preservation of groundwater beneficial uses) and the economy over the long term. Preservation of groundwater beneficial uses will have positive social and economic effects by decreasing S/N loading and reducing S/N concentrations in groundwater in the CBWCB. As presented in this SED, the program-level CEQA analysis concludes that there may be potentially significant impacts to the environment from implementation of Program 2, but these impacts are generally expected to be limited, short-term, and/or would be reduced to less than significant levels through the implementation of the identified mitigation measures. Additionally, the program-level CEQA analysis further concludes that when Program 2 is implemented in combination with non-SNMP projects in the region, there would be less than significant cumulative impacts on the environment.

To determine the impacts on future groundwater quality, the major proposed projects associated with Program 2 were simulated using the SNMP mixing model. Modeling results clearly demonstrate that future recycled water projects that may increase S/N loading are more than offset by implementation measures and other projects that reduce S/N loading and thus, groundwater quality overall in the CBWCB would either continue to improve or remain well below WQOs for S/Ns.

The CBWCB SNMP, Basin Plan Amendment, and this SED provide the necessary information pursuant to PRC Section 21159 to conclude that when properly designed and implemented, Program 2 generally should not have a reasonably foreseeable significant adverse effect on the environment. As specific projects are implemented under Program 2, subsequent and separate project-level CEQA assessments would occur where applicable and necessary. Any project-specific potential environmental impacts would be identified through the subsequent project-level CEQA process and the implementing agencies (i.e. CBWCB stakeholders) would be responsible for identifying the recommended mitigation measures. In accordance with CEQA, the lead agency for each project would be responsible for mitigating all the significant environmental impacts they identify, unless they have reason not to do so. This program-level

CEQA assessment identifies all reasonably foreseeable impacts and provides mitigation measures that can be applied to individual projects associated with Program 2 in order to reduce impacts below significance thresholds. In addition, in the event that project-level CEQA assessments identify unavoidable or immitigable impacts that would present unacceptable hardship upon nearby receptors, venues, or resources, the implementing agencies would have a variety of alternative SNMP implementation measures available that could be used instead to avoid such unavoidable or immitigable impacts.

At this program level, any more particularized conclusions would be speculative. The LARWQCB does not have legal authority to specify the manner of compliance with its orders or regulations (California Water Code Section 13360), and thus cannot dictate that an appropriate location be selected for any particular project, that it be designed consistent with standard industry practices, or that routine and ordinary mitigation measures be employed. These measures are all within the jurisdiction and authority of the parties that will be responsible for implementing the proposed projects associated with Program 2, and those parties can and should employ alternatives and mitigation measures to reduce any impacts to the extent feasible (California Code of Regulations, Title 14, Section 15091(a)(2)).

Implementation of the CBWCB SNMP is both necessary and beneficial. To the extent that the alternatives, mitigation measures, or both, that were evaluated in this program-level CEQA analysis are not deemed feasible by the CBWCB stakeholders, the necessity of implementing an SNMP and managing S/Ns in the CBWCB remains, as required by the Recycled Water Policy.

LARWQCB Determination

☐ The Recommended Program Alternative (Program 2) COULD NOT have a significant effect on the environment, and, therefore no alternatives or mitigation measures are proposed.

☒ The Recommended Program Alternative (Program 2) MAY have a significant or potentially significant effect on the environment, and, therefore alternatives and mitigation measures have been evaluated.

_____	_____
Signature	Date
_____	_____
Printed Name	Agency

Note: Authority Cited Sections 21083 and 21087, Public Resources Code. Reference: Sections 21080(c), 21080.1, 21082.1, 21083.3, 21093, 21094, 21151, Public Resources Code.

SECTION 10

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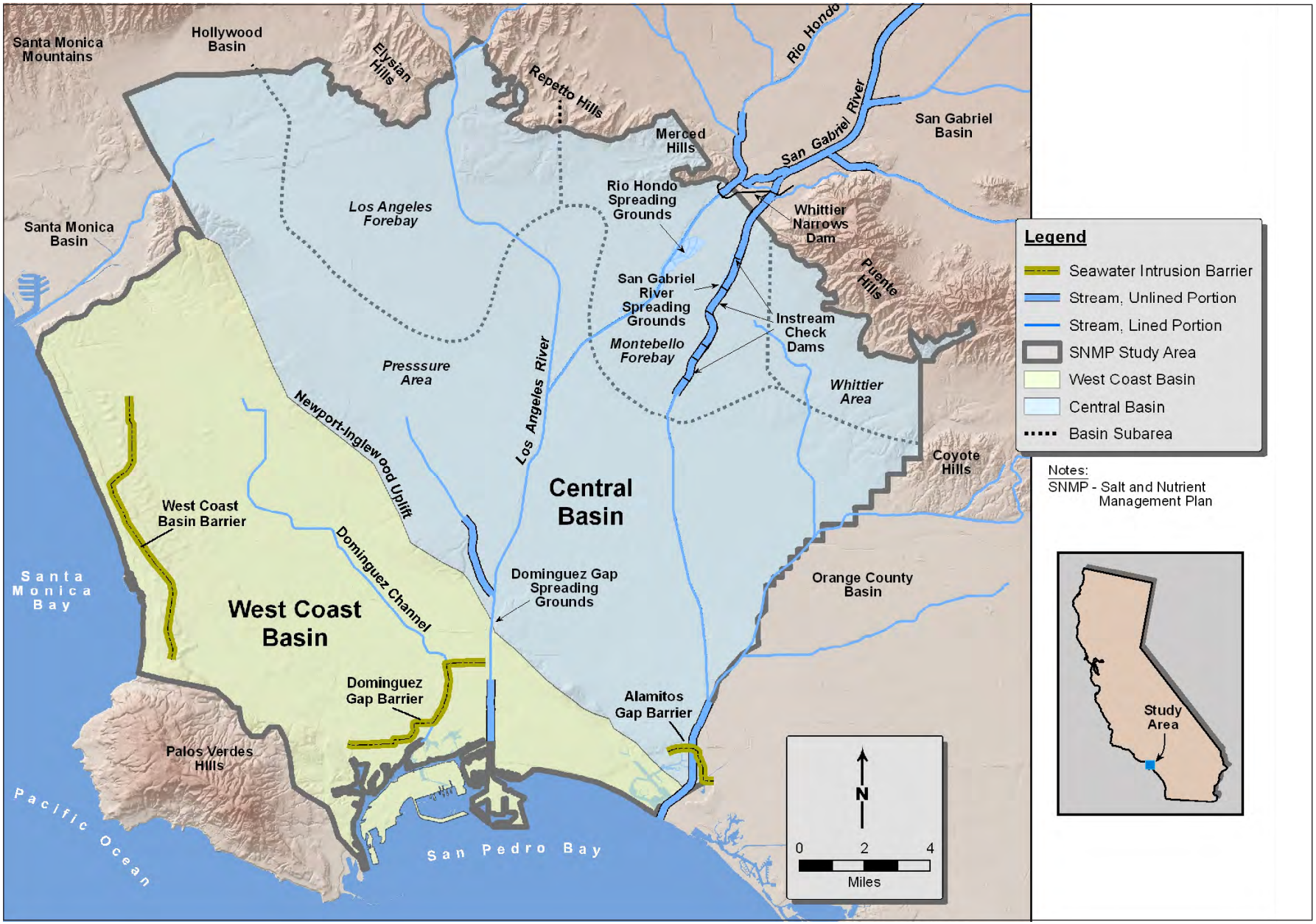
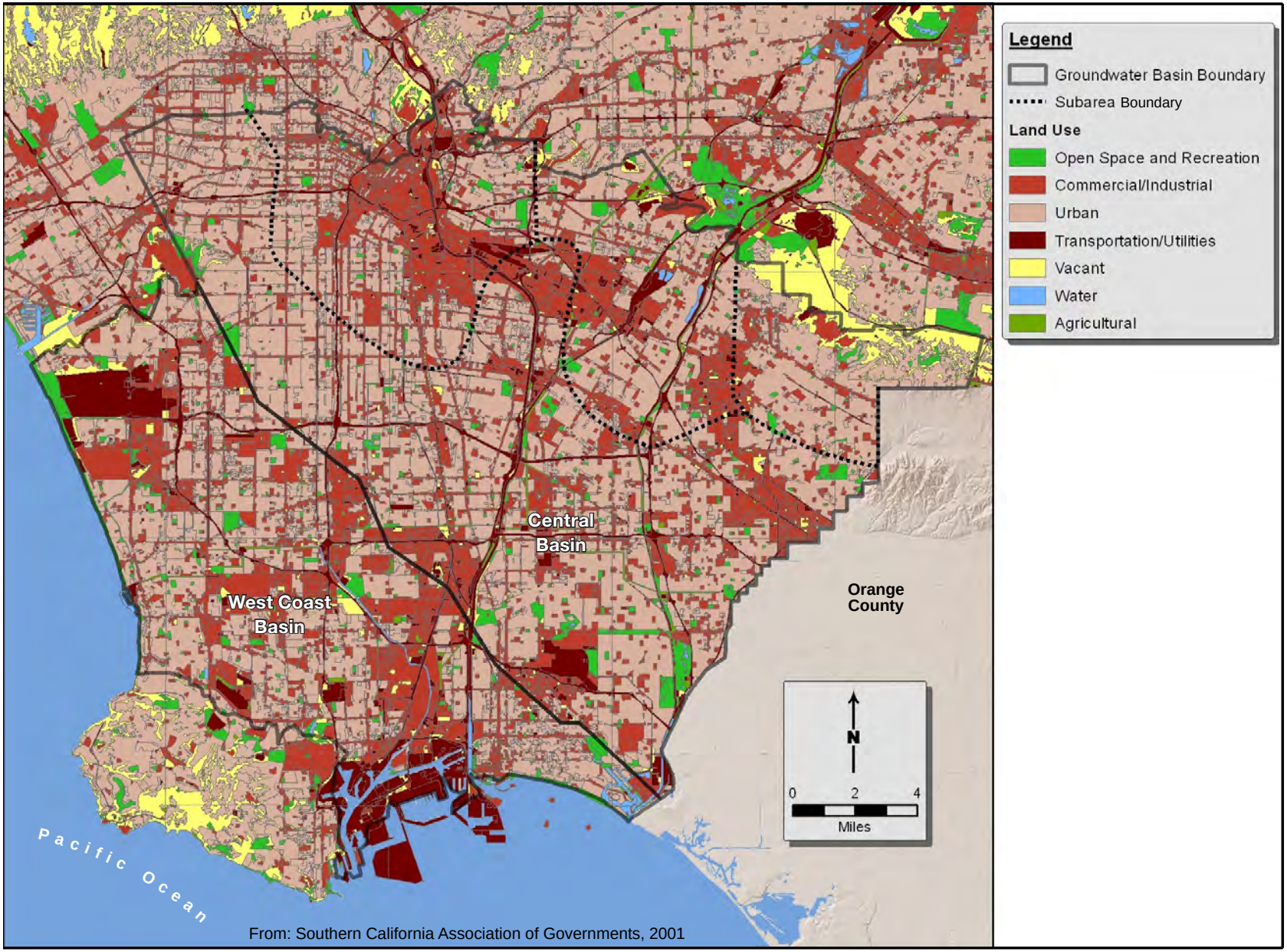
FIGURES



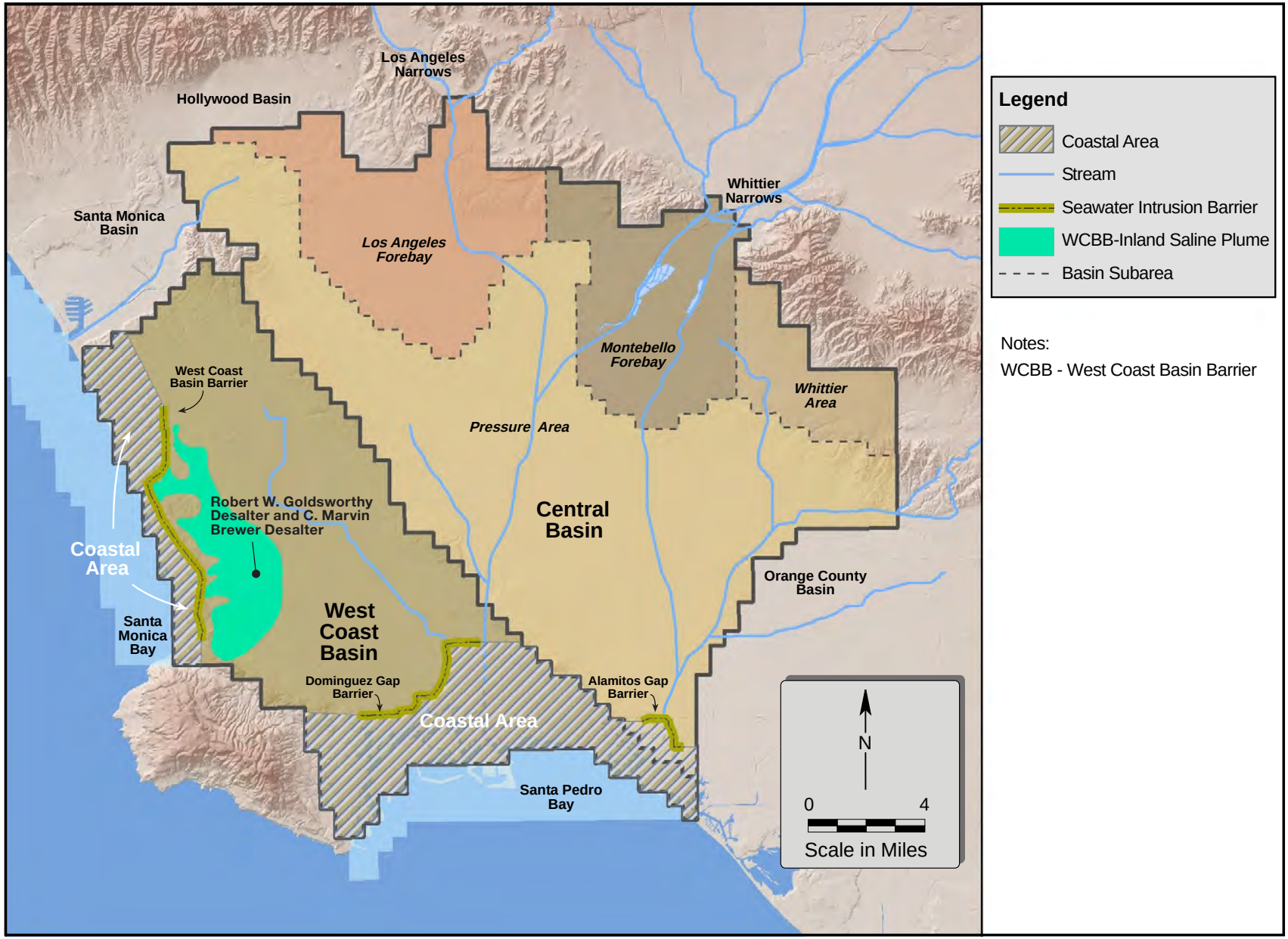
SOURCE: Todd Groundwater, 2014

Figure 1
Central Basin and West Coast Basin



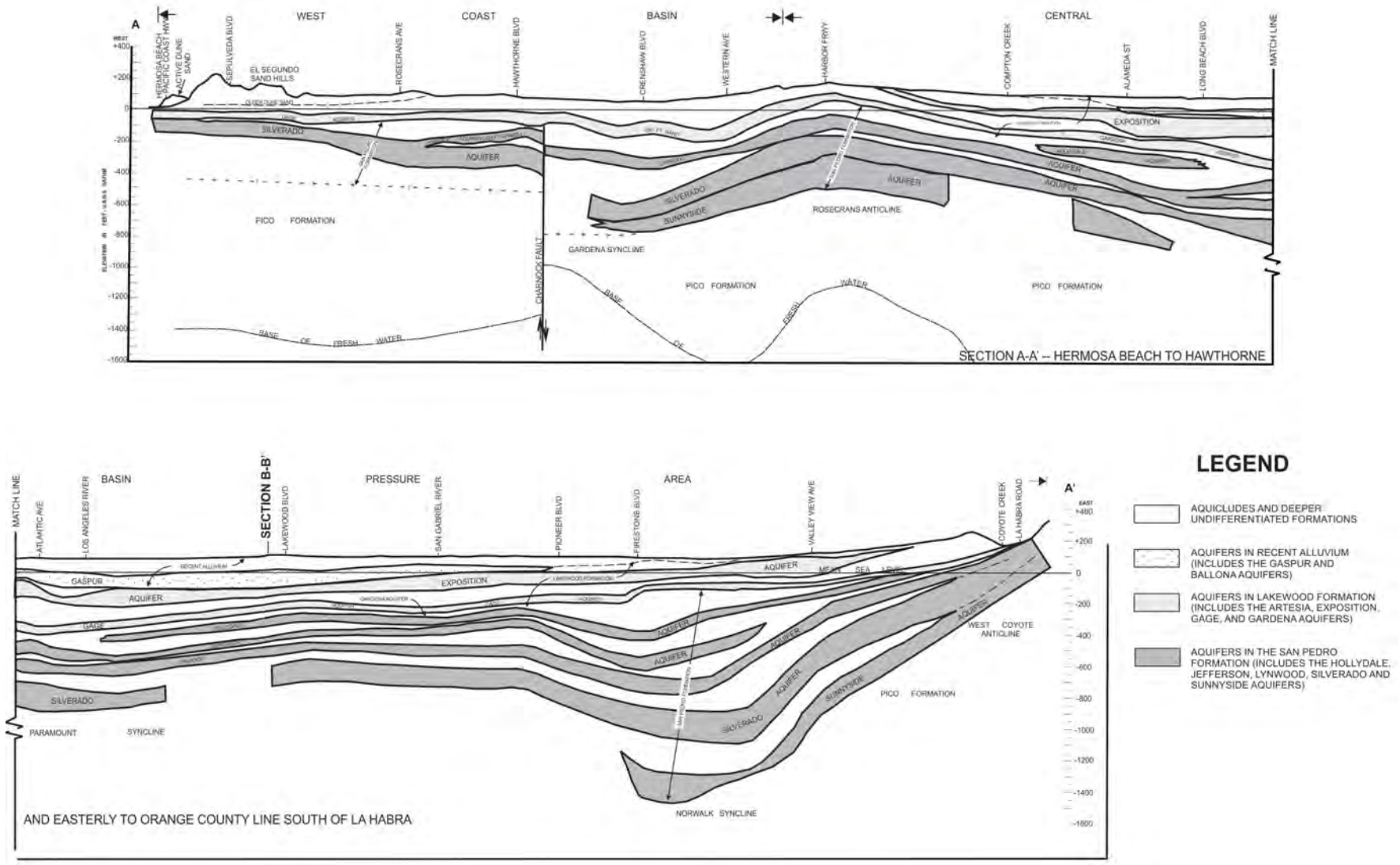
SOURCE: Todd Groundwater, 2014

Figure 2
Land Use in Southern Los Angeles County



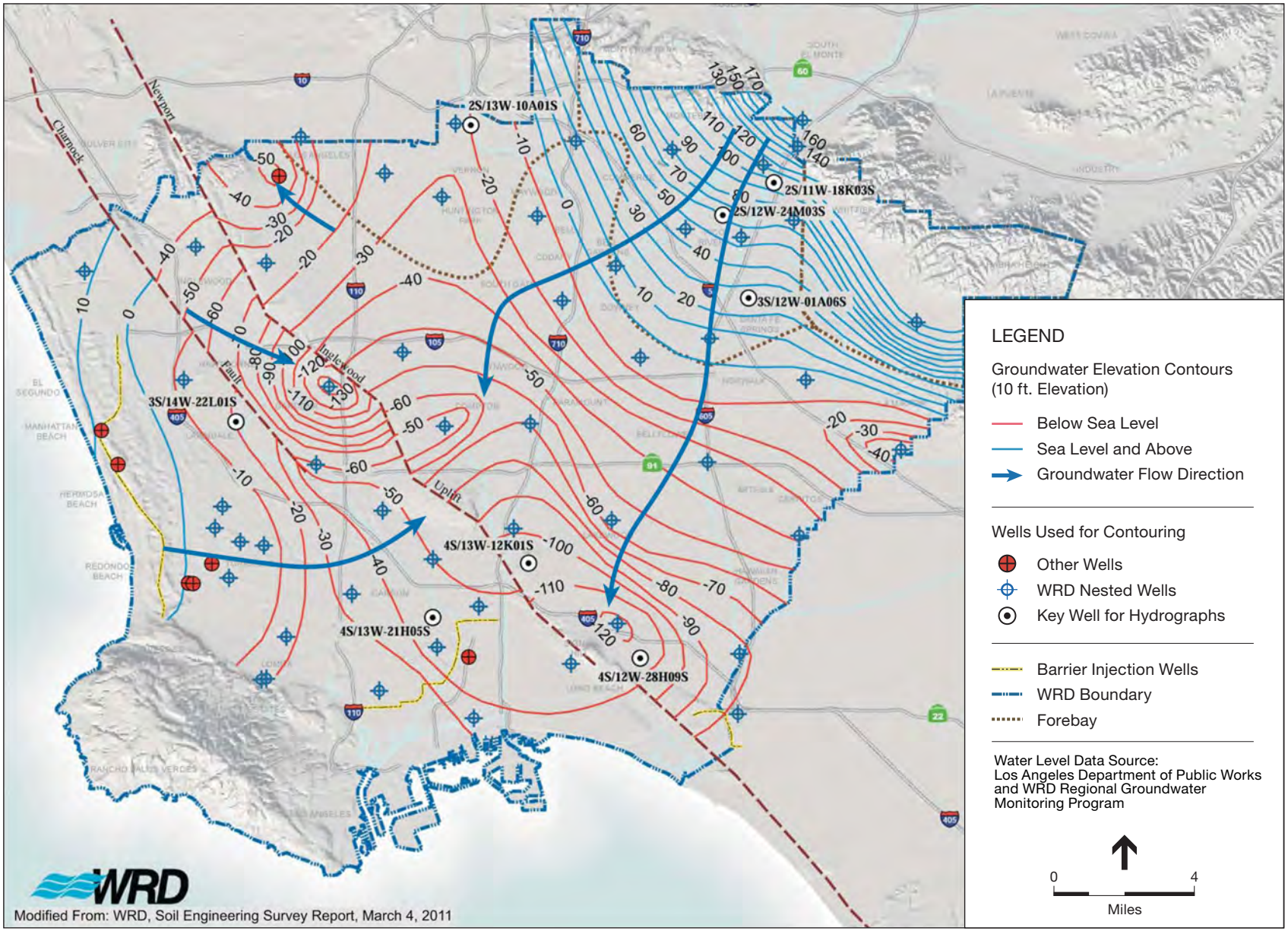
SOURCE: Todd Groundwater, 2014

Figure 3
Basin Subareas, Coastal Areas, and Saline Plume



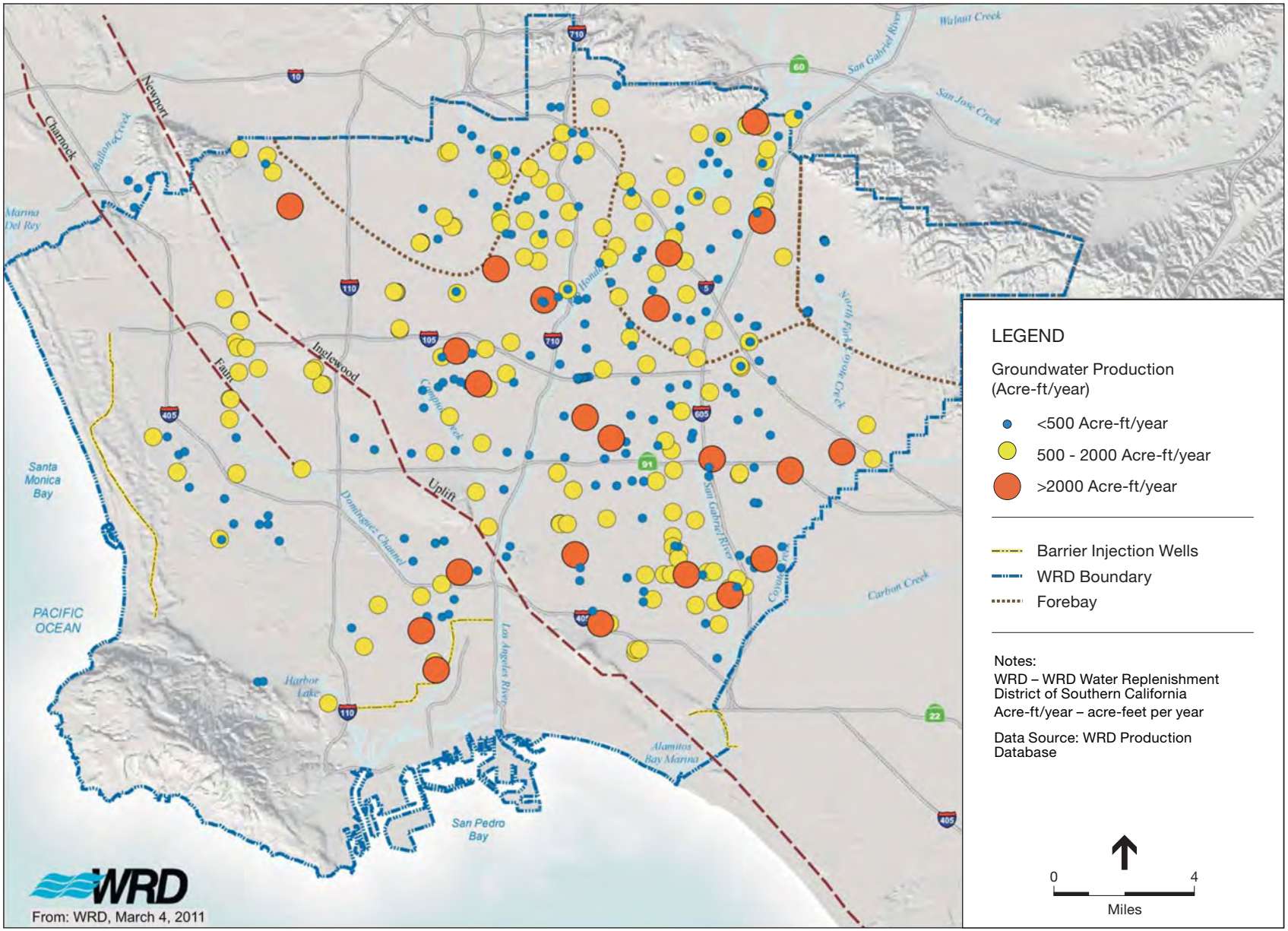
SOURCE: Adapted from California Department of Water Resources, Bulletin 104, Appendix B

Figure 4
DWR-Defined Aquifer System



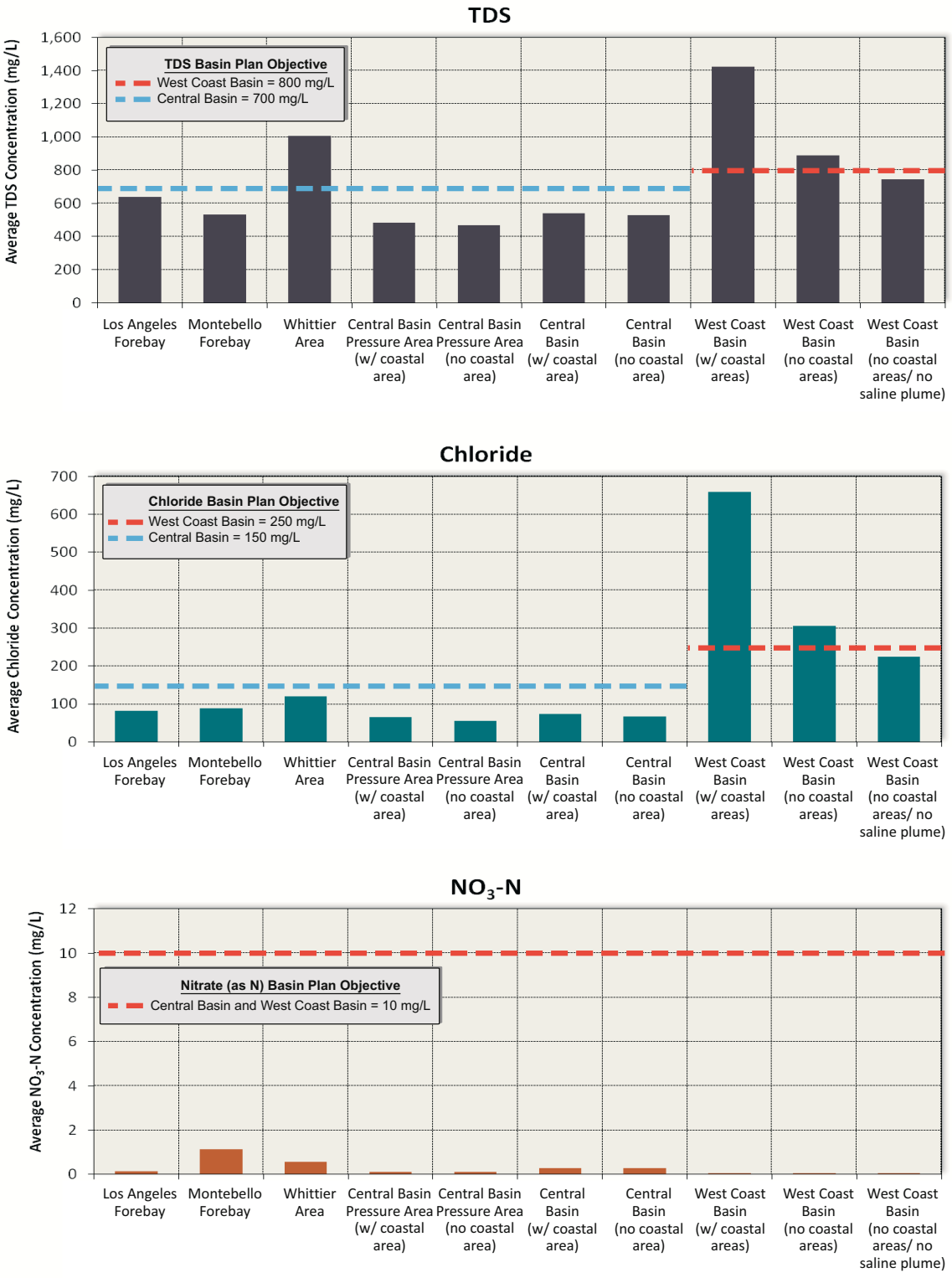
SOURCE: Todd Groundwater, 2014

Figure 5
Groundwater Elevation Contours, Fall 2010



SOURCE: Todd Groundwater, 2014

Figure 6
Groundwater Production, Water Year 2009-2010



Notes:

TDS - Total Dissolved Solids

NO_3-N - Nitrate as Nitrogen

mg/L - milligrams per Liter

SOURCE: Todd Groundwater, 2014

Figure 7
Subareas/Basin Average Existing TDS, Chloride, and Nitrate Concentrations

APPENDIX A

State Water Resources Control Board *Recycled Water Policy for Water Quality Control for Recycled Water* (Recycled Water Policy)

Resolution No. 2013-0003, Revised January 22, 2013 and Effective April 25, 2013
(Originally approved as Resolution No. 2009-0011 on May 14, 2009)

State Water Resources Control Board

Policy for Water Quality Control for Recycled Water (Recycled Water Policy)

Revised January 22, 2013
Effective April 25, 2013

State of California
Edmund G. Brown Jr., Governor

California Environmental Protection Agency
Matthew Rodriquez, Secretary

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Thomas Howard, Executive Director
Jonathan Bishop, Chief Deputy Director

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 2013-0003

ADOPTION OF AN AMENDMENT TO THE POLICY FOR WATER QUALITY CONTROL FOR RECYCLED WATER CONCERNING MONITORING REQUIREMENTS FOR CONSTITUTENTS OF EMERGING CONCERN

WHEREAS:

1. Provisions of the Policy for Water Quality Control for Recycled Water (Recycled Water Policy), adopted under Resolution No. 2009-0011, directed the State Water Resources Control Board (State Water Board) to convene a "blue-ribbon" advisory panel (Panel) to provide guidance on future actions related to monitoring constituents of emerging concern (CECs) in recycled water.

2. In June 2010, the Panel submitted a report titled "Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water – Recommendations of a Science Advisory Panel" (Report), which presented recommendations for monitoring CECs in municipal recycled water used for groundwater recharge.

3. In December 2010, the State Water Board held a public hearing regarding the Panel's Report and received public comments.

4. In May 2012, staff circulated a draft amendment to the Recycled Water Policy that: (1) proposed, in accordance with the Panel's recommendations, monitoring requirements for CECs and surrogates in recycled water used for groundwater recharge; and (2) proposed a reduction of priority pollutant monitoring of recycled water used for landscape irrigation.

5. In July 2012, a scientific peer review of the draft amendment and the Panel's Report was conducted.

6. Staff reviewed comments received on the draft amendment from the public and peer reviewers and issued a revised draft amendment on September 14, 2012. Written comments were received on this draft prior to an October 9, 2012, due date.

7. The State Water Board held a public hearing on October 16, 2012, to consider adoption of the draft amendment. At the hearing, the adoption was postponed to refine the responses to comments and allow additional time for public review.

8. The Natural Resources Agency has approved the State Water Board's and the Regional Water Quality Control Boards' water quality control planning process as a "certified regulatory program" that adequately satisfies the California Environmental Quality Act requirements for preparing environmental documents. The amendment concerns monitoring requirements for priority pollutants and constituents of emerging concern. It is not a "project" as defined by title 14, California Code of Regulations chapter 3, Guidelines for Implementation of the California Environmental Quality Act. Hence, approval of an environmental document is not required to adopt the amendment.

THEREFORE BE IT RESOLVED THAT:

The State Water Board

1. Adopts the amendment to the Recycled Water Policy.

2. Directs State Water Board Staff to submit the amended Recycled Water Policy to the Office of Administrative Law (OAL) for final approval.

3. Directs the Executive Director or designee to make minor, non-substantive modifications to the language of the amendment, if OAL determines during its approval process that such changes are needed; and directs the Executive Director to inform the State Water Board of any such changes.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on January 22, 2013.

AYE:	Vice Chair Frances Spivy-Weber Board Member Tam M. Doduc Board Member Steven Moore
NAY:	None
ABSENT:	Chairman Charles R. Hoppin Board Member Felicia Marcus
ABSTAIN:	None

Jeanine Townsend
Clerk to the Board

Recycled Water Policy

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Recycled Water Policy

1. *Preamble*

California is facing an unprecedented water crisis.

The collapse of the Bay-Delta ecosystem, climate change, and continuing population growth have combined with a severe drought on the Colorado River and failing levees in the Delta to create a new reality that challenges California's ability to provide the clean water needed for a healthy environment, a healthy population and a healthy economy, both now and in the future.

These challenges also present an unparalleled opportunity for California to move aggressively towards a sustainable water future. The State Water Resources Control Board (State Water Board) declares that we will achieve our mission to "preserve, enhance and restore the quality of California's water resources to the benefit of present and future generations." To achieve that mission, we support and encourage every region in California to develop a salt/nutrient management plan by 2014 that is sustainable on a long-term basis and that provides California with clean, abundant water. These plans shall be consistent with the Department of Water Resources' Bulletin 160, as appropriate, and shall be locally developed, locally controlled and recognize the variability of California's water supplies and the diversity of its waterways. We strongly encourage local and regional water agencies to move toward clean, abundant, local water for California by emphasizing appropriate water recycling, water conservation, and maintenance of supply infrastructure and the use of stormwater (including dry-weather urban runoff) in these plans; these sources of supply are drought-proof, reliable, and minimize our carbon footprint and can be sustained over the long-term.

We declare our independence from relying on the vagaries of annual precipitation and move towards sustainable management of surface waters and groundwater, together with enhanced water conservation, water reuse and the use of stormwater. To this end, we adopt the following goals for California:

- Increase the use of recycled water over 2002 levels by at least one million acre-feet per year (afy) by 2020 and by at least two million afy by 2030.
- Increase the use of stormwater over use in 2007 by at least 500,000 afy by 2020 and by at least one million afy by 2030.
- Increase the amount of water conserved in urban and industrial uses by comparison to 2007 by at least 20 percent by 2020.
- Included in these goals is the substitution of as much recycled water for potable water as possible by 2030.

As modified by
State Water Board Resolution 2013-0003
(January 22, 2013)

The purpose of this Policy is to increase the use of recycled water from municipal wastewater sources that meets the definition in Water Code section 13050(n), in a manner that implements state and federal water quality laws. The State Water Board expects to develop additional policies to encourage the use of stormwater, encourage water conservation, encourage the conjunctive use of surface and groundwater, and improve the use of local water supplies.

When used in compliance with this Policy, Title 22 and all applicable state and federal water quality laws, the State Water Board finds that recycled water is safe for approved uses, and strongly supports recycled water as a safe alternative to potable water for such approved uses.

2. *Purpose of the Policy*

a. The purpose of this Policy is to provide direction to the Regional Water Quality Control Boards (Regional Water Boards), proponents of recycled water projects, and the public regarding the appropriate criteria to be used by the State Water Board and the Regional Water Boards in issuing permits for recycled water projects.

b. It is the intent of the State Water Board that all elements of this Policy are to be interpreted in a manner that fully implements state and federal water quality laws and regulations in order to enhance the environment and put the waters of the state to the fullest use of which they are capable.

c. This Policy describes permitting criteria that are intended to streamline the permitting of the vast majority of recycled water projects. The intent of this streamlined permit process is to expedite the implementation of recycled water projects in a manner that implements state and federal water quality laws while allowing the Regional Water Boards to focus their limited resources on projects that require substantial regulatory review due to unique site-specific conditions.

d. By prescribing permitting criteria that apply to the vast majority of recycled water projects, it is the State Water Board's intent to maximize consistency in the permitting of recycled water projects in California while also reserving to the Regional Water Boards sufficient authority and flexibility to address site-specific conditions.

e. The State Water Board will establish additional policies that are intended to assist the State of California in meeting the goals established in the preamble to this Policy for water conservation and the use of stormwater.

f. For purposes of this Policy, the term “permit” means an order adopted by a Regional Water Board or the State Water Board prescribing requirements for a recycled water project, including but not limited to water recycling requirements, master reclamation permits, and waste discharge requirements.

3. *Benefits of Recycled Water*

The State Water Board finds that the use of recycled water in accordance with this Policy, that is, which supports the sustainable use of groundwater and/or surface water, which is sufficiently treated so as not to adversely impact public health or the environment and which ideally substitutes for use of potable water, is presumed to have a beneficial impact. Other public agencies are encouraged to use this presumption in evaluating the impacts of recycled water projects on the environment as required by the California Environmental Quality Act (CEQA).

4. *Mandate for the Use of Recycled Water*

a. The State Water Board and Regional Water Boards will exercise the authority granted to them by the Legislature to the fullest extent possible to encourage the use of recycled water, consistent with state and federal water quality laws.

(1) The State Water Board hereby establishes a mandate to increase the use of recycled water in California by 200,000 afy by 2020 and by an additional 300,000 afy by 2030. These mandates shall be achieved through the cooperation and collaboration of the State Water Board, the Regional Water Boards, the environmental community, water purveyors and the operators of publicly owned treatment works. The State Water Board will evaluate progress toward these mandates biennially and review and revise as necessary the implementation provisions of this Policy in 2012 and 2016.

(2) Agencies producing recycled water that is available for reuse and not being put to beneficial use shall make that recycled water available to water purveyors for reuse on reasonable terms and conditions. Such terms and conditions may include payment by the water purveyor of a fair and reasonable share of the cost of the recycled water supply and facilities.

(3) The State Water Board hereby declares that, pursuant to Water Code sections 13550 *et seq*., it is a waste and unreasonable use of water for water agencies not to use recycled water when recycled water of adequate quality is available and is not being put to beneficial use, subject to the conditions established in sections 13550 *et seq*. The State Water Board shall exercise its authority pursuant to Water Code section 275 to the fullest extent possible to enforce the mandates of this subparagraph.

b. These mandates are contingent on the availability of sufficient capital funding for the construction of recycled water projects from private, local, state, and federal sources and assume that the Regional Water Boards will effectively implement regulatory streamlining in accordance with this Policy.

c. The water industry and the environmental community have agreed jointly to advocate for $1 billion in state and federal funds over the next five years to fund projects needed to meet the goals and mandates for the use of recycled water established in this Policy.

d. The State Water Board requests the California Department of Public Health (CDPH), the California Public Utilities Commission (CPUC), and the California Department of Water Resources (CDWR) to use their respective authorities to the fullest extent practicable to assist the State Water Board and the Regional Water Boards in increasing the use of recycled water in California.

5. *Roles of the State Water Board, Regional Water Boards, CDPH and CDWR*

The State Water Board recognizes that it shares jurisdiction over the use of recycled water with the Regional Water Boards and with CDPH. In addition, the State Water Board recognizes that CDWR and the CPUC have important roles to play in encouraging the use of recycled water. The State Water Board believes that it is important to clarify the respective roles of each of these agencies in connection with recycled water projects, as follows:

a. The State Water Board establishes general policies governing the permitting of recycled water projects consistent with its role of protecting water quality and sustaining water supplies. The State Water Board exercises general oversight over recycled water projects, including review of Regional Water Board permitting practices, and shall lead the effort to meet the recycled water use goals set forth in the Preamble to this Policy. The State Water Board is also charged by statute with developing a general permit for irrigation uses of recycled water.

b. The CDPH is charged with protection of public health and drinking water supplies and with the development of uniform water recycling criteria appropriate to particular uses of water. Regional Water Boards shall appropriately rely on the expertise of CDPH for the establishment of permit conditions needed to protect human health.

c. The Regional Water Boards are charged with protection of surface and groundwater resources and with the issuance of permits that implement CDPH recommendations, this Policy, and applicable law and will, pursuant to paragraph 4 of this Policy, use their authority to the fullest extent possible to encourage the use of recycled water.

d. CDWR is charged with reviewing and, every five years, updating the California Water Plan, including evaluating the quantity of recycled water presently being used and planning for the potential for future uses of recycled water. In undertaking these tasks, CDWR may appropriately rely on urban water management plans and may share the data from those plans with the State Water Board and the Regional Water Boards. CDWR also shares with the State Water Board the authority to allocate and distribute bond funding, which can provide incentives for the use of recycled water.

e. The CPUC is charged with approving rates and terms of service for the use of recycled water by investor-owned utilities.

6. *Salt/Nutrient Management Plans*

a. Introduction.

(1) Some groundwater basins in the state contain salts and nutrients that exceed or threaten to exceed water quality objectives established in the applicable Water Quality Control Plans (Basin Plans), and not all Basin Plans include adequate implementation procedures for achieving or ensuring compliance with the water quality objectives for salt or nutrients. These conditions can be caused by natural soils/conditions, discharges of waste, irrigation using surface water, groundwater or recycled water and water supply augmentation using surface or recycled water. Regulation of recycled water alone will not address these conditions.

(2) It is the intent of this Policy that salts and nutrients from all sources be managed on a basin-wide or watershed-wide basis in a manner that ensures attainment of water quality objectives and protection of beneficial uses. The State Water Board finds that the appropriate way to address salt and nutrient issues is through the development of regional or subregional salt and nutrient management plans

rather than through imposing requirements solely on individual recycled water projects.

b. Adoption of Salt/ Nutrient Management Plans.

(1) The State Water Board recognizes that, pursuant to the letter dated December 19, 2008 and attached to the Resolution adopting this Policy, the local water and wastewater entities, together with local salt/nutrient contributing stakeholders, will fund locally driven and controlled, collaborative processes open to all stakeholders that will prepare salt and nutrient management plans for each basin/sub-basin in California, including compliance with CEQA and participation by Regional Water Board staff.

(a) It is the intent of this Policy for every groundwater basin/sub-basin in California to have a consistent salt/nutrient management plan. The degree of specificity within these plans and the length of these plans will be dependent on a variety of site-specific factors, including but not limited to size and complexity of a basin, source water quality, stormwater recharge, hydrogeology, and aquifer water quality. It is also the intent of the State Water Board that because stormwater is typically lower in nutrients and salts and can augment local water supplies, inclusion of a significant stormwater use and recharge component within the salt/nutrient management plans is critical to the long-term sustainable use of water in California. Inclusion of stormwater recharge is consistent with State Water Board Resolution No. 2005-0006, which establishes sustainability as a core value for State Water Board programs and also assists in implementing Resolution No. 2008-0030, which requires sustainable water resources management and is consistent with Objective 3.2 of the State Water Board Strategic Plan Update dated September 2, 2008.

(b) Salt and nutrient plans shall be tailored to address the water quality concerns in each basin/sub-basin and may include constituents other than salt and nutrients that impact water quality in the basin/sub-basin. Such plans shall address and implement provisions, as appropriate, for all sources of salt and/or nutrients to groundwater basins, including recycled water irrigation projects and groundwater recharge reuse projects.

(c) Such plans may be developed or funded pursuant to the provisions of Water Code sections 10750 *et seq.* or other appropriate authority.

(d) Salt and nutrient plans shall be completed and proposed to the Regional Water Board within five years from the date of this Policy unless a Regional Water Board finds that the stakeholders are making substantial progress towards completion of a plan. In no case shall the period for the completion of a plan exceed seven years.

(e) The requirements of this paragraph shall not apply to areas that have already completed a Regional Water Board approved salt and nutrient plan for a basin, sub-basin, or other regional planning area that is functionally equivalent to paragraph 6(b)3.

(f) The plans may, depending upon the local situation, address constituents other than salt and nutrients that adversely affect groundwater quality.

(2) Within one year of the receipt of a proposed salt and nutrient management plan, the Regional Water Boards shall consider for adoption revised implementation plans, consistent with Water Code section 13242, for those groundwater basins within their regions where water quality objectives for salts or nutrients are being, or are threatening to be, exceeded. The implementation plans shall be based on the salt and nutrient plans required by this Policy.

(3) Each salt and nutrient management plan shall include the following components:

(a) A basin/sub-basin wide monitoring plan that includes an appropriate network of monitoring locations. The scale of the basin/sub-basin monitoring plan is dependent upon the site-specific conditions and shall be adequate to provide a reasonable, cost-effective means of determining whether the concentrations of salt, nutrients, and other constituents of concern as identified in the salt and nutrient plans are consistent with applicable water quality objectives. Salts, nutrients, and the constituents identified in paragraph 6(b)(1)(f) shall be monitored. The frequency of monitoring shall be determined in the salt/nutrient management plan and approved by the Regional Water Board pursuant to paragraph 6(b)(2).

(i) The monitoring plan must be designed to determine water quality in the basin. The plan must focus on basin water quality near water supply wells and areas proximate to large water recycling projects, particularly groundwater recharge projects. Also, monitoring locations shall, where appropriate, target groundwater and surface waters where groundwater has connectivity with adjacent surface waters.

(ii) The preferred approach to monitoring plan development is to collect samples from existing wells if feasible as long as the existing wells are located appropriately to determine water quality throughout the most critical areas of the basin.

(iii) The monitoring plan shall identify those stakeholders responsible for conducting, compiling, and reporting the monitoring data. The data shall be reported to the Regional Water Board at least every three years.

(b) A provision for annual monitoring of Constituents of Emerging Concern (e.g., endocrine disrupters, personal care products or pharmaceuticals) (CECs) consistent with recommendations by CDPH and consistent with any actions by the State Water Board taken pursuant to paragraph 10(b) of this Policy.

(c) Water recycling and stormwater recharge/use goals and objectives.

(d) Salt and nutrient source identification, basin/sub-basin assimilative capacity and loading estimates, together with fate and transport of salts and nutrients.

(e) Implementation measures to manage salt and nutrient loading in the basin on a sustainable basis.

(f) An antidegradation analysis demonstrating that the projects included within the plan will, collectively, satisfy the requirements of Resolution No. 68-16.

(4) Nothing in this Policy shall prevent stakeholders from developing a plan that is more protective of water quality than applicable standards in the Basin Plan. No Regional Water Board, however, shall seek to modify Basin Plan objectives without full compliance

with the process for such modification as established by existing law.

7. *Landscape Irrigation Projects*[1]

a. *Control of incidental runoff.* Incidental runoff is defined as unintended small amounts (volume) of runoff from recycled water use areas, such as unintended, minimal over-spray from sprinklers that escapes the recycled water use area. Water leaving a recycled water use area is not considered incidental if it is part of the facility design, if it is due to excessive application, if it is due to intentional overflow or application, or if it is due to negligence. Incidental runoff may be regulated by waste discharge requirements or, where necessary, waste discharge requirements that serve as a National Pollutant Discharge Elimination System (NPDES) permit, including municipal separate storm water system permits, but regardless of the regulatory instrument, the project shall include, but is not limited to, the following practices:

(1) Implementation of an operations and management plan that may apply to multiple sites and provides for detection of leaks, (for example, from broken sprinkler heads), and correction either within 72 hours of learning of the runoff, or prior to the release of 1,000 gallons, whichever occurs first,

(2) Proper design and aim of sprinkler heads,

(3) Refraining from application during precipitation events, and

(4) Management of any ponds containing recycled water such that no discharge occurs unless the discharge is a result of a 25-year, 24-hour storm event or greater, and there is notification of the appropriate Regional Water Board Executive Officer of the discharge.

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[1] Specified uses of recycled water considered "landscape irrigation" projects include any of the following:
i. Parks, greenbelts, and playgrounds;
ii. School yards;
iii. Athletic fields;
iv. Golf courses;
v. Cemeteries;
vi. Residential landscaping, common areas;
vii. Commercial landscaping, except eating areas;
viii. Industrial landscaping, except eating areas; and
ix. Freeway, highway, and street landscaping.

b. *Streamlined Permitting.*

(1) The Regional Water Boards shall, absent unusual circumstances (i.e., unique, site-specific conditions such as where recycled water is proposed to be used for irrigation over high transmissivity soils over a shallow (5' or less) high quality groundwater aquifer), permit recycled water projects that meet the criteria set forth in this Policy, consistent with the provisions of this paragraph.

(2) If the Regional Water Board determines that unusual circumstances apply, the Regional Water Board shall make a finding of unusual circumstances based on substantial evidence in the record, after public notice and hearing.

(3) Projects meeting the criteria set forth below and eligible for enrollment under requirements established in a general order shall be enrolled by the State or Regional Water Board within 60 days from the date on which an application is deemed complete by the State or Regional Water Board. For projects that are not enrolled in a general order, the Regional Water Board shall consider permit adoption within 120 days from the date on which the application is deemed complete by the Regional Water Board.

(4) Landscape irrigation projects that qualify for streamlined permitting shall not be required to include a project specific receiving water and groundwater monitoring component unless such project specific monitoring is required under the adopted salt/nutrient management plan. During the interim while the salt management plan is under development, a landscape irrigation project proponent can either perform project specific monitoring, or actively participate in the development and implementation of a salt/nutrient management plan, including basin/sub-basin monitoring. Permits or requirements for landscape irrigation projects shall include, in addition to any other appropriate recycled water monitoring requirements, monitoring for priority pollutants in the recycled water at the recycled water production facility once per year, except when the recycled water production facility has a design production flow for the entire water reuse system of one million gallons per day or less. For these smaller facilities, the recycled water shall be monitored for priority pollutants once every five years.

(5) It is the intent of the State Water Board that the general permit for landscape irrigation projects be consistent with the terms of this Policy.

c. *Criteria for streamlined permitting*. Irrigation projects using recycled water that meet the following criteria are eligible for streamlined permitting, and, if otherwise in compliance with applicable laws, shall be approved absent unusual circumstances:

(1) Compliance with the requirements for recycled water established in Title 22 of the California Code of Regulations, including the requirements for treatment and use area restrictions, together with any other recommendations by CDPH pursuant to Water Code section 13523.

(2) Application in amounts and at rates as needed for the landscape (i.e., at agronomic rates and not when the soil is saturated). Each irrigation project shall be subject to an operations and management plan, that may apply to multiple sites, provided to the Regional Water Board that specifies the agronomic rate(s) and describes a set of reasonably practicable measures to ensure compliance with this requirement, which may include the development of water budgets for use areas, site supervisor training, periodic inspections, tiered rate structures, the use of smart controllers, or other appropriate measures.

(3) Compliance with any applicable salt and nutrient management plan.

(4) Appropriate use of fertilizers that takes into account the nutrient levels in the recycled water. Recycled water producers shall monitor and communicate to the users the nutrient levels in their recycled water.

8. *Recycled Water Groundwater Recharge Projects*

a. The State Water Board acknowledges that all recycled water groundwater recharge projects must be reviewed and permitted on a site-specific basis, and so such projects will require project-by-project review.

b. Approved groundwater recharge projects will meet the following criteria:

(1) Compliance with regulations adopted by CDPH for groundwater recharge projects or, in the interim until such regulations are approved, CDPH's recommendations pursuant to Water Code section 13523 for the project (e.g., level of treatment, retention time, setback distance, source control, monitoring program, etc.).

(2) Implementation of a monitoring program for CECs that is consistent with Attachment A and any recommendations from CDPH.

Groundwater recharge projects shall include monitoring of recycled water for priority pollutants twice per year.

c. Nothing in this paragraph shall be construed to limit the authority of a Regional Water Board to protect designated beneficial uses, *provided* that any proposed limitations for the protection of public health may only be imposed following regular consultation by the Regional Water Board with CDPH, consistent with State Water Board Orders WQ 2005-0007 and 2006-0001.

d. Nothing in this Policy shall be construed to prevent a Regional Water Board from imposing additional requirements for a proposed recharge project that has a substantial adverse effect on the fate and transport of a contaminant plume or changes the geochemistry of an aquifer thereby causing the dissolution of constituents, such as arsenic, from the geologic formation into groundwater.

e. Projects that utilize surface spreading to recharge groundwater with recycled water treated by reverse osmosis shall be permitted by a Regional Water Board within one year of receipt of recommendations from CDPH. Furthermore, the Regional Water Board shall give a high priority to review and approval of such projects.

9. *Antidegradation*

a. The State Water Board adopted Resolution No. 68-16 as a policy statement to implement the Legislature's intent that waters of the state shall be regulated to achieve the highest water quality consistent with the maximum benefit to the people of the state.

b. Activities involving the disposal of waste that could impact high quality waters are required to implement best practicable treatment or control of the discharge necessary to ensure that pollution or nuisance will not occur, and the highest water quality consistent with the maximum benefit to the people of the state will be maintained.

c. Groundwater recharge with recycled water for later extraction and use in accordance with this Policy and state and federal water quality law is to the benefit of the people of the state of California. Nonetheless, the State Water Board finds that groundwater recharge projects using recycled water have the potential to lower water quality within a basin. The proponent of a groundwater recharge project must demonstrate compliance with Resolution No. 68-16. Until such time as a salt/nutrient management plan is in effect, such compliance may be demonstrated as follows:

(1) A project that utilizes less than 10 percent of the available assimilative capacity in a basin/sub-basin (or multiple projects utilizing less than 20 percent of the available assimilative capacity in a basin/sub-basin) need only conduct an antidegradation analysis verifying the use of the assimilative capacity. For those basins/sub-basins where the Regional Water Boards have not determined the baseline assimilative capacity, the baseline assimilative capacity shall be calculated by the initial project proponent, with review and approval by the Regional Water Board, until such time as the salt/nutrient plan is approved by the Regional Water Board and is in effect. For compliance with this subparagraph, the available assimilative capacity shall be calculated by comparing the mineral water quality objective with the average concentration of the basin/sub-basin, either over the most recent five years of data available or using a data set approved by the Regional Water Board Executive Officer. In determining whether the available assimilative capacity will be exceeded by the project or projects, the Regional Water Board shall calculate the impacts of the project or projects over at least a ten year time frame.

(2) In the event a project or multiple projects utilize more than the fraction of the assimilative capacity designated in subparagraph (1), then a Regional Water Board-deemed acceptable antidegradation analysis shall be performed to comply with Resolution No. 68-16. The project proponent shall provide sufficient information for the Regional Water Board to make this determination. An example of an approved method is the method used by the State Water Board in connection with Resolution No. 2004-0060 and the Regional Water Board in connection with Resolution No. R8-2004-0001. An integrated approach (using surface water, groundwater, recycled water, stormwater, pollution prevention, water conservation, etc.) to the implementation of Resolution No. 68-16 is encouraged.

d. Landscape irrigation with recycled water in accordance with this Policy is to the benefit of the people of the State of California. Nonetheless, the State Water Board finds that the use of water for irrigation may, regardless of its source, collectively affect groundwater quality over time. The State Water Board intends to address these impacts in part through the development of salt/nutrient management plans described in paragraph 6.

(1) A project that meets the criteria for a streamlined irrigation permit and is within a basin where a salt/nutrient management plan satisfying the provisions of paragraph 6(b) is in place may be

approved without further antidegradation analysis, provided that the project is consistent with that plan.

(2) A project that meets the criteria for a streamlined irrigation permit and is within a basin where a salt/nutrient management plan satisfying the provisions of paragraph 6(b) is being prepared may be approved by the Regional Water Board by demonstrating through a salt/nutrient mass balance or similar analysis that the project uses less than 10 percent of the available assimilative capacity as estimated by the project proponent in a basin/sub-basin (or multiple projects using less than 20 percent of the available assimilative capacity as estimated by the project proponent in a basin/sub-basin).

10. *Constituents of Emerging Concern*

a. General Provisions

(1) Regulatory requirements for recycled water shall be based on the best available peer-reviewed science. In addition, all uses of recycled water must meet conditions set by CDPH.

(2) Knowledge of risks will change over time and recycled water projects must meet legally applicable criteria. However, when standards change, projects should be allowed time to comply through a compliance schedule.

(3) The state of knowledge regarding CECs is incomplete. There needs to be additional research and development of analytical methods and surrogates to determine potential environmental and public health impacts. Agencies should minimize the likelihood of CECs impacting human health and the environment by means of source control and/or pollution prevention programs.

(4) Regulating most CECs will require significant work to develop test methods and more specific determinations as to how and at what level CECs impact public health or our environment.

b. Research Program

(1) The State Water Board, in consultation with CDPH, convened a “blue-ribbon” advisory panel to guide future actions relating to CECs.

(a) The panel was actively managed by the State Water Board and was composed of the following: one human health toxicologist, one environmental toxicologist, one epidemiologist, one biochemist, one civil engineer familiar with the design and construction of recycled water treatment facilities, and one chemist familiar with the design and operation of advanced laboratory methods for the detection of emerging constituents. Each of these panelists had extensive experience as a principal investigator in their respective areas of expertise.

(b) The panel reviewed the scientific literature and submitted a report to the State Water Board and CDPH that described the current state of scientific knowledge regarding the risks of CECs to public health and the environment. In December 2010, the State Water Board, in coordination with CDPH, held a public hearing to hear a presentation on the report and to receive comments from stakeholders.

(c) The State Water Board considered the panel report and the comments received and adopted an amendment to the Policy establishing monitoring requirements for CECs in recycled water. These monitoring requirements are prescribed in Attachment A.

(2) The panel or a similarly constituted panel shall update the report every five years. The next update is due in June 2015.

(a) Each updated report shall recommend actions that the State of California should take to improve our understanding of CECs and, as may be appropriate, to protect public health and the environment.

(b) The updated reports shall answer the following questions: What are the appropriate constituents to be monitored in recycled water, including analytical methods and method detection limits? What is the known toxicological information for the above constituents? Would the above lists change based on level of treatment and use? If so, how? What are possible indicators that represent a suite of CECs? What levels of CEC's should trigger enhanced monitoring of CEC's in recycled water, groundwater and/or surface waters?

(c) Within six months from receipt of an updated report, the State Water Board shall hold a hearing to consider recommendations from staff and shall endorse the

recommendations, as appropriate, after making any necessary modifications.

c. Permit Provisions

Permits for recycled water projects shall be consistent with any CDPH recommendations to protect public health and the monitoring requirements prescribed in Attachment A.

11. *Incentives for the Use of Recycled Water*

a. Funding

The State Water Board will request CDWR to provide priority funding for projects that have major recycling components; particularly those that decrease demand on potable water supplies. The State Water Board will also request priority funding for stormwater recharge projects that augment local water supplies. The State Water Board shall promote the use of the State Revolving Fund (SRF) for water purveyor, stormwater agencies, and water recyclers to use for water reuse and stormwater use and recharge projects.

b. Stormwater

The State Water Board strongly encourages all water purveyors to provide financial incentives for water recycling and stormwater recharge and reuse projects. The State Water Board also encourages the Regional Water Boards to require less stringent monitoring and regulatory requirements for stormwater treatment and use projects than for projects involving untreated stormwater discharges.

c. TMDLs

Water recycling reduces mass loadings from municipal wastewater sources to impaired waters. As such, waste load allocations shall be assigned as appropriate by the Regional Water Boards in a manner that provides an incentive for greater water recycling.

ATTACHMENT A

Requirements for Monitoring Constituents of Emerging Concern in Recycled Water

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As modified by
State Water Board Resolution 2013-0003
(January 22, 2013)

ATTACHMENT A

REQUIREMENTS FOR MONITORING CONSTITUENTS OF EMERGING CONCERN FOR RECYCLED WATER

The purpose of this attachment to the Recycled Water Policy (Policy) is to provide direction to the Regional Water Quality Control Boards (Regional Water Boards) on monitoring requirements for constituents of emerging concern[2] (CECs) in recycled municipal wastewater, herein referred to as "recycled water." The monitoring requirements and criteria for evaluating monitoring results in the Policy are based on recommendations from a Science Advisory Panel[3]. The monitoring requirements pertain to the production and use of recycled water for groundwater recharge reuse[4] by surface and subsurface application methods. The monitoring requirements apply to recycled water producers, including entities that further treat or enhance the quality of recycled water supplied by municipal wastewater treatment facilities, and groundwater recharge reuse facilities.

Groundwater recharge by surface application is the controlled application of water to a spreading area for infiltration resulting in the recharge of a groundwater basin. Subsurface application is the controlled application of water to a groundwater basin or aquifer by a means other than surface application, such as direct injection through a well.

The California Department of Public Health (CDPH) shall be consulted for any additional monitoring requirements for recycled water use found necessary by CDPH to protect human health.

[2] For this Policy, CECs are defined to be chemicals in personal care products, pharmaceuticals including antibiotics, antimicrobials; industrial, agricultural, and household chemicals; hormones; food additives; transformation products, inorganic constituents; and nanomaterials.

[3] The Science Advisory Panel was convened in accordance with provision 10.b. of the Policy. The panel's recommendations were presented in the report; *Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water – Recommendations of a Science Advisory Panel*, dated June 25, 2010.

[4] As used in this attachment, use of recycled water for groundwater recharge reuse has the same meaning as indirect potable reuse for groundwater recharge as defined in Water Code section 13561(c), where it is defined as the planned use of recycled water for replenishment of a groundwater basin or an aquifer that has been designated as a source of water supply for a public water system.

As modified by
State Water Board Resolution 2013-0003
(January 22, 2013)

1. CECS AND SURROGATES

Within this Policy, CECs of toxicological relevance to human health are referred to as "health-based CECs."[5] CECs determined not to have human health relevance, but useful for monitoring treatment process effectiveness, are referred to as "performance indicator CECs." A performance indicator CEC is an individual CEC used for evaluating a family of CECs with similar physicochemical or biodegradable characteristics. The removal of a performance indicator CEC through a treatment process provides an indication of removal of CECs with similar properties. A health-based CEC may also serve as a performance indicator CEC.

A surrogate is a measurable physical or chemical property, such as chlorine residual or electrical conductivity, that can be used to measure the effectiveness of trace organic compound removal by treatment process and/or provide an indication of a treatment process failure. A reverse osmosis (RO) treatment process, for example, is expected to substantially reduce the electrical conductivity of the recycled water being treated. This reduction in the level of the surrogate also provides an indication that inorganic and organic compounds, including CECs, are being removed.

Recycled water monitoring programs used for groundwater recharge reuse shall include monitoring for: (1) human health-based CECs; (2) performance indicator CECs; and (3) surrogates. The purpose of monitoring performance indicator CECs and surrogates is to assess the effectiveness of unit processes to remove CECs. For this policy for groundwater recharge reuse, unit processes that remove CECs include RO, advanced oxidation processes (AOPs), and soil aquifer treatment.[6] AOPs are treatment processes involving the use of oxidizing agents, such as hydrogen peroxide and ozone, combined with ultraviolet light irradiation. Soil aquifer treatment is a natural treatment process that removes CECs as water passes through soil, the vadose zone, and within an aquifer.

This Policy provides CEC monitoring requirements for recycled water which undergoes additional treatment by soil aquifer treatment or by RO followed by AOPs. CEC monitoring requirements for groundwater recharge reuse projects implementing treatment processes that provide control of CECs by processes other than soil aquifer treatment or RO/AOPs shall be established on a case-by-case basis by the State Water Board in consultation with CDPH.

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[5] Heath-based CECs were determined through a screening process that was developed and conducted by the CEC Science Advisory Panel; *Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water – Recommendations of a Science Advisory Panel*, dated June 25, 2010.

[6] For evaluating removal of CECs, the treatment zone for soil aquifer treatment is from the surface of the application area through the unsaturated zone to groundwater, including groundwater within a 30-day travel time distance through the aquifer downgradient of the surface application area.

Monitoring of health-based CECs or performance indicator CECs is not required for recycled water used for landscape irrigation due to the low risk for ingestion of the water.[7]

1.1. CECs for Monitoring Programs

This Policy provides requirements for monitoring CECs in recycled water used for groundwater recharge reuse. The Regional Water Boards shall not issue requirements for monitoring of additional CECs in recycled water beyond the requirements provided in this Policy except when recommended by CDPH or requested by the project proponent.

Table 1 provides the health-based CECs and performance indicator CECs to be monitored along with their respective reporting limits. All CECs listed for a recycled water application shall be monitored during an initial assessment monitoring phase, as described in Section 3.1. Based on monitoring results and findings, the list of performance indicator CECs required for monitoring may be refined for subsequent monitoring phases. The health-based CECs listed in Table 1 shall be monitored during the entirety of the initial assessment and baseline monitoring phases (Sections 3.1 and 3.2). Based on the results of the baseline monitoring phase and/or subsequent monitoring, the list of health-based CECs required for monitoring may be revised. The method for evaluation of monitoring results for health-based CECs is provided in Section 4.2.

Quality assurance and quality control measures shall be used for both collection of samples and laboratory analysis work. The project proponent shall develop a quality assurance project plan that includes the appropriate number of field blanks, laboratory blanks, replicate samples, and matrix spikes.

[7] "For monitoring programs to assess CEC threats for urban irrigation reuse, none of the chemicals for which measurement methods and exposure data are available exceeded the threshold for monitoring priority. This is largely attributable to higher Monitoring Trigger Levels (MTLs), because of reduced water ingestion in a landscape irrigation setting compared to drinking water." MTLs are health-based screening level values for CECs for a particular water reuse scenario. MTLs were established in, *Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water – Recommendations of a Science Advisory Panel*, dated June 25, 2010.

Table 1 – CECs to be Monitored

Constituent	Constituent Group	Relevance/Indicator Type	Reporting Limit (µg/L)
GROUNDWATER RECHARGE REUSE - SURFACE APPLICATION			
17β-estradiol	Steroid hormones	Health	0.001
Caffeine	Stimulant	Health & Performance	0.05
N-Nitrosodimethylamine (NDMA)	Disinfection byproduct	Health	0.002
Triclosan	Antimicrobial	Health	0.05
Gemfibrozil	Pharmaceutical	Performance	0.01
Iopromide	Pharmaceutical	Performance	0.05
N,N-Diethyl-meta-toluamide (DEET)	Personal care product	Performance	0.05
Sucralose	Food additive	Performance	0.1
GROUNDWATER RECHARGE REUSE - SUBSURFACE APPLICATION			
17β-estradiol	Steroid hormones	Health	0.001
Caffeine	Stimulant	Health & Performance	0.05
NDMA	Disinfection byproduct	Health & Performance	0.002
Triclosan	Antimicrobial	Health	0.05
DEET	Personal care product	Performance	0.05
Sucralose	Food additive	Performance	0.1

µg/L – Micrograms per liter

Analytical methods for laboratory analysis of CECs shall be selected to achieve the reporting limits presented in Table 1. The analytical methods shall be based on methods published by the United States Environmental Protection Agency, methods certified by CDPH, or peer reviewed and published methods that have been reviewed by CDPH, including those published by voluntary consensus standards bodies such as the Standards Methods Committee and the American Society for Testing and Materials International. Any modifications to the published or certified methods shall be reviewed by CDPH and subsequently submitted to the Regional Water Board in an updated quality assurance project plan.

1.2. Surrogates for Monitoring Programs

Table 2 presents a list of surrogates that shall be considered for monitoring treatment of recycled water used for groundwater recharge reuse. Other surrogates not listed in Table 2 may also be considered.

Table 2: Surrogates

GROUNDWATER RECHARGE REUSE - SURFACE APPLICATION
Ammonia
Total Organic Carbon (TOC)
Nitrate
Ultraviolet (UV) Light Absorption
GROUNDWATER RECHARGE REUSE - SUBSURFACE APPLICATION
Electrical Conductivity
TOC

The project proponent shall propose surrogates to monitor on a case-by-case basis appropriate for the treatment process or processes. The Regional Water Board shall review and approve the selected surrogates in consultation with CDPH.

Where applicable, surrogates may be measured using on-line or hand-held instruments provided that instrument calibration procedures are implemented in accordance with the manufacturer's specifications and that calibration is documented.

2. MONITORING LOCATIONS

Monitoring locations for CECs and surrogates are described in this section.

2.1. Health-Based CEC Monitoring Locations

2.1.1. Groundwater Recharge Reuse - Surface Application

For groundwater recharge reuse projects implementing surface application of recycled water, health-based CECs shall be monitored at these locations:

(1) Following tertiary treatment[8] prior to application to the surface spreading area; and

(2) At monitoring well locations designated in consultation with CDPH within the distance groundwater travels downgradient from the application site in 30 days.

Monitoring locations for health-based CECs for the phases of monitoring are presented in Tables 3 through 5.

2.1.2. Groundwater Recharge Reuse - Subsurface Application

For groundwater recharge reuse projects implementing subsurface application of recycled water, health-based CECs shall be monitored at a location following treatment prior to release into an aquifer.

2.2. Performance Indicator CEC and Surrogate Monitoring Locations

To allow evaluation of individual unit processes or a combination of unit processes that provide removal of CECs, performance indicator CECs and surrogates shall be monitored at the locations described below and presented in Tables 3 through 5.

2.2.1. Groundwater Recharge Reuse - Surface Application

For groundwater recharge reuse projects using surface application of recycled water, performance indicator CECs and surrogates shall be monitored at these locations:

(1) Following tertiary treatment prior to application to the surface spreading area; and

(2) At monitoring well locations designated in consultation with CDPH within the distance groundwater travels downgradient from the application site in 30 days.

Monitoring locations for performance indicator CECs and surrogates for the phases of monitoring are presented in Tables 3 through 5.

2.2.2. Groundwater Recharge Reuse - Subsurface Application

For groundwater recharge reuse projects using subsurface application of recycled water, performance indicator CECs shall be monitored in recycled water at these locations:

(1) Prior to treatment by RO; and

[8] Standards for disinfected tertiary recycled water presented in California Code of Regulations, Title 22, section 60301.230 and 60301.320.

(2) Following treatment prior to release to the aquifer.

If the project proponent can demonstrate that the RO unit will not substantially remove a CEC, the Regional Water Board may allow monitoring for that CEC prior to the AOPs, instead of prior to the RO unit.

For groundwater recharge reuse projects using subsurface application of recycled water, surrogates shall be monitored at locations proposed by the project proponent and approved by the Regional Water Board in consultation with CDPH.

3. PHASED MONITORING REQUIREMENTS

The Regional Water Board shall phase the monitoring requirements for CECs and surrogates for groundwater recharge reuse projects. The purpose of phased monitoring is to allow monitoring requirements for health-based CECs, performance indicator CECs and surrogates to be refined based on the monitoring results and findings of the previous phase. An initial assessment monitoring phase, followed by a baseline monitoring phase, shall be conducted to determine the project-specific monitoring requirements for standard operations. The initial assessment and baseline monitoring phases shall be conducted after CDPH approval for groundwater recharge reuse project operation.

3.1. Initial Assessment Monitoring Phase

The purposes of the initial assessment phase are to: (1) identify the occurrence of health-based CECs, performance indicator CECs, and surrogates in recycled water and groundwater;[9] (2) determine treatment effectiveness; (3) define the project-specific performance indicator CECs and surrogates to monitor during the baseline phase; and (4) specify the expected removal percentages for performance indicator CECs and surrogates. The monitoring requirements for the initial assessment monitoring phase shall apply to the start-up of new facilities, piloting of new unit processes at existing facilities, and existing facilities where CECs and surrogates have not been assessed equivalent to the requirements of this Policy. Data from prior assessment need not replicate the exact frequency and duration of the initial assessment phase requirements specified in Table 3, if the overall robustness and size of the data are sufficient to adequately characterize the CECs, surrogates, and treatment performance. The initial assessment monitoring phase shall be conducted for a period of one year.

During the initial assessment monitoring phase for the applicable recycled water application method, each of the health-based CECs and performance indicator CECs

[9] The identification of the occurrence of health-based CECs, performance indicator CECs, and surrogates in groundwater only applies to groundwater recharge reuse by surface application.

listed in Table 1 and appropriate surrogates (see Section 1.2) shall be monitored. Surrogates shall be selected to monitor individual unit processes or combinations of unit processes that remove CECs. Performance indicator CEC and surrogate monitoring results that demonstrate measurable removal for a given unit process shall be candidates for use in the monitoring programs for the baseline and standard operation phases. Monitoring requirements for the initial assessment phase are summarized in Table 3.

For existing groundwater recharge reuse projects, historic monitoring data may be used to assess the occurrence and removal of CECs and surrogates. Existing projects demonstrating prior assessment of CECs and surrogates equivalent to the initial assessment phase requirements of this Policy may skip the initial monitoring phase and initiate the baseline monitoring phase requirements in Section 3.2.
Monitoring results shall be evaluated following each sampling event to allow timely implementation of any response actions. If evaluation of monitoring results indicates a concern, such as finding a concentration of a health-based CEC above the thresholds described in Table 7, more frequent monitoring may be required to further evaluate the effectiveness of the treatment process. Additional actions may also be warranted, which may include, but not be limited to, resampling to confirm a result, additional monitoring, implementation of a source identification program, toxicological studies, engineering removal studies, and/or modification of facility operations. If additional monitoring is required, the Regional Water Board shall consult with CDPH and revise the Monitoring and Reporting Program as appropriate. Evaluation of monitoring results and determination of appropriate response actions based on the monitoring results are presented in Section 4.

Following completion of the initial assessment monitoring phase, monitoring requirements shall be re-evaluated and subsequent requirements for the baseline monitoring phase shall be determined on a project-specific basis.

3.2. Baseline Monitoring Phase

Based on the findings of the initial assessment monitoring phase, project-specific performance indicator CECs and surrogates shall be selected for monitoring during the baseline monitoring phase. The purpose of the baseline monitoring phase is to assess and refine which health-based CECs, performance indicator CECs and surrogates are appropriate to monitor the removal of CECs and treatment system performance for the standard operation of a facility. Performance indicator CECs and surrogates that exhibited reduction by unit processes and/or provided an indication of operational performance shall be selected for monitoring during the baseline monitoring phase. Surrogates not reduced through a unit process are not good indicators of the unit's intended performance. For example, soil aquifer treatment may not effectively lower electrical conductivity. Therefore, electrical conductivity may not be a good surrogate for soil aquifer treatment. The baseline monitoring phase shall be conducted for a period

of three years following the initial assessment monitoring phase. Monitoring requirements for the baseline phase are summarized in Table 4. If a performance indicator CEC listed in Table 1 is found not to be a good indicator, the project proponent shall propose an alternative performance indicator CEC representative of the constituent group to monitor. This performance indicator CEC shall be subject to approval by the Regional Water Board in consultation with CDPH.

For existing groundwater recharge reuse projects, historic monitoring data may be used to assess removal of health-based CECs, performance indicator CECs and surrogates. Existing projects that can demonstrate prior assessment of CECs and surrogates equivalent to the initial assessment phase and baseline phase requirements of this Policy may be eligible for the standard operation monitoring requirements.

Monitoring results shall be evaluated following each sampling event to allow timely implementation of any response actions. If evaluation of monitoring results indicates a concern, such as finding a concentration of a health-based CEC above the thresholds described in Table 7, more frequent monitoring may be required to further evaluate the effectiveness of the treatment process. Additional actions may also be warranted, which may include, but not be limited to, resampling to confirm a result, additional monitoring, implementation of a source identification program, toxicological studies, engineering removal studies, and/or modification of facility operation. If additional monitoring is required, the Regional Water Board shall consult with CDPH and revise the Monitoring and Reporting Program as appropriate. Evaluation of monitoring results and determination of appropriate response actions based on the monitoring results are presented in Section 4.

Following the baseline operation monitoring phase, monitoring requirements shall be re-evaluated and subsequent requirements for the standard operation of a project shall be determined on a project-specific basis.

Table 3: Initial Assessment Phase Monitoring Requirements

Recycled Water Use	Constituent	Frequency	Monitoring Point
Groundwater Recharge Reuse- Surface Application	Health-Based CECs and Performance Indicator CECs: All listed in Table 1.	Quarterly[1]	- Following tertiary treatment prior to application to surface spreading area. - At monitoring well locations designated in consultation with CDPH.[2]
	Surrogates: To be selected on a project-specific basis.[5]	1st 3 months: To be determined on a project-specific basis.[3]	- Following tertiary treatment prior to application to the surface spreading area. - At monitoring well locations designated in consultation with CDPH.[2]
		3-12 months: To be determined on a project-specific basis.[3]	- Following tertiary treatment prior to application to the surface spreading area. - At monitoring well locations designated in consultation with CDPH.[2]
Groundwater Recharge Reuse -Subsurface Application	Health-Based CECs: All listed in Table 1.	Quarterly[1]	Following treatment prior to release to the aquifer.
	Performance Indicator CECs: All listed in Table 1.	Quarterly[1]	- Prior to RO treatment.[4] - Following treatment prior to release to the aquifer.
	Surrogates: To be selected on a project-specific basis.[5]	To be determined on a project-specific basis.	- At locations approved by the Regional Water Board.[6]

1 – This is the initial monitoring frequency for the monitoring and reporting program. The Regional Water Board may require additional monitoring to respond to a concern as stated in Section 3.1.
2 – Groundwater within the distance groundwater travels downgradient from the application site in 30-days.
3 – The monitoring frequency shall be determined by the Regional Water Board in consultation with CDPH. The intent is to have an increased monitoring frequency during the first three months and a decreased monitoring frequency after three months.
4 – If the project proponent can demonstrate that the RO unit will not substantially remove a CEC, the Regional Water Board may allow monitoring for that CEC prior to the AOP, instead of prior to the RO unit.
5 – See Section 1.2 for guidance on selection of surrogates.
6 – See Section 2.2.2 for information on surrogate monitoring locations for subsurface application.

As modified by
State Water Board Resolution 2013-0003
(January 22, 2013)

Table 4: Baseline Phase Monitoring Requirements

Recycled Water Use	Constituent	Frequency	Monitoring Point
Groundwater Recharge Reuse – Surface Application	Health-Based CECs: All listed in Table 1. Performance Indicator CECs: Selected based on the findings of the initial assessment phase.	Semi-Annually[1]	- Following tertiary treatment prior to application to the surface spreading area. - At monitoring well locations designated in consultation with CDPH.[2]
	Surrogates: Selected based on the findings of the initial assessment phase.	Based on findings of the initial assessment phase. .	- Following tertiary treatment prior to application to the surface spreading area. - At monitoring well locations designated in consultation with CDPH.[2]
Groundwater Recharge Reuse – Subsurface Application	Health-Based CECs: All listed in Table 1.	Semi-Annually[1]	Following treatment prior to release to the aquifer.
	Performance Indicator CECs: Selected based on the findings of the initial assessment phase.	Semi-Annually[1]	- Prior to RO treatment.[3] - Following treatment prior to release to the aquifer.
	Surrogates: Selected based on the findings of the initial assessment phase.	Based on findings of the initial assessment phase.	- At locations approved by the Regional Water Board.[4]

1 – More frequent monitoring may be required to respond to a concern as stated in Section 3.2.
2 – Groundwater within the distance groundwater travels downgradient from the application site in 30-days.
3 – If the project proponent can demonstrate that the RO unit will not substantially remove a CEC, the Regional Water Board may allow monitoring for that CEC prior to the AOP, instead of prior to the RO unit.
4 – See Section 2.2.2 for information on surrogate monitoring locations for subsurface application.

As modified by
State Water Board Resolution 2013-0003
(January 22, 2013)

3.3. Standard Operation Monitoring

Based on the findings of the baseline monitoring phase, monitoring requirements for health-based CECs, performance indicator CECs and surrogates may be refined to establish project-specific requirements for monitoring the standard operating conditions of a groundwater recharge reuse project. Monitoring requirements for the standard operation phase are summarized in Table 5. The list of health-based CECs may be revised to remove a health-based CEC from the list if monitoring results meet the conditions of the minimum threshold level presented in Table 7. Performance indicator CECs and surrogates that exhibited reduction by a unit process and/or provided an indication of operational performance shall be selected for monitoring of standard operations. If a performance indicator CEC is found to be a poor indicator, the project proponent shall propose an alternative performance indicator CEC representative of the constituent group to monitor. This performance indicator CEC shall be subject to approval by the Regional Water Board in consultation with CDPH.

Monitoring locations for the standard operation phase shall be the same as the locations used for the baseline monitoring phase.

Monitoring for health-based CECs and performance indicator CECs shall be conducted on a semi-annual basis, unless the project demonstrates consistency in treatment effectiveness in removal of CECs, treatment operational performance, and appropriate recycled water quality. These projects may be monitored for CECs on an annual basis. Monitoring frequencies for CECs and surrogates for standard operation monitoring are presented in Table 5.

Monitoring results shall be evaluated following each sampling event to allow timely implementation of any response actions. If evaluation of monitoring results indicates a concern, such as finding a health-based CEC above the thresholds described in Table 7 or a decline in removal of a performance indicator CEC from the performance levels established during the initial and baseline monitoring phases, more frequent monitoring may be required to further evaluate the effectiveness of the treatment process. Additional actions may also be warranted, which may include, but not be limited to, resampling to confirm a result, additional monitoring, implementation of a source identification program, toxicological studies, engineering removal studies, and/or modification of facility operation. If additional monitoring is required, the Regional Water Board shall consult with CDPH and revise the Monitoring and Reporting Program as appropriate. Evaluation of monitoring results and determination of appropriate response actions based on the monitoring results are presented in Section 4.

Table 5: Standard Operation Monitoring Requirement

Recycled Water Use	Constituent	Frequency	Monitoring Point
Groundwater Recharge Reuse - Surface Application	Health-Based CECs: Selected based on the findings of the baseline phase.	Semi-Annually or Annually[1]	- Following tertiary treatment prior to application to the surface spreading area. - At monitoring well locations designated in consultation with CDPH.[2]
	Performance Indicator CECs: Selected based on the findings of the baseline phase.		
	Surrogates: Selected based on the findings of the baseline phase.	Based on findings of the baseline assessment phase.	- Following tertiary treatment prior to application to the surface spreading area. - At monitoring well locations designated in consultation with CDPH.[2]
Groundwater Recharge Reuse - Subsurface Application	Health-Based CECs: Selected based on the findings of the baseline phase	Semi-Annually or Annually[1]	-Following ~~RO/AOPs~~ treatment prior to release to the aquifer.
	Performance Indicator CECs: Selected based on the findings of the baseline phase.	Semi-Annually or Annually[1]	- Prior to RO treatment.[3] - Following treatment prior to release to the aquifer.
	Surrogates: Selected based on the findings of the baseline phase,	Based on findings of the baseline assessment phase.	At locations approved by the Regional Water Board.[4]

1 – More frequent monitoring may be required to respond to a concern as stated in Section 3.3.
2 – Groundwater within the distance groundwater travels downgradient from the application site in 30-days.
3 – If the project proponent can demonstrate that the RO unit will not substantially remove a CEC, the Regional Water Board may allow monitoring for that CEC prior to the AOP, instead of prior to the RO unit.
4 – See Section 2.2.2 for information on surrogate monitoring locations for subsurface application.

As modified by
State Water Board Resolution 2013-0003
(January 22, 2013)

4. EVALUATION OF CEC AND SURROGATE MONITORING RESULTS

This section presents the approaches for evaluating treatment process performance and health-based CEC monitoring results. Monitoring results for performance indicator CECs and surrogates shall be used to evaluate the operational performance of a treatment process and the effectiveness of a treatment process in removing CECs. For evaluation of health-based CEC monitoring results, a multi-tiered approach of thresholds and corresponding response actions is presented in Section 4.2. The evaluation of monitoring results shall be included in monitoring reports submitted to the Regional Water Board and CDPH.

4.1 Evaluation of Performance Indicator CEC and Surrogate Results

The effectiveness of a treatment process to remove CECs shall be evaluated by determining the removal percentages for performance indicator CECs and surrogates. The removal percentage is the difference in the concentration of a compound in recycled water prior to and after a treatment process (e.g., soil aquifer treatment or RO followed by AOPs), divided by the concentration prior to the treatment process and multiplied by 100.

$$\text{Removal Percentage} = ([X_{in} - X_{out}]/X_{in})\ (100)$$

X_{in} - Concentration in recycled water prior to a treatment process
X_{out} - Concentration in recycled water after a treatment process

During the initial assessment, the recycled water project proponent shall monitor performance to determine removal percentages for performance indicator CECs and surrogates. The removal percentages shall be confirmed during the baseline monitoring phase. One example of removal percentages from Drews et. al. (2008) for each application scenario and their associated processes (i.e. soil aquifer treatment or RO/AOPs) is presented in Table 6. The established removal percentages for each project shall be used to evaluate treatment effectiveness and operational performance.

4.1.1. Groundwater Recharge Reuse – Surface Application

For groundwater recharge reuse by surface application, the removal percentage shall be determined by comparing the quality of the recycled water applied to a surface spreading area to the quality of groundwater at monitoring wells. The distance between the application site and the monitoring wells shall be no more than the distance the groundwater travels in 30 days downgradient from the application site. The location of the monitoring wells shall be designated in consultation with CDPH. The removal percentage shall be adjusted to account for dilution from potable water applied to the application site, storm water applied to the application site, and native groundwater.

The removal percentage shall also be adjusted to account for CECs in these waters. The project proponent shall submit a proposal to the Regional Water Board and CDPH as part of its operation plan on how it will perform this accounting.

4.1.2. Groundwater Recharge Reuse – Subsurface Application

For groundwater recharge reuse using subsurface application, the removal percentage shall be determined by comparing recycled water quality before treatment by RO/AOPs and after treatment prior to release to the aquifer.

Table 6: Monitoring Trigger Levels and Removal Percentages

Constituent/ Parameter	Relevance/Indicator Type/Surrogate	Monitoring Trigger Level (micrograms/liter)[1]	Removal Percentages (%)[2]
GROUNDWATER RECHARGE REUSE - SURFACE APPLICATION[3]			
17β-estradiol	Health	0.0009	--[4]
Caffeine	Health & Performance	0.35	>90
NDMA	Health	0.01	--
Triclosan	Health	0.35	--
Gemfibrozil	Performance	--	>90
Iopromide	Performance	--	>90
DEET	Performance	--	>90
Sucralose	Performance	--	<25[5]
Ammonia	Surrogate	--	>90
TOC	Surrogate	--	>30
Nitrate	Surrogate	--	>30
UV Absorption	Surrogate	--	>30
GROUNDWATER RECHARGE REUSE - SUBSURFACE APPLICATION[6]			
17β-estradiol	Health	0.0009	--
Caffeine	Health & Performance	0.35	>90
NDMA	Health & Performance	0.01	25-50, >80[7]
Triclosan	Health	0.35	--
DEET	Performance	--	>90
Sucralose	Performance	--	>90
Electrical Conductivity	Surrogate	--	>90
TOC	Surrogate	--	>90

1 – Monitoring trigger levels for groundwater recharge reuse and landscape irrigation applications were established in *Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water – Recommendations of a Science Advisory Panel*, dated June 25, 2010.
2 –The removal percentages presented in this table are from work by Drewes et.al. (2008) and provide an example of performance for that specific research. Project specific removal percentages will be developed for each groundwater recharge reuse project during the initial and baseline monitoring phases.
3 – Treatment process: Soil aquifer treatment. The stated removal percentages are examples and need to be finalized during the initial and baseline monitoring phases for a given site.
4 – Not applicable
5 – Sucralose degrades poorly during soil aquifer treatment. It is included here mainly as a tracer.
6 – Treatment process: Reverse osmosis and advanced oxidation process.
7 – For treatment using reverse osmosis, removal percentage is between 25 and 50 percent. For treatment using reverse osmosis and advanced oxidation processes, removal percentage is greater than 80 percent.

4.2. Evaluation of Health-Based CEC Results

The project proponent shall evaluate health-based CEC monitoring results. To determine the appropriate response actions, the project proponent shall compare measured environmental concentrations (MECs) to their respective monitoring trigger levels[10] (MTLs) listed in Table 6 to determine MEC/MTL ratios. The project proponent shall compare the calculated MEC/MTL ratios to the thresholds presented in Table 7 and shall implement the response actions corresponding to the threshold.

For surface application, the results shall be evaluated for groundwater collected from the monitoring wells. For subsurface application projects, results shall be evaluated for the recycled water released to the aquifer.

Table 7: MEC/MTL Thresholds and Response Actions

MC/MTL Threshold	Response Action
If greater than 75 percent of the MEC/MTL ratio results for a CEC are less than or equal to 0.1 during the baseline monitoring phase and/or subsequent monitoring -	A) After completion of the baseline monitoring phase, consider requesting removal of the CEC from the monitoring program.
If MEC/MTL ratio is greater than 0.1 and less than or equal to 1 -	B) Continue to monitor.
If MEC/MTL ratio is greater than 1 and less than or equal to 10 -	C) Check the data. Continue to monitor.
If MEC/MLT ratio is greater than 10 and less than or equal to 100 -	D) Resample immediately and analyze to confirm CEC result. Continue to monitor.
If MEC/MLT ratio is greater than 100 -	E) Resample immediately and analyze to confirm result. Continue to monitor. Contact the Regional Water Board and CDPH to discuss additional actions. (Additional actions may include, but are not limited to, additional monitoring, toxicological studies, engineering removal studies, modification of facility operation, implementation of a source identification program, and monitoring at additional locations.)

[10] Monitoring Trigger Level (MTL): Health-based screening level value for a CEC for a particular water reuse scenario. MTLs were established in, *Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water – Recommendations of a Science Advisory Panel*, dated June 25, 2010.

APPENDIX B

Los Angeles Regional Water Quality Control Board, June 28, 2012, Regional Water Board Assistance in Guiding Salt and Nutrient Management Plan Development in the Los Angeles Region

Regional Water Board Assistance in Guiding Salt and Nutrient Management Plan Development in the Los Angeles Region

Further clarification and information to assist development of Salt and Nutrient Management Plans set forth in the State Water Board's Recycled Water Policy

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD,
LOS ANGELES REGION

JUNE 28, 2012

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1. INTRODUCTION

The State Water Resources Control Board (State Water Board) adopted the Recycled Water Policy (State Water Board Resolution No. 2009-0011) on February 3, 2009. The purpose of the Recycled Water Policy (hereinafter, Policy) is to protect groundwater resources and increase the beneficial use of recycled water from municipal wastewater sources in a manner consistent with state and federal water quality laws and regulations. The Policy provides direction to the Regional Water Quality Control Boards (Regional Water Boards), proponents of recycled water projects, and the public regarding the appropriate criteria to be used by the State Water Board and the Regional Water Boards in issuing permits for recycled water projects.

The Policy recognizes the potential for increased salt and nutrient loading to groundwater basins as a result of increased recycled water use, and therefore, requires the development of regional or sub-regional salt and nutrient management plans. In requiring such plans, the Policy acknowledges that recycled water may not be the sole cause of high concentrations of salts and nutrients in groundwater basins, and therefore regulation of recycled water alone will not address such conditions. The intent of this requirement is for salts and nutrients from all sources to be managed on a basin-wide or watershed-wide basis in a manner that ensures the attainment of water quality objectives and protection of beneficial use.

The Recycled Water Policy states:

a) Every basin/sub-basin shall have a consistent salt and nutrient management plan (hereinafter, SNMP);
b) SNMPs shall be tailored to address the water quality concerns in each basin;
c) Shall be developed or funded pursuant to the provisions of Water Code sections 10750 ***et seq.*** or other appropriate authority;
d) SNMPs shall be completed and proposed to the Regional Water Board within five years from the adoption date of the Policy;
e) SNMPs are not required in areas where a Regional Water Board has approved a functionally equivalent salt and nutrient plan; and
f) SNMPs may address constituents other than salt and nutrients that adversely affect groundwater quality.

Within one year of the receipt of a proposed SNMP, the Regional Water Board is expected to consider for adoption revised implementation plans, consistent with Water Code section 13242, for those groundwater basins within their regions where water quality objectives for salts or nutrients are being, or are threatening to be, exceeded. The implementation plans are to be based on the salt and nutrient plans required by the Policy.

The Policy spells out the required elements of an SNMP. In addition, State Water Board staff provided additional detail on the contents of a SNMP by developing “Suggested Elements” as a means of indicating the nature and extent of information to be provided in the plans. State Water Board staff also provided templates for Regional Water Board adoption of the implementation aspects of the SNMPs into each region’s Water Quality Control Plan (hereinafter, Basin Plan).

The Policy is clear that the SNMP process should be stakeholder-led and conducted in a collaborative manner among interested parties. The Regional Water Board’s role is that

of an overseer and facilitator of the SNMP development process – providing regulatory guidance as necessary and technical and regulatory oversight of the process to ensure that the final product is compliant with the specific requirements of the Policy and state and federal water quality laws. Board staff has been attending stakeholder meetings for various groundwater basin/sub-basin groups to provide support and information as necessary.

The purpose of this document is to provide information and guidance to assist on certain aspects of the SNMP development identified by stakeholder groups. Recognizing that each basin has its own unique set of conditions and constraints, this document does not seek to dictate the methods by which stakeholders should manage salt and nutrient loads to their basins. It does, however, provide clarification of the regulatory requirements of SNMPs along with other considerations. By providing such information, the Regional Water Board will promote adherence with SNMP requirements for groundwater basins in the Los Angeles Region. This document is not a policy or regulation of the Regional Water Board and has no regulatory affect; it is intended to assist in the development of SNMPs.

2. GROUNDWATER BASINS IN THE LOS ANGELES REGION

The Los Angeles subregion overlies 24 groundwater basins and encompasses most of Ventura and Los Angeles counties (Figure 2-1). Within this subregion, the Ventura River Valley, Santa Clara River Valley, and Coastal Plain of Los Angeles basins are divided into sub-basins. The basins in the Los Angeles subregion underlie 1.01 million acres (1,580 square miles) or about 40 percent of the total surface area of the subregion (DWR, 2003). Groundwater is found in unconfined alluvial aquifers in most of the inland basins of the Los Angeles subregions. In some larger basins, such as those underlying the coastal plain, groundwater occurs in multiple aquifers separated by aquitards that create confined groundwater conditions (DWR, 2003). Coastal basins in this hydrologic region are prone to intrusion of seawater. Seawater intrusion barriers are maintained along the coastal plain. In Los Angeles County, imported and recycled water is injected to maintain a seawater intrusion barrier (DWR, 2003).

FIGURE 2-1: GROUNDWATER BASINS IN THE LOS ANGELES REGION

For purposes of regulation by the Regional Water Board pursuant to its authority under the California Water Code, the groundwater basins in the Los Angeles Region are identified in the Basin Plan. Basin descriptions in the Basin Plan were updated in 2011 based on the Department of Water Resources (DWR) 2003 revision of Bulletin 118 (Figure 2-1). The basins include the Central and West Coast Basins, which underlie the Los Angeles Coastal Plain; the San Fernando and San Gabriel Basins, which lie between the Santa Monica Mountains and the San Gabriel and Santa Susanna Range; and the Santa Clara and Ventura Basins, which lie between Oak Ridge and the Transverse Ranges.
General characteristics of the major basins/sub-basins are summarized in Table 2-1.

TABLE 2-1: GENERAL CHARACTERISTICS OF THE LOS ANGELES REGION GROUNDWATER BASINS

MAJOR GROUNDWATER BASIN(S) AND SUB-BASINS	**STORAGE CAPACITY (AC-FT)**	**BASIN RECHARGE**[1]
COASTAL PLAINS OF LOS ANGELES		
Santa Monica	~1,100,000	Natural/Recycled
Hollywood	200,000	Natural
West Coast Basin	~6,500,000	Natural/Recycled/Imported
Central	13,800,000	Natural/Recycled/Imported
SAN GABRIEL	10,740,000	Natural
RAYMOND	450,000	Natural
SAN FERNANDO	3,670,000	Natural/ Recycled
SANTA CLARA RIVER VALLEY		
Oxnard	7,140,000	Natural/ Recycled/ Septics
Mound	n.a	
Santa Paula	800,000	Recycled/Septics
Fillmore	1,100,000	Recycled/Septics
Piru	1,979,000	Recycled/Septics
Santa Clara River Valley East	n.a.	Natural/Recycled/Septics
PLEASANT VALLEY	1,886,000	Natural/Recycled/Septics
LAS POSAS VALLEY	345,000	Natural/Irrigation
ARROYO SANTA ROSA	103,600	Natural/Irrigation/Septics
UPPER/LOWER OJAI	~84,000	Natural/Septics
VENTURA RIVER VALLEY	10,000	
SIMI VALLEY	180,000	Natural/IRecycled/Septics
TIERRA REJADA	80,000	
THOUSAND OAKS	130,000	
CONEJO VALLEY	7,106	
RUSSELL VALLEY	10,570	
HIDDEN VALLEY	n.a.	
MALIBU VALLEY	n.a.	Natural/Irrigation/Septics

n.a: not available

The Central and West Coast Basins, San Gabriel and Raymond Basins, and the Piru, Fillmore, Mound and Oxnard Forebay sub-basins beneath the Santa Clara River Valley have large storage capacities with significant existing or proposed municipal groundwater use in both urbanized and agricultural areas. The water levels are stable or declining and imported and/or recycled water is used to replenish and help manage

[1] Managed and natural stormwater recharge takes place in most of these basins.

groundwater supplies. The hydrogeology and groundwater of the basins have been extensively studied and documented, and groundwater quality and transport have been studied using computer models. Potential groundwater management alternatives for these basins have also been extensively studied. The San Gabriel Basin has no confining layers, but the Regional Water Board and USEPA's management of twelve plumes of Volatile Organic Compounds (VOCs) and five plumes of nitrates, where groundwater exceeds the Maximum Contaminant Level (MCL), has limited the impact to adjudicated drinking water resources. Basin water quality has also benefited from management practices and implementation of groundwater remediation conducted by the Watermaster in conjunction with local water purveyors.
The San Fernando Basin and Santa Clara River also have large storage capacities, but have declining water levels, significantly less municipal groundwater use, and no existing conjunctive use. The groundwater quality is variable, but remains locally usable as a source of irrigation or municipal supply. Wastewater and recycling agencies within these basins experience periodic noncompliance with groundwater quality objectives. In general, the basins have been studied less extensively than the Central and West Coast, San Gabriel and Raymond and Lower Santa Clara River Valley basins, although the potential yields from these basins are equally large. In the San Fernando Basin, impacts from a VOC plume and four nitrate plumes along with the irregular presence of confining layers have impacted the use of the basin for drinking water uses. In the upgradient portion of Santa Clara River Valley, contamination of the groundwater and its exfiltrates by salts, nutrients and bacteria as a result of increasing urbanization has impacted the use of groundwater as a source of domestic supply.

Nine groundwater basins in rural areas[2] are the sole source of local drinking water supply. They have smaller storage capacities (less than 10,000 acre-feet) in unconsolidated sediment. Wastewater, recycling agencies and facilities with onsite wastewater treatment systems (hereinafter, OWTS) may experience periodic noncompliance with Basin Plan groundwater quality objectives in these basins. Fewer studies and resources exist to characterize basin hydrogeology, groundwater quality, and groundwater transport. The California Department of Public Health, the State Water Board's Division of Water Rights, and USEPA's drinking water protection programs identify problems with water quality upon delivery, and efforts to isolate pollutants from the underlying potable supply are implemented through waste discharge requirements from the Regional Water Board.

The Oxnard Plain, Ventura River, Sylmar, Pomona, and Thousand Oaks/Pleasant Valley/Fox Canyon basins are moderately sized agricultural and urbanized groundwater basins with higher salinity levels. Wastewater and recycled water can usually comply with Basin Plan groundwater quality objectives, but the quality is improved by potable water conjunctive use. The coastal areas of the Region are underlain by porous sediments or fractured bedrock, both of which may have been intruded by saltwater during historic municipal, agricultural and industrial use of the aquifers. Fresh or recycled water injection is used to limit seawater intrusion in the Central, West Coast and Oxnard Plain basins. The tidally influenced and impacted areas may be heavily studied or un-evaluated, but wastewater and recycled water permits generally require compliance with Basin Plan objectives for salt. Public water supplies are not currently developed within these areas.

[2] Ojai Valley, Acton, Sierra Pelona Valley, Lake Elizabeth, Santa Rosa Valley, Hidden Valley, Santa Susana Knolls, Lockwood Valley, and Hungry Valley.

Beneficial uses of the groundwater basins in the region include Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Services Supply (IND), Industrial Process Supply (PROC), and Aquaculture (AQUA). The designated beneficial uses for these basins are shown in Table 2-2.

TABLE 2-2: BENEFICIAL USES OF GROUND WATERS IN THE LOS ANGELES REGION.[1]

DWR[2] Basin No.	BASIN	MUN	IND	PROC	AGR	AQUA
	PITAS POINT AREA[3]	E	E	P	E	
4-1	**UPPER OJAI VALLEY**	E	E	E	E	
4-2	**OJAI VALLEY**	E	E	E	E	
4-3	**VENTURA RIVER VALLEY**					
4-3.01	Upper Ventura	E	E	E	E	
4-3.02	Lower Ventura	P	E	P	E	
4-4	**SANTA CLARA RIVER VALLEY[4]**					
4-4.02	Oxnard					
4-4.02	Oxnard Forebay	E	E	E	E	
4-4.02	Confined aquifers	E	E	E	E	
4-4.02	Unconfined and perched aquifers	E	P		E	
4-4.03	Mound					
4-4.03	Confined aquifers	E	E	E	E	
4-4.03	Unconfined and perched aquifers	E	P		E	
4-4.04	Santa Paula					
4-4.04	East of Peck Road	E	E	E	E	
4-4.04	West of Peck Road	E	E	E	E	
4-4.05	Fillmore					
4-4.05	Pole Creek Fan area	E	E	E	E	
4-4.05	South side of Santa Clara River	E	E	E	E	
4-4.05	Remaining Fillmore area	E	E	E	E	E
4-4.05	Topa Tapa (upper Sespe) area	P	E	P	E	
4-4.06	Piru					
4-4.06	Upper area (upper Lake Piru)	P	E	E	E	
4-4.06	Lower area east of Piru Creek	E	E	E	E	
4-4.06	Lower area west of Piru Creek	E	E	E	E	
4-4.07	Santa Clara River Valley East					
4-4.07	Mint Canyon	E	E	E	E	
4-4.07	South Fork	E	E	E	E	
4-4.07	Placerita Canyon	E	E	E	E	
4-4.07	Bouquet and San Francisquito Canyons	E	E	E	E	
4-4.07	Castaic Valley	E	E	E	E	
4-4.07	Saugus Aquifer	E				
4-5	**ACTON VALLEY[4]**					
4-5	Acton Valley	E	E	E	E	
4-5	Sierra Pelona Valley (Agua Dulce)	E	E		E	
4-5	Upper Mint Canyon	E	E	E	E	
4-5	Upper Bouquet Canyon	E	P	P	E	

DWR[2] Basin No.	BASIN	MUN	IND	PROC	AGR	AQUA
4-5	Green Valley	E	P	P	E	
4-5	Lake Elizabeth- Lake Hughes area	E	P	P	E	
4-6	**PLEASANT VALLEY[5]**					
4-6	Confined Aquifers	E	E	E	E	
4-6	Unconfined and perched aquifers	P	E	E	E	
4-7	**ARROYO SANTA ROSA VALLEY[5]**	E	E	E	E	
4-8	**LAS POSAS VALLEY[5]**	E	E	E	E	
4-9	**SIMI VALLEY**					
	Simi Valley Basin					
	Confined aquifers	E	E	E	E	
	Unconfined aquifers	E	E	E	E	
	Gillibrand Basin	E	E	P	E	
4-10	**CONEJO**	E	E	E	E	
4-11	**COASTAL PLAIN OF LOS ANGELES**					
4-11.01	Santa Monica	E	E	E	E	
4-11.02	Hollywood	E	E	E	E	
4-11.03	West Coast					
	Underlying Ports of Los Angeles & Long Beach		E	E	E	
4-11.03	Underlying El Segundo, Seaward of Barrier		E	E	E	
4-11.03	Remainder of Basin	E	E	E	E	
4-11.04	Central	E	E	E	E	
4-12	**SAN FERNANDO VALLEY**	E[6]	E	E	E	
4-13	**SAN GABRIEL VALLEY[7]**	E	E	E	E	
4-15	**TIERRA REJADA**	E	P	P	E	
4-16	**HIDDEN VALLEY**	E	P		E	
4-17	**LOCKWOOD VALLEY**	E	E		E	
4-18	**HUNGRY VALLEY**	E	P	E	E	
4-19	**THOUSAND OAKS AREA[8]**	E	E	E	E	
4-19	Triunfo Canyon area	P	P		E	
4-19	Lindero Canyon area	P	P		E	
4-19	Las Virgenes Canyon area	P	P		E	
4-20	**RUSSELL VALLEY**	E	P		E	
4-21	**CONEJO-TIERRA REJADA VOLCANIC[9]**	E			E	
4-22	**MALIBU VALLEY[10]**					
4-22	Camarillo area	E	P		E	
4-22	Point Dume area	E	P		E	
4-22	Malibu Valley	P	P		E	
4-22	Topanga Canyon area	P	P		E	
4-23	**RAYMOND**	E	E	E	E	
	SAN PEDRO CHANNEL ISLANDS[11]					
	Anacapa Island	P	P			
	San Nicolas Island	E	P			

DWR[2] Basin No.	BASIN	MUN	IND	PROC	AGR	AQUA
	Santa Catalina Island	E	P		E	
	San Clemente Island	P	P			
	Santa Barbara Island	P	P			

E: Existing beneficial use
P: Potential beneficial use
1: Beneficial uses for ground waters outside of the major basins listed on this table have not been specifically listed. However, ground waters outside of the major basins are, in many cases, significant sources of water. Furthermore, ground waters outside of the major basins are either potential or existing source of water for downgradient basins, and as such, beneficial uses in the downgradient basins shall apply to these areas.
2: Basins are numbered according to DWR Bulletin No. 118-Update 2003 (DWR, 2003).
3: Ground waters in the Pitas Point area (between the lower Ventura River and Rincon Point) are not considered to comprise a major basin and, accordingly, have not been designated a basin number by the DWR or outlined on Fig. 2-1.
4: Santa Clara River Valley Basin was formerly Ventura Central Basin and Acton Valley Basin was formerly Upper Santa Clara Basin (DWR, 1980).
5: Pleasant Valley, Arroyo Santa Rosa Valley, and Las Posas Valley Basins were formerly sub-basins of Ventura Central (DWR, 1980).
6: Nitrite pollution in the groundwater of the Sunland-Tujunga area currently precludes direct MUN use. Since the groundwater in this area can be treated or blended (or both), it retains the MUN designation.
7: Raymond Basin was formerly a sub-basin of San Gabriel Valley and Monk Hill sub-basin is now part of San Fernando Valley Basin (DWR, 2003). The Main San Gabriel Basin was formerly separated into Eastern and Western areas. Since these areas had the same beneficial uses as Puente Basin all three areas have been combined into San Gabriel Valley. Any groundwater upgradient of these areas is subject to downgradient beneficial uses and objectives, as explained in Footnote 1.
8: These areas were formerly part of the Russell Valley Basin (DWR, 1980).
9: Groundwater in the Conejo-Tierra Rejada Volcanic Area occurs primarily in fractured volcanic rocks in the western Santa Monica Mountains and Conejo Mountain areas. These areas have not been delineated on Fig. 2-1.
10: With the exception of groundwater in Malibu Valley (DWR Basin No. 4-22) ground waters along the southern slopes of the Santa Monica Mountains are not considered to comprise a major basin and accordingly have not been designated a basin number by DWR.
11: DWR has not designated basins for ground waters on the San Pedro Channel Islands.

3. REGIONAL GROUNDWATER QUALITY OBJECTIVES

As set forth in the Policy, ***SNMPs shall be tailored to address water quality concerns in each basin and may include constituents other than salt and nutrients that adversely impact basin/sub-basin water quality.***

GROUND WATER QUALITY OBJECTIVES

Water quality objectives for ground waters in the Los Angeles Region are contained in the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan). The same water quality objectives for Nitrogen, Chemical Constituents and Radioactivity, Bacteria, and Taste and Odor, apply to all ground waters in the region (Table 3-1).

TABLE 3-1: WATER QUALITY OBJECTIVES FOR GROUNDWATER BASINS IN THE LOS ANGELES REGION

PARAMETER	WATER QUALITY OBJECTIVE
Nitrogen NO3-N + NO2-N NO3 NO3-N NO2-N	 10 mg/L 45 mg/L 10 mg/L 1 mg/L
Chemical Constituents and Radioactivity	For ground waters designated for use as domestic or municipal supply, Maximum Contaminant Levels (MCLs) contained in Title 22 of the California Code of Regulations apply. In addition, ground waters shall not contain concentrations of chemical constituents in amounts that adversely affect any designated beneficial use.
Bacteria	In ground waters used for domestic or municipal supply (MUN), the concentration of coliform organisms over any seven day period shall be less than 1.1/100 mL.
Taste and Odor	Ground waters shall not contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

The Basin Plan also contains site-specific objectives for mineral water quality for individual basins/sub-basins (Table 3-2).

TABLE 3-2: WATER QUALITY OBJECTIVES FOR SELECTED CONSTITUENTS IN REGIONAL GROUND WATERS

2011 Basin Plan Name	Bulletin 118-03 update number	1994 Basin Plan Name	Bulletin 118-80 number	TDS	Sulfate	Chloride	Boron
Upper Ojai Valley	**4-1**	**Ojai Valley**	**4-1**				
Upper Ojai Valley	4-1	Upper Ojai Valley	4-1				
Upper Ojai Valley	4-1	West of Sulfur Mountain Road	4-1	1000	300	200	1.0
Upper Ojai Valley	4-1	Central Area	4-1	700	50	100	1.0
Upper Ojai Valley	4-1	Sisar Area	4-1	700	250	100	0.5
Ojai Valley	**4-2**	**Lower Ojai Valley**	**4-2**				**0.5**
Ojai Valley	4-2	West of San Antonio-Senior Canyon	4-2	1000	300	200	0.5
Ojai Valley	4-2	East of San Antonio-Senior Canyon	4-2	700	200	50	
Ventura River Valley	**4-3**	**Ventura River Valley**	**4-3**				
Upper Ventura River	4-3.01	Upper Ventura	4-3	800	300	100	0.5
Upper Ventura River	4-3.01	San Antonio Creek Area	4-3	1000	300	100	1.0
Lower Ventura River	4-3.02	Lower Ventura	4-3	1500	500	30	1.5
Santa Clara River Valley	**4-4**	**Ventura Central**	**4-4**				
Piru	4-4.06	Santa Clara-Piru Creek Area	4-4				
Piru	4-4.06	Upper Area (above Lake Piru)	4-4	1100	400	200	2.0
Piru	4-4.06	Lower Area East of Piru Creek	4-4	2500	1200	200	1.5
Piru	4-4.06	Lower Area West of Piru Creek	4-4	1200	600	100	1.5
Fillmore	4-4.05	Santa Clara-Sespe Creek Area	4-4				
Fillmore	4-4.05	Topa Topa (upper Sespe) Area	4-4	900	350	30	2.0
Fillmore	4-4.05	Fillmore Area	4-4				
Fillmore	4-4.05	Pole Creek Fan Area	4-4	2000	800	100	1.0
Fillmore	4-4.05	South Side of Santa Clara River	4-4	1500	800	100	1.1
Fillmore	4-4.05	Remaining Fillmore Area	4-4	1000	400	50	0.7
Santa Paula	4-4.04	Santa Clara-Santa Paula Area	4-4				
Santa Paula	4-4.04	East of Peck Road	4-4	1200	600	100	1.0
Santa Paula	4-4.04	West of Peck Road	4-4	2000	800	110	1.0

2011 Basin Plan Name	Bulletin 118-03 update number	1994 Basin Plan Name	Bulletin 118-80 number	TDS	Sulfate	Chloride	Boron
Oxnard	4-4.02	Oxnard Plain	4-4				
Mound	4-4.03	Oxnard Plain	4-4				
Oxnard	4-4.02	Oxnard Forebay	4-4	1200	600	150	1.0
Oxnard	4-4.02	Confined Aquifers	4-4	1200	600	150	1.0
Oxnard	4-4.02	Unconfined & Perched Aquifers	4-4	3000	1000	500	
Pleasant Valley	**4-6**	**Pleasant Valley**	**4-6**				
Pleasant Valley	4-6	Confined Aquifers	4-6	700	300	150	1.0
Pleasant Valley	4-6	Unconfined & Perched Aquifers	4-6				
Arroyo Santa Rosa Valley	**4-7**	**Arroyo Santa Rosa**	**4-7**	900	300	150	1.0
Las Posas Valley	**4-8**	**Las Posas Valley**	**4-8**				
Las Posas Valley	4-8	South Las Posas Area	4-8				
Las Posas Valley	4-8	NW of Grimes Cyn Rd. & LA Ave. & Somis Rd.	4-8	700	300	100	0.5
Las Posas Valley	4-8	E of Grimes Cyn Rd & Hitch Blvd.	4-8	2500	1200	400	3.0
Las Posas Valley	4-8	S of LA Ave Between Somis Rd & Hitch Blvd.	4-8	1500	700	250	1.0
Las Posas Valley	4-8	Grimes Canyon Rd. & Broadway Area	4-8	250	30	30	0.2
Las Posas Valley	4-8	North Las Posas Area	4-8	500	250	150	1.0
Acton Valley	**4-5**	**Upper Santa Clara**	**4-5**				
Acton Valley	4-5	Acton Valley	4-5	550	150	100	1.0
Acton Valley	4-5	Sierra Pelona Valley (Agua Dulce)	4-5	600	100	100	0.5
Acton Valley	4-5	Upper Mint Canyon	4-5	700	150	100	0.5
Acton Valley	4-5	Upper Bouquet Canyon	4-5	400	50	30	0.5
Acton Valley	4-5	Green Valley	4-5	400	50	25	
Acton Valley	4-5	Lake Elizabeth-Lake Hughes Area	4-5	500	100	50	0.5
Santa Clara River Valley East	**4-4.07**	**Eastern Santa Clara**	**4-4.07**				
Santa Clara River Valley	4-4.07	Santa Clara-Mint Canyon	4-4.07	800	150	150	1.0

2011 Basin Plan Name	Bulletin 118-03 update number	1994 Basin Plan Name	Bulletin 118-80 number	TDS	Sulfate	Chloride	Boron
East							
Santa Clara River Valley East	4-4.07	South Fork	4-4.07	700	200	100	0.5
Santa Clara River Valley East	4-4.07	Placentia Canyon	4-4.07	700	150	100	0.5
Santa Clara River Valley East	4-4.07	Santa Clara-Bouquet & San Fransisquito Canyons	4-4.07	700	250	100	1.0
Santa Clara River Valley East	4-4.07	Castaic Valley	4-4.07	1000	350	150	1.0
Santa Clara River Valley East	4-4.07	Saugus Aquifer	4-4.07				
Simi Valley	**4-9**	**Simi Valley**	**4-9**				
Simi Valley	4-9	Simi Valley Basin	4-9				
Simi Valley	4-10	Confined Aquifers	4-9	1200	600	150	1.0
Simi Valley	4-11	Unconfined & Perched Aquifers	4-9				
Simi Valley	4-12	Gillibrand Basin	4-9	900	350	50	1.0
Conejo Valley	**4-10**	**Conejo Valley**	**4-10**	**800**	**250**	**150**	**1.0**
Coastal Plain of Los Angeles	**4-11**	**Los Angeles Coastal Plain**	**4-11**				
Central	4-11.04	Central Basin	4-11	700	250	150	1.0
West Coast	4-11.03	West Coast Basin	4-11	800	250	250	1.5
Hollywood	4-11.02	Hollywood Basin	4-11	750	100	100	1.0
Santa Monica	4-11.01	Santa Monica Basin	4-11	1000	250	200	0.5
San Fernando Valley	**4-12**	**San Fernando Valley**	**4-12**				
San Fernando Valley	4-12	Sylmar Basin	4-12	600	150	100	0.5
San Fernando Valley	4-12	Verdugo Basin	4-12	600	150	100	0.5
San Fernando Valley	4-12	San Fernando Basin	4-12				
San Fernando Valley	4-12	West of Highway 405	4-12	800	300	100	1.5
San Fernando Valley	4-12	East of Highway 405 (overall)	4-12	700	300	100	1.5
San Fernando Valley	4-12	Sunland-Tujunga Area	4-12	400	50	50	0.5
San Fernando Valley	4-12	Foothill Area	4-12	400	100	50	1.0
San Fernando Valley	4-12	Area Encompassing RT-Tujunga -Erwin-N. Hollywood-Whithall-LA/Verdugo-Crystal	4-12	600	250	100	1.5

2011 Basin Plan Name	Bulletin 118-03 update number	1994 Basin Plan Name	Bulletin 118-80 number	TDS	Sulfate	Chloride	Boron
		Springs-Headworks-Glendale/Burbank Well Fields					
San Fernando Valley	4-12	Narrows Area (below confluence of Verdugo Wash with the LA River	4-12	900	300	150	1.5
San Fernando Valley	4-12	Eagle Rock Basin	4-12	800	150	100	0.5
San Gabriel Valley/Raymond/San Fernando Valley	**4-13**	**San Gabriel Valley**	**4-13**				
Raymond	4-23	Raymond Basin	4-13				
San Fernando Valley	4-12	Monk Hill Sub-Basin	4-13	450	100	100	0.5
Raymond	4-23	Santa Anita Area	4-13	450	100	100	0.5
Raymond	4-23	Pasadena Area	4-13	450	100	100	0.5
San Gabriel Valley	4-13	Main San Gabriel Basin	4-13				
San Gabriel Valley	4-13	Western Area	4-13	450	100	100	0.5
San Gabriel Valley	4-13	Eastern Area	4-13	600	100	100	0.5
San Gabriel Valley	4-13	Puente Basin	4-13	1000	300	150	1.0
Upper Santa Ana Valley/San Gabriel Valley	**8-2.01**	**Upper Santa Ana Valley**	**4-14**				
San Gabriel Valley	4-13	Live Oak Area	8-2	450	150	100	0.5
San Gabriel Valley	4-13	Claremont Heights Area	8-2	450	100	50	
San Gabriel Valley	4-13	Pomona Area	8-2	300	100	50	0.5
Upper Santa Ana Valley/ San Gabriel Valley	8-2.01/4-13	Chino Area	8-2	450	20	15	
San Gabriel Valley	4-13	Spadra Area	8-2	550	200	120	1.0
Tierra Rejada	**4-15**	**Tierra Rejada**	**4-15**	**700**	**250**	**100**	**0.5**
Hidden Valley	**4-16**	**Hidden Valley**	**4-16**	**1000**	**250**	**250**	**1.0**
Lockwood Valley	**4-17**	**Lockwood Valley**	**4-17**	**1000**	**300**	**20**	**2.0**
Hungry Valley	**4-18**	**Hungry Valley & Peace Valley**	**4-18**	**500**	**150**	**50**	**1.0**
Conejo Valley	**4-10**	**Thousand Oaks Area**	**4-19**	**1400**	**700**	**150**	**1.0**
Russell Valley	**4-20**	**Russell Valley**	**4-20**				
Russell Valley	4-20	Russell Valley	4-20	1500	500	250	1.0
Thousand Oaks Area	4-19	Triunfo Canyon Area	4-20	2000	500	500	2.0

2011 Basin Plan Name	Bulletin 118-03 update number	1994 Basin Plan Name	Bulletin 118-80 number	TDS	Sulfate	Chloride	Boron
Thousand Oaks Area	4-20	Lindero Canyon Area	4-20	2000	500	500	2.0
Thousand Oaks Area	4-21	Las Virgenes Canyon Area	4-20	2000	500	500	2.0
Deleted	**Deleted**	**Conejo-Tierra Rejada Volcanic Area**	**4-21**				
Malibu Valley	**4-22**	**Santa Monica Mountains-Southern Slopes**	**4-22**				
Malibu Valley	4-22	Camarillo Area	4-22	1000	250	250	1.0
Malibu Valley	4-22	Point Dume Area	4-22	1000	250	250	1.0
Malibu Valley	4-22	Malibu Valley	4-22	2000	500	500	2.0
Malibu Valley	4-22	Topanga Canyon Area	4-22	2000	500	500	2.0
San Pedro Channel Islands		**San Pedro Channel Islands**					
Anacapa Island	No DWR#	Anacapa Island	No DWR#				
San Nicholas Island	No DWR#	San Nicholas Island	No DWR#	1100	150	350	
Santa Catalina Island	No DWR#	Santa Catalina Island	No DWR#	1000	100	250	1.0
San Clemente Island	No DWR#	San Clemente Island	No DWR#				
Santa Barbara	No DWR#	Santa Barbara Island	No DWR#				

GROUNDWATER BASIN WATER QUALITY

The following section presents information on general water quality conditions as provided by the Department of Water Resources in their Bulletin 118- 2003 update. This information is meant to provide a general overview of the conditions within the basins. It is anticipated that more current information will be provided in the Salt and Nutrient Management Plans developed for each basin.

According to DWR's Bulletin 118-2003, nitrate content is elevated in some parts of the subregion. Volatile organic compounds (VOCs) have caused groundwater impairments in some of the industrialized portions of the region. The San Gabriel Valley and San Fernando Valley groundwater basins both have multiple sites of contamination from VOCs. The main constituents in the contamination plumes are trichloroethylene (TCE) and tetrachloroethylene (PCE). Some of the locations have been declared federal Superfund sites. Contamination plumes containing high concentrations of TCE and PCE also occur in the Bunker Hill Sub-basin of the Upper Santa Ana Valley Groundwater Basin. Some of these plumes are also designated as Superfund sites. Also, perchlorate has been identified as a significant pollutant in some areas of the Los Angeles Region.

Basin-specific information on water quality in the region's major basins/sub-basins is provided in Table 3-3. This information is summarized from DWR's Bulletin 118-2003 and includes monitoring results from public supply wells sampled under the DHS Title 22 program from 1994 through 2000. Per this bulletin, the information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

TABLE 3-3: WATER QUALITY IN MAJOR BASINS/SUB-BASINS IN THE LOS ANGELES REGION

Basin/sub-basin	Status	TDS	Constituent Group[3]	Number of wells sampled[4]	Number of wells with a concentration above an MCL[5]
Central Basin		Range: 200-2500 mg/l Average: 453 mg/l (293 public wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	316 315 315 322 344 316	15 1 2 0 43 113
West Coast Basin	Injection wells create a groundwater ridge, which inhibits the inland flow of saltwater into the sub-basin to protect and maintain groundwater elevations.		Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	45 45 46 46 44 45	0 1 0 0 0 30
San Fernando Valley Basin	Groundwater contamination from VOCs and hexavalent chromium (CrVI) continues to be a serious problem for water supply in the eastern portion of the San Fernando Valley		Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	129 122 129 134 134 129	6 13 44 3 90 17
San Gabriel[6]	Four areas of the San Gabriel Valley Basin are Superfund sites. Trichloroethylene, Perchloroethylene, and Carbon Tetrachloride contaminate the Whittier Narrows, Puente basin, Baldwin Park and El Monte areas.		Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	287 278 300 292 301 287	3 4 73 1 85 20

[3] A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in ***California's Groundwater–Bulletin 118*** by DWR (2003).

[4] Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.

[5] Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

[6] There are six operable units (O.U.) within the Main San Gabriel Basin: the Baldwin Park O.U., the Puente Valley O.U., the Whittier Narrows O.U., the South El Monte O.U., and the Area 3 (Alhambra) O.U.

Basin/sub-basin	Status	TDS	Constituent Group[3]	Number of wells sampled[4]	Number of wells with a concentration above an MCL[5]
Raymond	Fluoride content occasionally exceeds recommended levels of 1.6 mg/L, near the San Gabriel Mountain front. Volatile organic compounds are detected in wells near Arroyo Seco and radiation is occasionally detected near the San Gabriel Mountains.	Range: 38-780 mg/l Average: 346 mg/l (70 public wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	66 55 78 57 60 66	9 8 23 0 19 9
Santa Monica		Range: 729-1,156 mg/L Average: 916 mg/L (7 public wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	13 12 13 12 12 13	0 1 0 0 9 8
Hollywood	Public water supply from imported surface water, groundwater quality information scarce.	Single sample 526 mg/L (Truran, 2001).			
Oxnard	Nitrate concentrations can exceed the state Maximum Contaminant Level (MCL) of 45 mg/L. Intrusion of seawater has occurred near Pt. Mugu and Port Hueneme. Elevated levels of DDT and PCB are found near Pt. Mugu.	Range: 160-1,800 mg/L Average: 1,102 mg/L (69 public supply wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	73 69 80 63 68 73	6 8 14 1 2 49
Piru	Agricultural return flows may lead to high nitrate concentrations particularly during dry periods. Urban stormwater runoff within the Santa Clara River Watershed tends to concentrate salts and other contaminants. The most prominent natural contaminants in the sub-basin are boron and sulfate.		Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	3 3 3 3 3 3	0 0 0 0 0 1

Basin/sub-basin	Status	TDS	Constituent Group[3]	Number of wells sampled[4]	Number of wells with a concentration above an MCL[5]
Fillmore	Agricultural return flows may lead to high nitrate concentrations particularly during dry periods. Urban stormwater runoff within the Santa Clara River Watershed tends to concentrate salts and other contaminants. Other contaminants in the sub-basin are boron, sulfate, and nitrates.		Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	13 10 14 10 10 13	0 1 1 0 1 3
Santa Paula	Nitrate concentrations can fluctuate significantly.	Range: 470-1,800 mg/L Average: 1,198 mg/L (13 public wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	16 12 16 9 9 16	3 1 2 0 0 15
Mound		Range: 1,498-1,908 mg/L Average: 1,644 mg/L (4 public wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	2 2 2 2 2 2	1 0 0 0 0 2
Las Posas		Range: 338-1,700 mg/L Average: 742 mg/L (23 public wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	22 22 24 22 22 22	1 2 0 1 0 16
Santa Rosa			Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	1 1 1 1 1 1	0 0 0 0 0 1

Basin/sub-basin	Status	TDS	Constituent Group[3]	Number of wells sampled[4]	Number of wells with a concentration above an MCL[5]
Pleasant Valley		Range: 597-1,420 mg/L Average: 922 mg/L (10 public wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	10 10 10 10 10 10	0 1 0 0 0 10
Lower Santa Clara	Drinking water standards are met at public supply wells without the use of treatment methods. Areas with somewhat elevated mineral levels have been observed in the northern basin. Some wells with elevated nitrate concentration have been identified in the southern portion of the basin.		Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	257 234 268 253 252 257	9 1 10 3 4 29
Upper Santa Clara	Nitrate content has exceeded 45 mg/L in some parts of the sub-basin with a well in the central part of the sub-basin reaching 68 mg/L. Trichloroethylene and ammonium perchlorate have been detected in four wells in the eastern part of the sub-basin.	Range: 300-1,662 mg/L Average: 695 mg/L (59 public wells)	Inorganic – Primary Radiological Nitrates Pesticides VOCs and SVOCs Inorganics- Secondary	67 56 74 66 66 67	4 2 2 4 0 7

4. CLARIFICATION OF SNMP REQUIREMENTS

The Policy states that SNMPs are to be developed for every groundwater basin in California. This will allow water purveyors and basin management agencies to take advantage of a streamlined permit process for recycled water projects that is intended to expedite the implementation of recycled water projects. The required elements of a SNMP, as specified by the Policy include:

a) Development of a basin-wide monitoring plan;
b) Annual monitoring of Constituents of Emerging Concern;
c) Consideration of Water Recycling/Stormwater Recharge/Use;
d) Source identification/Source loading and assimilative capacity estimates;
e) Implementation measures; and
f) Anti-degradation analyses.

Development of SNMPs will lead to a more comprehensive approach to basin water quality management. SNMP proponents will have the opportunity to collectively determine the implementation strategies necessary to comply with water quality objectives established to restore and maintain the beneficial use of the ground waters.

SNMPs are required for each groundwater basin in the state. However, there is flexibility in the level of detail required in each plan depending on the size, complexity and level of activity within the basin. That notwithstanding, an initial assessment of water quality (past and present) and use (including future use) is necessary in order to determine the level of specificity warranted in each basin. The following sections discuss the required SNMP elements in greater detail, providing clarification where communications with stakeholders have indicated it to be necessary.

STAKEHOLDER COLLABORATION

As stated in the Policy*:*
"***…local water and wastewater entities, together with local salt/nutrient contributing stakeholders, will fund locally driven and controlled, collaborative processes open to all stakeholders that will prepare salt and nutrient management plans for each basin/sub-basin in California, including compliance with CEQA and participation by Regional Water Board staff.***"

Stakeholder collaboration may be within or between basins. While the Policy requires that every basin/sub-basin in the state have a SNMP, this does not preclude stakeholders working across basin boundaries to accommodate existing and future stakeholder structures and basin management efforts. Also, some differences exist between DWR Bulletin-118 basin/sub-basin definitions and court-adjudicated basins, which may influence formation of stakeholder groups.

Key stakeholders include local agencies involved in groundwater management, owners and operators of recharge facilities, water purveyors, water districts, water masters, and salt and nutrient contributing dischargers. These agencies have access to basin-specific data and information that is essential to the development of successful SNMPs. Private well owners may also have essential water quality information. Nongovernmental entities may have information about ecosystems associated with groundwater exfiltration. Other

parties from regulatory agencies, environmental groups, industry, and interested persons may also provide important support. No single entity is wholly responsible for SNMP development. While a lead agency is necessary to coordinate the development effort, the point of a collaborative process is to take advantage of the collective expertise, resources and information of the participating entities. Therefore, participation to varying degrees by all stakeholders is encouraged. Table 4-1 lists the agencies already engaged in, and others that should consider being involved in salt and nutrient management for each groundwater basin or sub-basin group. This is not an exhaustive list.

TABLE 4-1: PARTICIPATING AND POTENTIAL STAKEHOLDERS FOR EACH BASIN/SUB-BASIN GROUP AS OF FEBRUARY 2012

Basin/sub-basin	**Participating and Potential Stakeholders**
Central and West Coast Basins	Water Replenishment District (WRD) of Southern California City of Los Angeles Department of Water & Power County Sanitation Districts of Los Angeles County Metropolitan Water District of Southern California West Basin Municipal Water District Central Basin Municipal Water District Los Angeles County Department of Public Works California Department of Public Health
San Fernando Basin	Upper Los Angeles River Area Water Master Los Angeles Department of Water and Power City of Glendale City of Burbank City of San Fernando City of La Crescenta Metropolitan Water District US Environmental Protection Agency California Department of Public Health
San Gabriel/	San Gabriel Basin Water Master City of Alhambra* City of Arcadia* City of Pasadena* Crescenta Valley Water District* Metropolitan Water District County Sanitation Districts of Los Angeles County
Raymond Basin	Raymond Basin Management Board City of Alhambra* City of Pasadena* Metropolitan Water District County Sanitation Districts of Los Angeles County
Three Valleys (Six Basins)	Three Valleys Municipal Water District*
Lower Santa Clara Pleasant Valley, Las Posas, Oxnard	Fox Canyon United Water Conservation District Metropolitan Water District City of Oxnard
Lower Santa Clara	Ventura County Watershed Protection District City of Fillmore County of Ventura City of Santa Paula United Water Conservation District
Eastern Santa Clara	Castaic Lake Water Agency

Basin/sub-basin	Participating and Potential Stakeholders
Saugus Aquifer, Santa Clara Castaic Valley, South Fork, Placerita Canyon, Santa Clara-Bouquet and San Francisquito Canyons, Santa Clara-Mint Canyon, Acton/Sierra Pelona/Upper Mint Canyon Basins	Los Angeles County Sanitation Districts City of Santa Clara
Tierra Rejada/Gillibrand/Simi/Thousand Oaks/Conejo/Hidden Valley/Russell Valley Basins	Calleguas Municipal Water District Calleguas Creek Watershed Management Plan
Hollywood and Santa Monica Basins	***City of Beverly Hills* City of Santa Monica****
Pleasant Valley, Las Posas, Oxnard and Tierra Rejada/Gillibrand/Simi/Thousand Oaks/Conejo/Hidden Valley/Russell Valley Basins	Calleguas Creek Watershed Management Plan, Fox Canyon, City of Oxnard, United Water Conservation District.
Ventura/Ojai	County of Ventura
Malibu Valley	City of Malibu* La Paz Treatment Facility

Potentia Stakeholders

Ideally, participation in the SNMP development process should not be limited to those agencies directly involved with basin management or salt and nutrient contributors. Other parties from regulatory agencies, environmental groups, industry, and interested persons may be included and/or kept informed; and their input solicited for each major task. Groundwater basin adjudication may impact the roles of stakeholders not identified as parties in the applicable judgments.

The Regional Water Board's role in preparing SNMPs is to:

a) Facilitate interaction and information sharing within and among groundwater basin stakeholder groups,
b) Provide regulatory guidance on the SNMP requirements of the Policy,
c) Provide technical and regulatory oversight of the SNMP process to maintain consistency in scope and content of these plans and ensure compliance with the Policy's requirements, and
d) Adopt, as appropriate, the implementation measures included in SNMPs into the Water Quality Control Plan for the Los Angeles Region.

The Regional Water Board conducted its first stakeholder workshop in November 2010 to introduce the SNMP requirement to stakeholders and initiate the development process. Since then stakeholder groups have been formed for the major groundwater basins and Regional Water Board staff have been made available to each group to provide basin-specific technical guidance and oversight of individual plans. A second stakeholder workshop was held in November 2011 to provide further clarification on certain regulatory aspects of the SNMP development process that were identified as issues of concern by stakeholders.

SPECIFIC SNMP REQUIREMENTS

It is the intent of the Policy "… ***that salts and nutrients from all sources be managed on a basin-wide or watershed-wide basis in a manner that ensures attainment of water quality objectives and protection of beneficial uses***."

The Policy also specifies that each salt and nutrient management plan shall include:

a) A basin/sub-basin wide monitoring plan that includes an appropriate network of monitoring locations to determine whether concentrations of salt, nutrients, and other constituents of concern are consistent with applicable water quality objectives.

b) A provision for annual monitoring of Emerging Constituents/Constituents of Emerging Concern

c) Water recycling and stormwater recharge/use goals and objectives.

d) Salt and nutrient source identification, basin/sub-basin assimilative capacity and loading estimates, together with fate and transport of salts and nutrients.

e) ***Implementation measures to manage salt and nutrient loading in the basin on a sustainable basis.***

f) An antidegradation analysis demonstrating that the projects included within the plan will, collectively, satisfy the requirements of the Antidegradation Policy (Resolution No. 68-16).

SNMP "SUGGESTED ELEMENTS"

In 2010, at the direction of the Executive Director, State Water Board staff provided a draft list of suggested elements for SNMPs that would assure that the requirements of the Policy were met (Appendix I). These elements are not considered additions to the requirements; rather they are meant to provide specifics as to how the requirements can be met, and indicate the appropriate level of detail necessary in a SNMP. They are purely recommendations and stakeholders have the option of arriving at the Policy's SNMP requirements via alternative means. This is illustrated in Table 4-2 where the suggested elements provided by State Water Board staff are lined up with the SNMP requirements as enumerated in the Policy.

TABLE 4-2: SNMP SUGGESTED ELEMENTS AND CORRESPONDING REQUIREMENTS FROM THE RECYCLED WATER POLICY

RECYCLED WATER POLICY SECTION	**RECYCLED WATER POLICY REQUIREMENT**	**SNMP SUGGESTED ELEMENTS**
6b(1)	…local water and wastewater entities, together with local salt/nutrient contributing stakeholders, will fund locally driven and controlled, collaborative processes open to all stakeholders that will prepare salt and nutrient management plans for each basin/sub-basin in California, including compliance with CEQA …	**CEQA ANALYSIS**
6b(1)(a)	It is the intent of this Policy for every groundwater basin/sub-	**GROUNDWATER BASIN CHARACTERISTICS** GROUNDWATER BASIN OVERVIEW

RECYCLED WATER POLICY SECTION	RECYCLED WATER POLICY REQUIREMENT	SNMP SUGGESTED ELEMENTS
	basin in California to have a consistent salt/nutrient management plan. The degree of specificity within these plans and the length of these plans will be dependent on a variety of site-specific factors, including but not limited to size and complexity of a basin, source water quality, stormwater recharge, hydrogeology, and aquifer water quality.	▪ Physiographic Description ▪ Groundwater Basin and/or Sub-Basin Boundaries ▪ Watershed Boundaries ▪ Geology ▪ Hydrogeology/Hydrology ▪ Aquifers ▪ Recharge Areas ▪ Hydrologic Areas Tributary to the Groundwater Basin ▪ Climate ▪ Land Cover and Land Use ▪ Water Sources GROUNDWATER INVENTORY ▪ Groundwater Levels ▪ Historical, Existing, Regional Changes ▪ Groundwater Storage ▪ Historical, Existing, Changes ▪ Groundwater Production ▪ Historical, Existing, Spatial and Temporal Changes, Safe Yield ▪ Groundwater Mixing and Movement ▪ Subsurface Inflow/Outflow ▪ Horizontal and Vertical Movement and Mixing **BASIN EVALUATION** WATER BALANCE ▪ Conceptual Model ▪ Basin Inflow/Outflow ▪ Groundwater, Surface Water, Imported Water, Water Transfers, Recycled Water Irrigation, Waste Water Discharges, Agricultural Runoff, Stormwater Runoff (Urban, Agriculture, Open Space), Precipitation ▪ Infiltration, Evaporation, Evapotranspiration, Recharge, Surface Water and Groundwater Connectivity PROJECTED WATER QUALITY BASIN WATER QUALITY ▪ Groundwater Quality ▪ Background, Historical, Existing ▪ Water Quality Objectives ▪ Surface Water Quality ▪ Delivered Water Quality ▪ Imported Water Quality ▪ Recycled Water Quality
6b(3)(a)	A basin/sub-basin wide monitoring plan that includes an appropriate network of monitoring locations.	**BASIN MANAGEMENT PLAN ELEMENTS** BASIN MONITORING PROGRAMS ▪ Identify Responsible Stakeholder(s) Implementing the Monitoring ▪ Monitoring Program Goals

RECYCLED WATER POLICY SECTION	RECYCLED WATER POLICY REQUIREMENT	SNMP SUGGESTED ELEMENTS

6b(3)(a)(i)	The plan must focus on basin water quality near water supply wells and areas proximate to large water recycling projects, particularly groundwater recharge projects. Also, monitoring locations shall, where appropriate, target groundwater and surface waters where groundwater has connectivity with adjacent surface waters.	▪ Sampling Locations
		▪ Water Quality Parameters
		▪ Sampling Frequency
		▪ Quality Assurance/Quality Control
		▪ Database Management
		▪ Data Analysis and Reporting
		▪ Groundwater Level Monitoring
		▪ Basin Water Quality Monitoring
		▪ Groundwater Quality Monitoring
		  ▪ Areas of Surface Water and Groundwater Connectivity
		  ▪ Areas of Large Recycled Water Projects
		  ▪ Recycled Water Recharge Areas

6b(3)(a)(iii)	The monitoring plan shall identify those stakeholders responsible for conducting, compiling, and reporting the monitoring data.	▪ Surface Water Quality Monitoring
		▪ Stormwater Monitoring
		▪ Wastewater Discharge Monitoring
		▪ Recycled Water Quality Monitoring
		▪ Salt and Nutrient Source Loading Monitoring
		▪ Other Constituents of Concern
		▪ Water Balance Monitoring
		  ▪ Climatological Monitoring
		  ▪ Surface Water Flow Monitoring
		  ▪ Groundwater Production Monitoring

6b(3)(b)	A provision for annual monitoring of Emerging Constituents/ Constituents of Emerging Concern (e.g., endocrine disrupters, personal care products or pharmaceuticals) (CECs) consistent with recommendations by CDPH and consistent with any actions by the State Water Board taken pursuant to paragraph 10(b) of this Policy.	**BASIN EVALUATION** CONSTITUENTS OF EMERGING CONCERNS (CECs) ▪ Constituents ▪ CEC Source Identification
6b(3)(c)	Water recycling and stormwater recharge/use goals and objectives.	**BASIN MANAGEMENT PLAN ELEMENTS** GROUNDWATER MANAGEMENT GOALS ▪ Recycled Water and Stormwater Use/Recharge Goals and Objectives
6b(3)(d)	Salt and nutrient source identification, basin/sub-basin assimilative capacity and loading estimates, together with fate and transport of salts and nutrients.	**BASIN EVALUATION** SALT AND NUTRIENT BALANCE ▪ Conceptual Model ▪ Salt and Nutrient Source Identification ▪ Salt and Nutrient Loading Estimates ▪ Historical, Existing, Projected ▪ Import/Export ▪ Basin/Sub-Basin Assimilative Capacity for Salt and Nutrients ▪ Fate and Transport of Salt and Nutrients
6b(3)(e)	Implementation measures to	**BASIN MANAGEMENT PLAN ELEMENTS**

RECYCLED WATER POLICY SECTION	**RECYCLED WATER POLICY REQUIREMENT**	**SNMP SUGGESTED ELEMENTS**
	manage salt and nutrient loading in the basin on a sustainable basis.	GROUNDWATER MANAGEMENT GOALS ▪ Groundwater Management Goals SALT AND NUTRIENT LOAD ALLOCATIONS **SALT AND NUTRIENT MANAGEMENT STRATEGIES** ▪ Load Reduction Goals ▪ Future Land Development and Use ▪ Salt/Nutrient Management Options ▪ Salt/Nutrient Management Strategies and Modeling ▪ Management Strategy Model Results ▪ Feasibility ▪ Cost **PLAN IMPLEMENTATION** SALT AND NUTRIENT MANAGEMENT PROGRAM ▪ Organizational Structure ▪ Stakeholder Responsibilities ▪ Implementation Measures to Manage Salt and Nutrient Loading ▪ Salt/Nutrient Management ▪ Water Supply Quality ▪ Regulations of Salt/Nutrients ▪ Load Allocations ▪ Salt and Nutrient Source Control ▪ CEC Source Control ▪ Site Specific Requirements ▪ Groundwater Resource Protection ▪ Additional Studies PERIODIC REVIEW OF SALT/NUTRIENT MANAGEMENT PLAN ▪ Adaptive Management Plan ▪ Performance Measures ▪ Performance Evaluation COST ANALYSIS ▪ CWC § 13141, "…prior to implementation of any agricultural water quality control program, an estimate of the total cost of such a program, together with an identification of potential sources of funding, shall be indicated in any regional water quality control plan." IMPLEMENTATION SCHEDULE
6b(3)(f)	An antidegradation analysis demonstrating that the projects included within the plan will, collectively, satisfy the requirements of Resolution No. 68-16.	**ANTIDEGRADATION ANALYSIS**
No specific reference	While the background information listed in State	**BACKGROUND** ▪ Purpose

RECYCLED WATER POLICY SECTION	RECYCLED WATER POLICY REQUIREMENT	SNMP SUGGESTED ELEMENTS
	Water Board's "Suggested Elements" is not specifically identified by the Recycled Water Policy, it would provide the necessary information in support of the conceptual basis for the plan.	▪ Protection of Beneficial Use ▪ Sustainability of Water Resources ▪ Problem Statement ▪ Salt/Nutrient Management Objectives ▪ Regulatory Framework ▪ Groundwater Beneficial Uses ▪ Stakeholder Roles and Responsibilities ▪ Process to Develop Salt/Nutrient Management Plan

The Policy recognizes that:
The degree of specificity within these plans and the length of these plans will be dependent on a variety of site-specific factors, including but not limited to size and complexity of a basin, source water quality, stormwater recharge, hydrogeology, and aquifer water quality.

In response to this, State Water Board staff has suggested three classes of basins in the context of SNMP development to assist in determining the extent of information required for each class: Major, Saline/Coastal, and No Threat basins. They are defined as follows:

a) Major: Large in size, complex land use, heavily used, water quality threatened;
b) Saline/Coastal: Basins with naturally saline groundwater not currently used as a source of water; and
c) Low threat: Basins with minimal or no known or current threat to water quality.

The State Water Board staff have also provided draft Basin Plan Amendment templates to indicate the amount of information necessary for each classification. The templates for each basin class are provided in Appendix I. Groundwater basins in the Los Angeles Region do not necessarily fit neatly into these classes; the scope of information for a SNMP will also be influenced by basin-specific attributes, conditions and water quality concerns. However, stakeholders are encouraged to use the templates as a guide.

Regardless of how a basin may be categorized, the Policy states that the SNMP must include "implementation measures to manage salt and nutrient loading in the basin on a sustainable basis."
Where applicable, implementation strategies may be developed to address issues such as pollution prevention, water quality restoration, basin recharge with storm water and recycled water and groundwater-surface water interaction.

A. BASIN/SUB-BASIN WIDE MONITORING PLAN

As set forth in the Policy Part 6(b)(3)(a), each SNMP shall include ***"a basin/sub-basin wide monitoring plan that includes an appropriate network of monitoring locations. The scale of the basin/sub-basin monitoring plan is dependent upon the site-specific conditions and shall be adequate to provide a reasonable, cost-effective means of determining whether the concentrations of salt, nutrients, and other constituents of concern as identified in the salt and nutrient plans are consistent with applicable water***

quality objectives. Salts, nutrients, and the constituents identified in paragraph 6(b)(1)(f) shall be monitored. The frequency of monitoring shall be determined in the salt/nutrient management plan and approved by the Regional Water Board pursuant to paragraph 6(b)(2).

(i) The monitoring plan must be designed to determine water quality in the basin. The plan must focus on basin water quality near water supply wells and areas proximate to large water recycling projects, particularly groundwater recharge projects. Also, monitoring locations shall, where appropriate, target groundwater and surface waters where groundwater has connectivity with adjacent surface waters.

(ii) The preferred approach to monitoring plan development is to collect samples from existing wells if feasible as long as the existing wells are located appropriately to determine water quality throughout the most critical areas of the basin.

(iii) The monitoring plan shall identify those stakeholders responsible for conducting, compiling, and reporting the monitoring data. The data shall be reported to the Regional Water Board at least every three years.

The objective of this requirement is to develop a basin wide monitoring plan that would allow for a comprehensive assessment of basin water quality in relation to beneficial uses supported by the basin and applicable water quality objectives. Several localized and project-specific monitoring programs exist throughout the basins in the region. These include monitoring of ground and surface waters by various agencies to comply with regulatory requirements, as well as voluntary monitoring efforts by these agencies and environmental groups. In keeping with the Policy's preferred approach, it is recommended that all parties engaged in water quality monitoring and data collection within each groundwater basin be identified as a starting point in developing a basin-wide monitoring plan. Compilation and review of existing programs and groundwater quality reports will reduce the potential for redundancy, and also assist in identifying data gaps that need to be addressed.

Regulatory agencies are involved in statewide monitoring of groundwater quality for the purpose of assessing and protecting groundwater basins. These agencies include the State Water Board, the California Department of Public Health, Department of Water Resources, Department of Toxic Substances Control, Department of Pesticide Regulation, and the U.S. Geological Survey. State Water Board's online groundwater information system, GeoTracker GAMA provides access to groundwater quality monitoring data from these agencies as well as other Regional Boards and the Lawrence Livermore National Laboratory. This information is available on the Groundwater Ambient Monitoring and Assessment (GAMA) program website at: http://www.waterboards.ca.gov/water_issues/programs/gama/geotracker_gama.shtml. Results from these monitoring efforts may be used in conjunction with those generated by water purveyors, managers and private entities in determining the scope of the monitoring plan.

The monitoring plan should clearly define the areal extent of the basin or sub-basin to be monitored. The region's major basin boundaries were most recently updated by the Department of Water Resources in its 2003 update of Bulletin 118 (DWR, 2003). While this update omitted some of the sub-basins that were identified in the previous version,

the Regional Water Board's Basin Plan still retains these basins/sub-basin as ground waters to be protected under the California Water Code.

In developing sampling locations within a given basin, stakeholders are encouraged to consider:

a) Location of existing monitoring locations;
b) Location of existing and potential contributing sources, including areas with significant groundwater-surface water interaction; and
c) Existing and proposed recycled water projects/facilities and groundwater recharge areas.

Stakeholders are also encouraged to use the 2003 U.S. Geological Survey report titled "Framework for a Ground Water Quality and Assessment Program for California" as a resource when developing the monitoring plan. This document is available at: http://www.waterboards.ca.gov/water_issues/programs/gama/docs/usgs_rpt_72903_wri034166.pdf

The parameters to be monitored should be reflective of the water quality conditions and applicable water quality objectives within a given basin or sub-basin. Per the Policy, salts, nutrients, and CECs will be monitored in all basins. It is recommended that a draft monitoring plan be submitted to the Regional Water Board for review prior to finalizing the SNMP of which it would be a component. As with other groundwater monitoring programs in the region, data generated from SNMP monitoring programs should be submitted to the State Water Board's online groundwater information system – GeoTracker.

The Policy also states that Salt and Nutrient Management Plans may include constituents other than salt and nutrients which may impact water quality in the basin/sub-basin. However, inclusion of additional parameters is at the discretion of stakeholders involved in the SNMP development process. Stakeholders are encouraged to consider existing groundwater quality information and their knowledge of localized conditions, in determining which other parameters of concern should be monitored. Table 4-3 lists some of the known parameters of concern in the major basins and sub-basins in the Los Angeles Region.

TABLE 4-3: PARAMETERS OF CONCERN IN THE LOS ANGELES REGION'S MAJOR BASINS

Groundwater Basin		**Primary Parameters of Concern***
West Coast Central		Seawater Intrusion
San Gabriel Raymond		VOCs, SVOCs
San Fernando		VOCs, Cr^{VI}
Santa Clara Watershed	Oxnard Mound Santa Paula Fillmore Piru East Santa Clara	Nitrate, Salts, TDS, DDT, PCBs
Pleasant Valley		Nitrates, TDS, Salts

Groundwater Basin		Primary Parameters of Concern*
Ojai Ventura River		Nitrates
Calleguas Watershed	Conejo Valley Russell Valley Hidden Valley Simi Valley Tierra Rejada Thousand Oaks	Nitrates, TDS, Salts
Malibu Valley		Seawater Intrusion

*This is not a complete list of parameters of concern.

B. MONITORING OF CONSTITUENTS OF EMERGING CONCERN

Constituents of emerging concerns (CECs) include several types of chemicals that may be classified as (i) persistent organic pollutants (ii) pharmaceuticals and personal care products, (iii) veterinary medicines, (iv) endocrine disruptors, and others. Such constituents present water quality concerns due to their large number and variety, their prevalence in the environment, and their potential for harmful effects on aquatic life. Much less is known about their potential effects on humans. Increasing recycled water use has the potential to increase the occurrence of CECs in ground water basins through indirect potable reuse or groundwater recharge reuse (i.e., augmentation of drinking water aquifers using recycled water), as well as urban landscape irrigation. Staff are coordinating with EPA, the Southern California Coastal Water Research Project, and others in studying this issue.

Recycled Water Policy CEC Monitoring Requirements:

As stated in the Policy, ***"[e]ach Salt and Nutrient Management Plan shall include a provision for annual monitoring of Emerging Constituents/Constituents of Emerging Concern (CECs) consistent with recommendations by CDPH and consistent with any actions by the State Water Board taken pursuant to paragraph 10(b) of this Policy."***

Paragraph 10(b) of the Policy directs the State Water Board, in consultation with the California Department of Public Health (CDPH), to convene a "blue-ribbon" advisory panel to guide future actions relating to constituents of emerging concern.

The advisory panel (Panel) completed its report (Panel Report) on CECs in June 2010. State Water Board staff developed a staff report (SWRCB, 2010) based on recommendations from the Panel and those provided by the CDPH. In December 2010, the State Water Board held a public hearing regarding proposed CEC monitoring requirements presented in the staff report.

The Panel Report employed a risk-based screening process to identify CECs of toxicological relevance to monitor for potable and non-potable recycled water use scenarios (i.e., groundwater recharge reuse and landscape irrigation). The screening approach focused the universe of CECs based on their potential for health effects and their occurrence in recycled water in California. The Panel Report recommends monitoring of selected performance indicator CECs to evaluate the performance of treatment processes to remove CECs; and recommends monitoring of surrogate parameters, such as turbidity, dissolved organic carbon, and conductivity, to verify that treatment units are working as designed.

Health-based CECs selected for monitoring include caffeine, 17-beta-estradiol (17β-estradiol), n-nitrosodimethylamine (NDMA), and triclosan.

The Panel also selected a set of performance-based indicator CECs. Each selected performance-based indicator CEC represents a group or a family of CECs. The removal of the performance-based indicator CEC through a treatment process provides an indication of the removal of the other CECs in the group, provide they have similar properties. The six compounds selected to serve as performance-based indicator CECs are caffeine, gemfibrozil, n,n-diethyl-meta-toluamide (DEET), iopromide, NDMA, and sucralose. Caffeine and NDMA serve as both health and performance-based indicator CECs.

Upon reviewing the oral and written comments received on the publicly noticed staff report, the State Water Board drafted an amendment to the Policy prescribing monitoring requirements for CECs in recycled water used for groundwater recharge reuse and landscape irrigation. The draft Policy amendment ("Requirements for Monitoring Emerging Constituents/Constituents of Emerging Concern for Recycled Water") was released for public comment on May 9, 2012. The proposed amendment and accompanying attachment can be found on the State Water Board's website at: http://www.waterboards.ca.gov/water_issues/programs/water_recycling_policy/draft_amendment_to_policy.shtml

Other Considerations

The California Department of Public Health has released a draft of their Groundwater Replenishment Reuse Regulations, which are used to regulate recycled water for replenishment projects. Upon adoption of the final regulation, where the CEC monitoring requirements differ from those specified by the State Water Board in the amendment to the Policy, monitoring for the additional constituents specified by California Department of Public Health regulations should be included where groundwater recharge using recycled water is a consideration.

Section 60320.120(c) of the draft regulations requires annual monitoring of indicator CECs specified by CDPH and the Regional Water Board by proponents of groundwater replenishment and reuse projects (GRRPs). Stakeholders may take this into consideration in developing CEC monitoring programs for each basin/sub-basin where such projects exist or are planned. .

Regional Board Considerations

The Los Angeles Regional Board has taken early actions to begin to address CECs. The Board currently includes CEC Special Study Requirements in NPDES permits for Publicly Owned Treatment Works (POTWs), during permit renewal.
In addition, the development of a CEC monitoring strategy for the region was identified as a priority project during the project-selection phase of the 2011-13 triennial review. The Regional Board has also directed resources toward establishing some baseline information on CEC occurrence, and fate and transport in inland surface waters throughout the region. The information gathered from on-going monitoring and other applicable studies will inform future monitoring strategies.

Where site specific CEC monitoring is required for existing or proposed projects within a groundwater basin or sub-basin, SNMP proponents are encouraged to consider including them as part of the CEC monitoring strategies developed for the basin or sub-basin

C. SALT AND NUTRIENT ANALYSIS

As stated in the Policy***, "[e]ach SNMPs shall include salt and nutrient source identification, basin/sub-basin assimilative capacity and loading estimates, together with fate and transport of salts and nutrients…"*** in order to ***"… address and implement provisions, as appropriate, for all sources of salt and/or nutrients to groundwater basins, including recycled water irrigation projects and groundwater recharge reuse projects."***

Identification of existing and planned future sources of salts and nutrients is an essential part of a SNMP. This allows for a more accurate assessment of the pollutant loads to the basin and analysis of the final impact on basin water quality as determined through fate and transport analysis. A comprehensive consideration of sources will lead to a robust assessment and a more effective implementation strategy for basin management. Table 4-5 provides examples of source considerations in conducting this analysis.

TABLE 4-6: LIKELY SOURCES OF SALTS, NUTRIENTS, AND OTHER POLLUTANTS OF CONCERN IN GROUNDWATER BASINS

Source Considerations	**Examples**
Land uses	Agricultural and landscape irrigation
Groundwater recharge	Recycled water, Municipal water supply, Stormwater
Point source discharges to groundwater	Municipal and Industrial facilities, Other permitted facilities (e.g. landfills)
Non-point source discharges	Agricultural and nursery facilities, on-site wastewater treatment system discharges
Specific point sources	Injection wells*, percolation basins*
Surface water-groundwater interaction	Percolation from stream flow, stormwater runoff infiltration
Sub-surface inflow	Seawater intrusion, upstream inflow
Discrete discharges	Chemical spills, leaking tanks, improper disposal

*associated with oil production

In order to estimate pollutant loads to these basins, it will be necessary to quantify the mass loadings of all identifiable sources to each basin/sub-basin, and evaluate their fate and transport Stakeholders have the flexibility to apply any scientifically defensible methodology to make these determinations.

D. WATER RECYCLING AND STORMWATER RECHARGE/USE GOALS AND OBJECTIVES

Recycled Water Use

As stated in the Policy, ***"[e]ach SNMP shall include water recycling and stormwater recharge goals and objectives."*** With the intent of moving towards sustainable management of surface waters and groundwater, the Policy adopts the goals of increasing the use of recycled water in California over 2002 levels by at least one million acre-feet per year (afy) by 2020 and by at least two million afy by 2030***.***

There are a significant number of recycled water facilities in the Los Angeles Region. The State Water Board conducted a 2009 survey of recycled water use throughout the state to determine the amount of recycled water used and the beneficial uses to which

recycled water was put. Only publicly-owned wastewater and water recycling agencies were included in the survey. Due to the low response rate from agencies solicited (18%), data from a similar 2001 survey were included in the overall results. Table 4-6 shows survey results for responding agencies in the Los Angeles Region. More details on the survey are available on the State Water Board's website at http://www.waterboards.ca.gov/water_issues/programs/grants_loans/water_recycling/munirec.shtml.

TABLE 4-7: SURVEY RESULTS OF RECYCLED WATER USE BY POTWS AND WATER RECYCLING AGENCIES IN THE LOS ANGELES REGION

Agency	Total Reuse (AFY)	Beneficial Use
Burbank Water and Power	2090	Golf Course and Landscape Irrigation, Industrial
City of Burbank	879	Landscape Irrigation, Geothermal/Energy Production
City of Los Angeles Bureau of Sanitation	40,787	Recreational Impoundment, Natural systems restoration, Wetlands, Wildlife Habitat
City of Los Angeles Department of Water and Power	32,113	Golf Course & Landscape Irrigation, Industrial, Seawater Intrusion Barrier, Recreational Impoundment, Natural systems restoration, Wetlands, Wildlife Habitat
City of Los Angeles Department of Public Works	3,683	Landscape Irrigation, Geothermal/Energy Production
Camarillo Sanitation District/City of Camarillo	1,293	Agriculture Irrigation
Camrosa Water District	779	Agriculture Irrigation
City of Fillmore	110	Landscape Irrigation
County Sanitation Districts of Los Angeles County	80,000	Unspecified (likely groundwater recharge)
Las Virgenes Municipal Water District	5,174	Landscape Irrigation
Los Angeles County Department of Public Works	148	Landscape Irrigation
Long Beach Water Department	6,380	Golf Course & Landscape Irrigation, Commercial, Seawater Barrier
Ventura County Waterworks District 1	428	Golf Course Irrigation
Ventura County Waterworks District 1	63	Commercial
West Basin Municipal Water District	26,032	Landscape Irrigation, Industrial, Seawater Intrusion Barrier

While the majority of facilities surveyed used their recycled water for irrigation, a significant portion of the recycled water is used for groundwater recharge. In the Central and West Coast Groundwater Basins, recycled water is used extensively by the Water Replenishment District of Southern California for groundwater recharge and to maintain seawater intrusion barriers. An innovative form of recycling is practiced by the City of Santa Monica using its Santa Monica Urban Runoff Recycling Facility, which collects and treats 90% of the City's urban runoff in the dry season for use in landscape irrigation.

Substituting potable water with recycled water is another means of increasing recycled water use and reducing dependence on imported water supplies. This may be achieved by developing an indirect potable use program similar to the one initiated by the Orange County Water District.

SNMPs should include goals and objectives for water recycling. As part of developing these goals, it may be helpful to examine master plans for water recycling that have been developed by recycled water producers, distributors, and municipalities, as well as Urban Water Management Plans.

Stormwater Use

Another goal of the Policy, with the intent of increasing sustainable local water supplies, is to increase the use of stormwater over the levels in 2007 by at least 500,000 afy by 2020 and by at least one million afy by 2030.The Policy recognizes that stormwater is typically lower in nutrients and salts and can augment local water supplies, and therefore deems the inclusion of a significant stormwater use and recharge component within the salt/nutrient management plans to be critical to the long-term sustainable use of water in California. In support of this, the State Water Board expects to develop additional policies to encourage the use of stormwater, encourage water conservation, encourage the conjunctive use of surface and groundwater, and improve the use of local water supplies.

The Regional Water Board also recognizes stormwater as a valuable resource and contains a requirement in its Municipal Separate Stormwater Systems (MS4) permits that new developments and significant redevelopments retain stormwater onsite using low impact development (LID) best management practices (BMPs), with an allowance for regional and other alternative compliance approaches. MS4 permits require that land development projects be designed to infiltrate, harvest and use, evapotranspire, or bio-treat a specified volume of stormwater onsite using LID BMPs, if technically feasible. The intent of this requirement is twofold – first, to achieve improvements in water quality by preventing pollutants conveyed by stormwater from being discharged to receiving waters and, second, to increase the use of stormwater for groundwater recharge.

Since new developments and redevelopments will not necessarily occur in areas where infiltration or recharge is feasible, it is important that stormwater use be considered on a regional scale to maximize the potential for stormwater infiltration and use. Basin stakeholders are encouraged to consider such an approach in developing their implementation strategies for increasing stormwater use.

E. IMPLEMENTATION MEASURES

As stated in the Policy, ***"[e]ach SNMP shall include implementation measures to manage salt and nutrient loading in the basin on a sustainable basis."***

Implementation strategies should integrate water quantity and quality, groundwater and surface water, and recharge area protection in order to maintain a sustainable long-term supply for multiple beneficial uses. These strategies will be dictated to a large degree by basin-specific characteristics and conditions. Depending on conditions within each basin/sub-basin, strategies may generally be geared towards:

a) Pollution prevention to maintain and protect ground water quality at levels consistent with Basin Plan objectives and the State's anti-degradation policy;
b) Source load reductions to groundwater basins;
c) Treatment and management of areas of impaired water quality;
d) Increasing groundwater recharge by storm water; and
e) Increasing recycled water use.

Based on water quality conditions within a basin and the results of the source loading and fate and transport analysis, salts and nutrients from identifiable non-point and point sources should be managed in a manner that will support attainment of applicable water quality objectives. Measurable parameters should be identified for evaluation of the effectiveness of the strategies, and an implementation schedule and monitoring program should be developed to track progress toward basin management goals. Implementation measures may also include, as appropriate, strategies for local water supply development including increasing the use of recycled water, and plans for stormwater retention for use or recharge.

The consideration of implementation alternatives should take into account the interest of all parties currently involved in basin use and management in order to resolve any potential competing or conflicting interests prior to finalizing the basin management approach. To the greatest extent feasible, input from all stakeholders and interested parties should be solicited as part of the development process.

The Regional Water Board recognizes that a number of agencies have developed basin management plans for specific basins; while others have developed specific management measures for salt and/or nutrient impairments. Existing basin or sub-basin management plans and salt and nutrient management strategies should be assessed to determine their applicability towards the SNMP requirements of the Policy. For the purpose of SNMP development, these efforts may be supplemented as necessary to provide missing elements or address inconsistencies and demonstrate compliance with SNMP requirements. In instances where water quality from a sub-basin or basin may impact or be impacted by that of adjacent basins, all stakeholders concerned are encouraged to collaborate in developing salt and nutrient management strategies.

F. ANTI-DEGRADATION REQUIREMENTS

As stated in the Policy, ***"[e]ach Salt and Nutrient Management Plan shall include an antidegradation analysis demonstrating that the projects included within the plan will, collectively, satisfy the requirements of Resolution No. 68-16."***

Resolution No. 68-16 is the State Water Board's "Statement of Policy with respect to Maintaining High Quality of Waters in California" also known as the State Anti-degradation Policy. It requires that:

> ***Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.***

Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

The intent of Resolution 68-16 is to preserve the State's high quality waters. Any activity that results in the discharge of waste must be subject to treatment or controls that assure that the discharge will not cause the receiving water to exceed water quality objectives set forth in the applicable Basin Plan or cause pollution or nuisance. In addition, the discharge should be controlled to achieve the highest water quality feasible. In other words, water quality should be the best it can be, but at least not exceed water quality objectives or impact beneficial uses. The water quality objectives are set forth in the Regional Water Board Basin Plans, the State Water Board's Sources of Drinking Water Policy, and the California Ocean Plan. The baseline water quality to maintain refers to the highest existing quality since Resolution No. 68-16 was adopted in 1968, although if a lowering of water quality was formally approved in the past, this could adjust the baseline.

In some instances, degradation of existing water quality may be allowed so long as such degradation is consistent with the maximum benefit to the people of the state. Modification of existing water quality through the development of site specific objectives should only be considered when all other salt and nutrient management alternatives have been exhausted; and even so should be part of a larger salt and nutrient load reduction strategy. Such changes to water quality objectives may only occur where the existing water quality is better than that required to support the most sensitive beneficial use(s) of the basin (i.e. where there is assimilative capacity). Basin-wide management strategies should always be developed in a manner that would be protective of the most sensitive beneficial uses within a basin.
Where project(s) within SNMPs have the potential to degrade the water quality within a basin, stakeholders are required to conduct an anti-degradation analysis. The rigor of the analysis required depends on the nature and extent of the potential degradation. The guidelines and requirements for such analysis are provided below and parallel, to a large extent, those provided in the Policy for basins where plans are yet to be completed. This analysis will be part of the supporting documentation for the Basin Plan amendment incorporating the implementation plan(s) consistent with implementation measures identified in the SNMP. Implementation projects must be demonstrated to be consistent with Resolution 68-16 as supported by the anti-degradation analysis conducted as part of SNMP development.

The Policy recognizes that groundwater recharge and landscape irrigation projects are to the benefit of the people of the state, despite having the potential to lower water quality within the basin. As such, the Policy provides a threshold below which less rigorous analysis will be conducted for the anti-degradation analysis – during the period before SNMPs have been developed.
The Regional Water Board will apply the same considerations, on a basin-wide scale, once SNMPs are in place.

(1) Generally, a basin-wide implementation strategy that utilizes less than 20 percent of the available assimilative capacity in a basin/sub-basin need only conduct an anti-degradation analysis verifying the use of the assimilative capacity. For those basins /sub-basins where the Regional Water Boards have not determined the baseline assimilative capacity, the baseline assimilative capacity shall be calculated by the initial project proponent, with review and approval by the Regional Water Board. The available assimilative capacity shall be calculated by comparing the water quality objectives with the average concentration of the basin/sub-basin[7], either over the most recent five years of data available or using a data set approved by the Regional Water Board Executive Officer. Though the Policy expresses assimilative capacity in units of concentration, the Regional Water Board recognizes that, depending on the complexity of the basin, it may be more appropriate to calculate and express assimilative capacity as a load. Historical groundwater quality data will be reviewed in order to inform decisions about assimilative capacity and conclusions drawn about anti-degradation requirements. In determining whether the available assimilative capacity will be exceeded by the basin-wide implementation strategy, the Regional Water Board will consider the impacts of the strategy over at least a ten-year time frame, based on an analysis of these impacts provided by the project proponent(s), and other relevant data and information.

(2) In the event a basin wide implementation strategy utilizes more than 20 percent of the available assimilative capacity in a basin/sub-basin), a more rigorous anti-degradation analysis shall be performed to comply with Resolution No. 68-16. Proponents of the strategy shall provide sufficient information for the Regional Water Board to make this determination.

In addition to verification of the assimilative capacity to be used, the analysis should show:

a) That the strategy is necessary to accommodate important economic or social development;
b) Any reduction in water quality will be consistent with maximum benefit to people of the State;
c) Reduction in water quality will not unreasonably affect actual or potential beneficial uses; and
d) Water quality will not fall below water quality objectives set to protect beneficial uses as prescribed in the Basin Plan.

The severity and extent of water quality reduction will be considered when evaluating the benefits required to compensate for the degradation. The magnitude of the proposed strategy and potential reduction in water quality will also determine the scope of impact assessment. The Regional Water Board will ensure that a systematic impact assessment is conducted.

Factors that should be considered when determining whether a strategy is necessary to accommodate social or economic development and is consistent with maximum benefit to the people of the State, include:

1. Past, present, and probable beneficial uses of the water.

[7] More than one average concentration may be necessary for a given basin/sub-basin to fully evaluate variability between sub-areas or sub-basins.

2. Economic and social costs, tangible and intangible, of the proposed strategy compared to benefits. The economic impacts to be considered may include the cost of alternative actions in lieu of the proposed strategy, as well as the cost of any mitigation necessary to address degradation resulting from the proposed strategy. The long-term and short-term socioeconomic impacts of maintaining existing water quality must be considered. Examples of social and economic parameters that could be affected are employment, housing, community services, income, tax revenues, and land value. To accurately assess the impact of the proposed strategy, the projected baseline socioeconomic profile of the affected community without the strategy should be compared to the projected profile with the strategy.
3. The environmental aspects of the proposed discharge must be evaluated. The proposed discharge, while actually causing a reduction in water quality in a given water body, may be simultaneously causing an increase in water quality in a more environmentally sensitive body of water from which the discharge in question is being diverted.
4. The implementation of feasible alternative control measures, which might reduce, eliminate, or compensate for negative impacts of the proposed action.

Participation from the public and appropriate government agencies should be solicited in the "maximum benefit" determination to ensure that the environmental, social, and economic impacts of the strategy are accurately assessed.

The Regional Water Board will ultimately make the decision as to whether or not it is to the maximum benefit of the people of the State to use more than 20% of the assimilative capacity of a basin or sub-basin as part of a SNMP's implementation strategy. Consideration will be given to providing buffers for varying environmental conditions such as droughts, as well as the needs of future generations.

Where no assimilative capacity exists for salts and/or nutrients within a basin/sub-basin, stakeholders may explore and implement strategies for creating such assimilative capacity. As previously mentioned, modifying water quality objectives should only be considered where all other alternatives have been exhausted and then only as part of a larger comprehensive salt and nutrient reduction strategy. Any modifications to water quality objectives shall be done in a manner that protects the most sensitive beneficial uses in a basin/ sub-basin.

The Policy includes an example of an approved method for conducting an anti-degradation analysis based on a numeric groundwater model. It was used by the State Water Board in connection with Resolution No. 2004-0060 and the Regional Water Board in connection with Resolution No. R8-2004-0001. However, stakeholders have the flexibility to use other methods that have been deemed acceptable by the Regional Board. SNMP proponents should vet any such other methods with Regional Board staff prior to embarking on an analysis using the method. The Policy also encourages an integrated approach (using surface water, groundwater, recycled water, stormwater, pollution prevention, water conservation, etc.) to the implementation of Resolution No. 68-16.

An anti-degradation analysis will not be required where it has been demonstrated that implementation strategies are not expected to result in water quality degradation in a groundwater basin.

E. DISCHARGES COVERED BY THE RECYCLED WATER POLICY

The Policy is specifically geared towards increasing the use of recycled water from municipal wastewater sources permitted through Wastewater Recycling Requirements (WRRs). Land discharges of wastewater are addressed through separate Waste Discharge Requirements (WDRs), however, this does not preclude them from the SNMP development process. Such discharges (existing and proposed) should be accounted for in determining source loading estimates, determination of assimilative capacity, and in basin management planning. In the same vein, recycled water projects already in progress should be considered during the same phases of SNMP development.

5. CEQA REQUIREMENTS

The Policy requires that salt and nutrient management plans developed for basin/sub-basins comply with the applicable California Environmental Quality Act (CEQA) requirements. The following outlines the CEQA requirements for the Regional Board adoption of SNMP implementation strategies into the Water Quality Control Plan for the Los Angeles Region (Basin Plan). SNMP proponents may be required to comply with other CEQA requirements related to specific implementation strategies for salt and nutrient management contained in their plans. SNMP proponents are to conduct the environmental analysis required for Regional Board adoption.

The CEQA requires state and local agencies determine the potential significant environmental impacts of proposed projects and identify measures to avoid or mitigate these impacts where feasible. The CEQA Guidelines, which provide the protocol by which state and local agencies comply with CEQA requirements, are detailed in California Code of Regulations, Title 14 § 15000 et seq.

The basic purposes of CEQA are to: 1) inform decision makers and public about the potential significant environmental effects of a proposed project, 2) identify ways that environmental damage may be mitigated, 3) prevent significant, avoidable damage to the environment by requiring changes in projects, through the selection of alternative projects or the use of mitigation measures when feasible, and 4) disclose to the public why an agency approved a project if significant effects are involved (Cal. Code Regs., tit. 14, § 15002(a)).

LEAD AND RESPONSIBLE AGENCIES UNDER CEQA

As set forth in the Policy, stakeholders will fund SNMP development including any necessary analysis and documentation to comply with CEQA. Stakeholders will develop implementation strategies, which may include projects requiring environmental analysis. Public agencies that carry out or implement projects associated with the SNMPs are considered the lead agencies under CEQA for these individual projects. However, in addition, the implementation measures identified in a SNMP may be adopted as amendments to the Basin Plan by the Regional Water Board, and CEQA analysis is a required part of the adoption process in accordance with the State Water Board's certified regulatory program. As such, for the purpose of Water Board adoption of a Basin Plan amendment, the Regional Water Board will be the lead agency for purposes of CEQA. Therefore, it will be necessary for stakeholders and Regional Water Board staff to work in collaboration.

REQUIRED ENVIRONMENTAL ANALYSIS

The California Secretary for Natural Resources has certified the State and Regional Water Boards' basin planning process as exempt from certain requirements of CEQA, including preparation of an initial study, negative declaration, and environmental impact report (California Code of Regulations, Title 14, Section 15251(g)).

The basin planning process is certified by the Secretary for Natural Resources as a regulatory program exempt from the requirements to prepare an Environmental Impact Report, Negative Declaration, and Initial Study (Title 14, California Code of Regulations (CCR), Section 15241(g)). However, a certified program is subject to other provisions in CEQA (Pub. Resources Code, Section 21000 et seq.), such as the requirement to avoid significant adverse effects to the environment where feasible. The Regional Board is required to comply with State Water Board regulations set forth in California Code of Regulations, Title 23, sections 3775 et. seq, and Public Resources Code section 21159.

Requirements of California Code of Regulations, Title 23, Section 3777(a)

The "certified regulatory program" of the Regional Water Board is also subject to the substantive requirements of California Code of Regulations, Title 23, Section 3777(a), which requires a written report that includes a description of the proposed activity, an analysis of reasonable alternatives, and an identification of mitigation measures to minimize any significant adverse environmental impacts. Section 3777(a) also requires the Regional Water Board to complete an environmental checklist as part of its substitute environmental documents.

Any water quality control plan, state policy for water quality control, and any other components of California's water quality management plan as defined in Code of Federal Regulations, title 40, sections 130.2(k) and 130.6, proposed for board approval or adoption must include or be accompanied by Substitute Environmental Documentation (SED) and supported by substantial evidence in the administrative record. The Draft SED may be comprised of a single document or a compilation of documents. The Draft SED must be circulated prior to board action approving or adopting a project, as specified in sections 3778 and 3779. The Draft SED shall consist of:

a) A written report prepared for the board, containing an environmental analysis of the project;
b) A completed Environmental Checklist (a sample of which is contained in Appendix II). The sample Environmental Checklist may be modified as appropriate to meet the particular circumstances of a project. The issues identified in the Environmental Checklist must be evaluated in the checklist or elsewhere in the SED; and
c) Other documentation as the board may include.

The Draft SED shall include, at a minimum, the following information:

a) A brief description of the proposed project;
b) An identification of any significant or potentially significant adverse environmental impacts of the proposed project;
c) An analysis of reasonable alternatives to the project and mitigation measures to avoid or reduce any significant or potentially significant adverse environmental impacts; and
d) An environmental analysis of the reasonably foreseeable methods of compliance. The environmental analysis shall include, at a minimum, all of the following:
    i. An identification of the reasonably foreseeable methods of compliance with the project;

ii. An analysis of any reasonably foreseeable significant adverse environmental impacts associated with those methods of compliance;
iii. An analysis of reasonably foreseeable alternative methods of compliance that would have less significant adverse environmental impacts; and
iv. An analysis of reasonably foreseeable mitigation measures that would minimize any unavoidable significant adverse environmental impacts of the reasonably foreseeable methods of compliance.

In the preparation of the environmental analysis described in d) above, the board may utilize numerical ranges or averages where specific data are not available; however, the board shall not be required to engage in speculation or conjecture. The environmental analysis shall take into account a reasonable range of environmental, economic, and technical factors, population and geographic areas, and specific sites, but the board shall not be required to conduct a site-specific project level analysis of the methods of compliance, which CEQA may otherwise require of those agencies who are responsible for complying with the plan or policy when they determine the manner in which they will comply.

As to each environmental impact, the SED shall contain findings as described in State CEQA Guidelines section 15091, and if applicable, a statement described in section 15093.

If the board determines that no fair argument exists that the project could result in any reasonably foreseeable significant adverse environmental impacts, the SED shall include a finding to that effect in lieu of the analysis of project alternatives and mitigation measures.

If the board determines that no fair argument exists that the reasonably foreseeable methods of compliance with the project could result in any reasonably foreseeable significant adverse environmental impacts, the SED shall include a finding to that effect in lieu of the analysis of alternative methods of compliance and associated mitigation measures.

Requirements of Public Resources Code section 21159

Public Resources Code section 21159 has the same minimum requirements for the environmental analysis which the Regional Water Board is also required to fulfill along with the same considerations. Section 21159(c) requires that the environmental analysis take into account a reasonable range of:

a) Environmental, economic, and technical factors,
b) Population and geographic areas, and
c) Specific sites.

A “reasonable range” does not require an examination of every site, but a reasonably representative sample of them. The statute specifically states that the section shall not require the agency to conduct a “project-level analysis” (Public Resources Code § 21159(d)). Rather, a project-level analysis must be performed by the local agencies that will implement the strategies and projects identified in the SNMP (Public Resources Code §21159.2). Notably, the Regional Water Board is prohibited from specifying the manner of compliance with its regulations (Cal. Water Code §13360), and accordingly,

the actual environmental impacts will necessarily depend upon the compliance strategy selected by the local agencies and other permittees.

State Water Board Finding

As set forth in the Policy, the State Water Board finds that the use of recycled water which supports the sustainable use of groundwater and/or surface water that is sufficiently treated so as not to adversely impact public health or the environment and which ideally substitutes for use of potable water is presumed to have a beneficial impact. Other public agencies are encouraged to use this presumption in evaluating the impacts of recycled water projects on the environment as required by the CEQA.

Public Participation Requirements for the CEQA Process

Pursuant to California Public Resources Code section 21083.9, a CEQA Scoping Meeting will be held to receive comments on the appropriate scope and content of substitute environmental documents supporting amendments to the Basin Plan to incorporate salt and nutrient management plans for groundwater basins in the Los Angeles Region. The purpose of this meeting is to scope the proposed projects and/or strategies for groundwater basin management and to determine, with input from interested agencies and persons, if those means would result in significant adverse impacts to the environment. Information garnered from this process will be considered during development of the draft SED and, where applicable, may be incorporated into the final document.

ROLES OF STAKEHOLDER GROUPS AND REGIONAL WATER BOARD STAFF IN THE CEQA PROCESS

Both Regional Water Board staff and stakeholder groups will be significantly involved in the environmental analysis for the SNMPs. Table 5-1 lists the different aspects of the CEQA process and identifies the roles of each party.

TABLE 5-1: ROLES OF STAKEHOLDERS AND REGIONAL WATER BOARD STAFF IN THE CEQA PROCESS FOR BASIN PLAN AMENDMENTS

TASK	REGIONAL WATER BOARD	STAKEHOLDERS
LEAD AGENCY	Lead	
CEQA SCOPING MEETING	Co-Lead	Co-Lead
ENVIRONMENTAL ANALYSIS	Oversight	Lead
SED DEVELOPMENT	Oversight	Lead
DOCUMENT REVIEW	Lead	
RESPONSE TO COMMENTS	Lead - Regulatory	Lead - Technical
REVISIONS	Oversight/Review	Lead
PUBLIC HEARING	Lead	
PROJECT LEVEL EIR		Lead

The CEQA scoping meeting will be held jointly by Regional Water Board staff and stakeholder groups, while the environmental analysis will be conducted primarily by the groundwater basin stakeholder groups with oversight and review by Regional Water Board staff. Following the release of the draft environmental document for public review, it is anticipated that there will be comments on its technical and regulatory aspects. The Regional Water Board will take the lead in responding to the regulatory comments, while stakeholders will be the lead for responding to technical comments. Any revisions

necessary in response to public comments will be the purview of the stakeholder groups with oversight by Regional Water Board staff. Preparation of the environmental documentation for consideration and adoption by the Regional Water Board will be the responsibility of Regional Water Board and staff. Finally, once the SNMPs have been adopted and specific projects are to be implemented, basin stakeholders will be responsible for the development of project-specific environmental analysis and other related CEQA requirements.

TIMELINE FOR THE CEQA PROCESS IN RELATION TO SNMP DEVELOPMENT

The SED will be considered by the Regional Water Board as part of the adoption of the implementation provisions contained in the SNMPs. Approval of the SED is separate from approval of a specific project alternative or a component of an alternative. Approval of the SED refers to the process of: (1) addressing comments, (2) confirming that the Regional Water Board considered the information in the SED, and (3) affirming that the SED reflects independent judgment and analysis by the Regional Water Board - CEQA Guidelines Section 10590 and 15090 (Title 14 of CCR).

Stakeholders are encouraged to begin the CEQA process once potential basin management strategies have been identified during SNMP development. The CEQA scoping meeting should be held early enough in the process for consideration of public comments during the development of the substitute environmental document. Ideally the SED should be completed at the same time as the SNMP for timely consideration and adoption by the Regional Water Board.

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6. BOARD ADOPTION OF SNMPS

As stated in the Policy: ***Salt and nutrient plans shall be completed and proposed to the Regional Water Board within five years from the date of this Policy unless a Regional Water Board finds that the stakeholders are making substantial progress towards completion of a plan. In no case shall the period for the completion of a plan exceed seven years.***

Stakeholders are encouraged to complete and submit SNMPs for each basin by May 2014 as specified in the Policy. However, the Policy allows for an extension where significant progress has been made but this deadline cannot be met. For this purpose, the Regional Water Board will consider "significant progress" as follows: (i) upon completion of a collaborative stakeholder developed basin wide monitoring plan that meets the requirements set forth in the Policy, (ii) completion of the salt/nutrient source identification, loading and linkage analysis, and (iii) commencement of the development of implementation strategies for basin management. Stakeholders will also be required to make a showing that completion by the May 2014 deadline is infeasible. SNMPs that have not achieved significant progress may warrant greater Regional Board involvement or Regional Board developed plans, and will be addressed on a case-by-case basis.

Within one year of the receipt of a proposed salt and nutrient management plan, the Regional Water Boards shall consider for adoption revised implementation plans, consistent with Water Code section 13242, for those groundwater basins within their regions where water quality objectives for salts or nutrients are being, or are threatening to be, exceeded. The implementation plans shall be based on the salt and nutrient plans required by this Policy.

The Regional Water Board expects to adopt the implementation provisions of each SNMP within one year of submission by basin/sub-basin stakeholders. State Water Board staff have provided templates for these Basin Plan amendments (see Appendix I) as a guide to the scope of information to be provided in the amendment language. Table 6-1 provides a tentative schedule of stakeholder tasks and submissions.

TABLE 6-1: TENTATIVE SCHEDULE OF STAKEHOLDER SUBMISSIONS

Tasks	**Date**
CEQA Scoping Meeting	June 2013
Initial Draft SNMP & CEQA submittal	November 2013
Final Draft SNMP & CEQA submittal	May 2014
Regional Water Board Consideration and Adoption	May 2015 and beyond

Regional and State Water Board Resources

Regional Water Board staff expects to continue working collaboratively with groundwater basin stakeholders during the SNMP development process, as well as through the Board adoption process. In addition to staff assigned for this purpose, the following resources are available to stakeholders to facilitate the process.

Regional Water Board SNMP website:

www.waterboards.ca.gov/losangeles/water_issues/programs/salt_and_nutrient_management/index.shtml

SNMP E-mail list subscription:
http://www.waterboards.ca.gov/resources/email_subscriptions/reg4_subscribe.shtml

Groundwater Ambient Monitoring and Assessment (GAMA) website:
www.waterboards.ca.gov/losangeles/water_issues/programs/sgama/geotracker_gama.html

State Water Board website:
http://www.swrcb.ca.gov/water_issues/programs/water_recycling_policy/index.shtml

7. REFERENCES

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http://www.waterboards.ca.gov/water_issues/programs/gama/docs/usgs_rpt_72903_wri034166.pdf

APPENDIX C

List of special-status plant and wildlife species identified in the California Department of Fish and Wildlife's California Natural Diversity Database and California Native Plant Society's online inventory

Selected Elements by Element Code

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad is (Inglewood (3311883) or Anaheim (3311778) or Baldwin Park (3411718) or El Monte (3411811) or Hollywood (3411813) or La Habra (3311788) or Los Alamitos (3311871) or Los Angeles (3411812) or Long Beach (3311872) or Redondo Beach (3311874) or San Pedro (3311863) or South Gate (3311882) or Torrance (3311873) or Venice (3311884) or Whittier (3311881))

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
AAABF02020	***Spea hammondii*** western spadefoot	None	None	G3	S3	SSC
ABNFC01021	***Pelecanus occidentalis californicus*** California brown pelican	Delisted	Delisted	G4T3	S1S2	FP
ABNKC12040	***Accipiter cooperii*** Cooper's hawk	None	None	G5	S3	WL
ABNKC19070	***Buteo swainsoni*** Swainson's hawk	None	Threatened	G5	S3	
ABNKC19120	***Buteo regalis*** ferruginous hawk	None	None	G4	S3S4	WL
ABNME03041	***Laterallus jamaicensis coturniculus*** California black rail	None	Threatened	G4T1	S1	FP
ABNNB03031	***Charadrius alexandrinus nivosus*** western snowy plover	Threatened	None	G3T3	S2	SSC
ABNNM08103	***Sternula antillarum browni*** California least tern	Endangered	Endangered	G4T2T3Q	S2S3	FP
ABNRB02022	***Coccyzus americanus occidentalis*** western yellow-billed cuckoo	Proposed Threatened	Endangered	G5T3Q	S1	
ABNSB10010	***Athene cunicularia*** burrowing owl	None	None	G4	S3	SSC
ABPAE33043	***Empidonax traillii extimus*** southwestern willow flycatcher	Endangered	Endangered	G5T1T2	S1	
ABPAU08010	***Riparia riparia*** bank swallow	None	Threatened	G5	S2S3	
ABPBG02095	***Campylorhynchus brunneicapillus sandiegensis*** coastal cactus wren	None	None	G5T3Q	S3	SSC
ABPBJ08081	***Polioptila californica californica*** coastal California gnatcatcher	Threatened	None	G3T2	S2	SSC
ABPBW01114	***Vireo bellii pusillus*** least Bell's vireo	Endangered	Endangered	G5T2	S2	
ABPBX24010	***Icteria virens*** yellow-breasted chat	None	None	G5	S3	SSC
ABPBX99015	***Passerculus sandwichensis beldingi*** Belding's savannah sparrow	None	Endangered	G5T3	S3	
ABPBXB0020	***Agelaius tricolor*** tricolored blackbird	None	None	G2G3	S1S2	SSC
AFCJB1303H	***Siphateles bicolor mohavensis*** Mohave tui chub	Endangered	Endangered	G4T1	S1	FP

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
AMABA01104	***Sorex ornatus salicornicus*** southern California saltmarsh shrew	None	None	G5T1?	S1	SSC
AMACC02010	***Lasionycteris noctivagans*** silver-haired bat	None	None	G5	S3S4	
AMACC05030	***Lasiurus cinereus*** hoary bat	None	None	G5	S4?	
AMACC05070	***Lasiurus xanthinus*** western yellow bat	None	None	G5	S3	SSC
AMACC10010	***Antrozous pallidus*** pallid bat	None	None	G5	S3	SSC
AMACD02011	***Eumops perotis californicus*** western mastiff bat	None	None	G5T4	S3?	SSC
AMACD04010	***Nyctinomops femorosaccus*** pocketed free-tailed bat	None	None	G4	S2S3	SSC
AMACD04020	***Nyctinomops macrotis*** big free-tailed bat	None	None	G5	S2	SSC
AMAEB03051	***Lepus californicus bennettii*** San Diego black-tailed jackrabbit	None	None	G5T3?	S3?	SSC
AMAFD01042	***Perognathus longimembris pacificus*** Pacific pocket mouse	Endangered	None	G5T1	S1	SSC
AMAFF08041	***Neotoma lepida intermedia*** San Diego desert woodrat	None	None	G5T3?	S3?	SSC
AMAFF11035	***Microtus californicus stephensi*** south coast marsh vole	None	None	G5T1T2	S1S2	SSC
AMAJF04010	***Taxidea taxus*** American badger	None	None	G5	S4	SSC
ARAAA02010	***Chelonia mydas*** green turtle	Threatened	None	G3	S1	
ARAAD02030	***Emys marmorata*** western pond turtle	None	None	G3G4	S3	SSC
ARACC01012	***Anniella pulchra pulchra*** silvery legless lizard	None	None	G3G4T3T4Q	S3	SSC
ARACF12100	***Phrynosoma blainvillii*** coast horned lizard	None	None	G3G4	S3S4	SSC
ARACJ02143	***Aspidoscelis tigris stejnegeri*** coastal whiptail	None	None	G5T3T4	S2S3	
CTT21330CA	***Southern Dune Scrub*** Southern Dune Scrub	None	None	G1	S1.1	
CTT31200CA	***Southern Coastal Bluff Scrub*** Southern Coastal Bluff Scrub	None	None	G1	S1.1	
CTT32720CA	***Riversidian Alluvial Fan Sage Scrub*** Riversidian Alluvial Fan Sage Scrub	None	None	G1	S1.1	

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
CTT52120CA	***Southern Coastal Salt Marsh*** Southern Coastal Salt Marsh	None	None	G2	S2.1	
CTT62400CA	***Southern Sycamore Alder Riparian Woodland*** Southern Sycamore Alder Riparian Woodland	None	None	G4	S4	
CTT71210CA	***California Walnut Woodland*** California Walnut Woodland	None	None	G2	S2.1	
CTT81600CA	***Walnut Forest*** Walnut Forest	None	None	G1	S1.1	
ICBRA07010	***Streptocephalus woottoni*** Riverside fairy shrimp	Endangered	None	G1	S1	
IICOL02080	***Cicindela gabbii*** western tidal-flat tiger beetle	None	None	G2G4	S1	
IICOL02101	***Cicindela hirticollis gravida*** sandy beach tiger beetle	None	None	G5T2	S1	
IICOL02113	***Cicindela latesignata latesignata*** western beach tiger beetle	None	None	G2G4T1T2	S1	
IICOL02121	***Cicindela senilis frosti*** senile tiger beetle	None	None	G2G3T1T3	S1	
IICOL4A010	***Coelus globosus*** globose dune beetle	None	None	G1G2	S1S2	
IICOL4W010	***Onychobaris langei*** Lange's El Segundo Dune weevil	None	None	G1	S1	
IICOL51021	***Trigonoscuta dorothea dorothea*** Dorothy's El Segundo Dune weevil	None	None	G1T1	S1	
IIDIP05022	***Rhaphiomidas terminatus terminatus*** El Segundo flower-loving fly	None	None	G1T1	S1	
IIDIP17010	***Brennania belkini*** Belkin's dune tabanid fly	None	None	G1G2	S1S2	
IILEM0R390	***Eucosma hennei*** Henne's eucosman moth	None	None	G1	S1	
IILEM2X090	***Carolella busckana*** Busck's gallmoth	None	None	G1G3	SH	
IILEP84030	***Panoquina errans*** wandering (=saltmarsh) skipper	None	None	G4G5	S1	
IILEPG201B	***Euphilotes battoides allyni*** El Segundo blue butterfly	Endangered	None	G5T1	S1	
IILEPG402A	***Glaucopsyche lygdamus palosverdesensis*** Palos Verdes blue butterfly	Endangered	None	G5T1	S1	
IILEPP2010	***Danaus plexippus*** monarch butterfly	None	None	G5	S3	
IMGASJ7040	***Tryonia imitator*** mimic tryonia (=California brackishwater snail)	None	None	G2G3	S2S3	

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
PDAST20095	***Chaenactis glabriuscula var. orcuttiana*** Orcutt's pincushion	None	None	G5T1	S1	1B.1
PDAST440C0	***Pseudognaphalium leucocephalum*** white rabbit-tobacco	None	None	G4	S2S3.2	2B.2
PDAST4N102	***Helianthus nuttallii ssp. parishii*** Los Angeles sunflower	None	None	G5TH	SH	1A
PDAST4R0P4	***Centromadia parryi ssp. australis*** southern tarplant	None	None	G3T2	S2	1B.1
PDAST5L0A1	***Lasthenia glabrata ssp. coulteri*** Coulter's goldfields	None	None	G4T2	S2	1B.1
PDAST6X060	***Pentachaeta lyonii*** Lyon's pentachaeta	Endangered	Endangered	G2	S2	1B.1
PDASTE80C0	***Symphyotrichum defoliatum*** San Bernardino aster	None	None	G2	S2	1B.2
PDASTE80U0	***Symphyotrichum greatae*** Greata's aster	None	None	G2	S2.3	1B.3
PDBER060A0	***Berberis nevinii*** Nevin's barberry	Endangered	Endangered	G1	S1	1B.1
PDBRA10020	***Dithyrea maritima*** beach spectaclepod	None	Threatened	G2	S2.1	1B.1
PDBRA1M114	***Lepidium virginicum var. robinsonii*** Robinson's pepper-grass	None	None	G5T3	S3	4.3
PDBRA270V0	***Nasturtium gambelii*** Gambel's water cress	Endangered	Threatened	G1	S1	1B.1
PDCAR040L0	***Arenaria paludicola*** marsh sandwort	Endangered	Endangered	G1	S1	1B.1
PDCHE02010	***Aphanisma blitoides*** aphanisma	None	None	G3G4	S3	1B.2
PDCHE040E0	***Atriplex coulteri*** Coulter's saltbush	None	None	G2	S2	1B.2
PDCHE041C0	***Atriplex pacifica*** south coast saltscale	None	None	G3G4	S2	1B.2
PDCHE041D0	***Atriplex parishii*** Parish's brittlescale	None	None	G1G2	S1	1B.1
PDCHE041T1	***Atriplex serenana var. davidsonii*** Davidson's saltscale	None	None	G5T1	S1	1B.2
PDCHE091Z0	***Chenopodium littoreum*** coastal goosefoot	None	None	G2	S2	1B.2
PDCHE0P0D0	***Suaeda esteroa*** estuary seablite	None	None	G3	S2	1B.2
PDCON040E6	***Calystegia sepium ssp. binghamiae*** Santa Barbara morning-glory	None	None	G5T1	S1	1B.1

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
PDCRA040H0	***Dudleya multicaulis*** many-stemmed dudleya	None	None	G2	S2	1B.2
PDCRA040S2	***Dudleya virens ssp. insularis*** island green dudleya	None	None	G3?T3	S3	1B.2
PDCRO02020	***Crossosoma californicum*** Catalina crossosoma	None	None	G2	S2	1B.2
PDCUS01111	***Cuscuta obtusiflora var. glandulosa*** Peruvian dodder	None	None	G5T4T5	SH	2B.2
PDFAB0F1G0	***Astragalus brauntonii*** Braunton's milk-vetch	Endangered	None	G2	S2	1B.1
PDFAB0F7B1	***Astragalus pycnostachyus var. lanosissimus*** Ventura Marsh milk-vetch	Endangered	Endangered	G2T1	S1	1B.1
PDFAB0F8R2	***Astragalus tener var. titi*** coastal dunes milk-vetch	Endangered	Endangered	G2T1	S1	1B.1
PDGER01070	***California macrophylla*** round-leaved filaree	None	None	G2	S2	1B.1
PDGRO020F3	***Ribes divaricatum var. parishii*** Parish's gooseberry	None	None	G4TH	SH	1A
PDHYD0A0H0	***Nama stenocarpum*** mud nama	None	None	G4G5	S1S2	2B.2
PDHYD0C510	***Phacelia stellaris*** Brand's star phacelia	None	None	G1	S1	1B.1
PDLAM1U0A1	***Scutellaria bolanderi ssp. austromontana*** southern mountains skullcap	None	None	G4T2	S2	1B.2
PDMAL110J0	***Sidalcea neomexicana*** Salt Spring checkerbloom	None	None	G4?	S2S3	2B.2
PDNYC010P1	***Abronia villosa var. aurita*** chaparral sand-verbena	None	None	G5T3T4	S2	1B.1
PDPGN040J1	***Chorizanthe parryi var. fernandina*** San Fernando Valley spineflower	Candidate	Endangered	G2T1	S1	1B.1
PDPGN0G011	***Nemacaulis denudata var. denudata*** coast woolly-heads	None	None	G3G4T2	S2	1B.2
PDPLM0C080	***Navarretia fossalis*** spreading navarretia	Threatened	None	G1	S1	1B.1
PDPLM0C0Q0	***Navarretia prostrata*** prostrate vernal pool navarretia	None	None	G2	S2	1B.1
PDROS0W045	***Horkelia cuneata var. puberula*** mesa horkelia	None	None	G4T1	S1	1B.1
PDROS1B120	***Potentilla multijuga*** Ballona cinquefoil	None	None	GX	SX	1A
PDSCR0J0C2	***Chloropyron maritimum ssp. maritimum*** salt marsh bird's-beak	Endangered	Endangered	G4?T1	S1	1B.2

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
PDSOL0G0N0	***Lycium brevipes var. hassei*** Santa Catalina Island desert-thorn	None	None	G1Q	S1	1B.1
PMLIL0D150	***Calochortus plummerae*** Plummer's mariposa-lily	None	None	G4	S4	4.2
PMLIL0D1J1	***Calochortus weedii var. intermedius*** intermediate mariposa-lily	None	None	G3G4T2	S2	1B.2
PMPOA4G010	***Orcuttia californica*** California Orcutt grass	Endangered	Endangered	G1	S1	1B.1

Record Count: 107