

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

RESOLUTION R5-2017-0062

AMENDMENT TO THE WATER QUALITY CONTROL PLAN FOR
THE SACRAMENTO RIVER BASIN AND SAN JOAQUIN RIVER BASIN TO ADD ELECTRICAL
CONDUCTIVITY WATER QUALITY OBJECTIVES IN THE SAN JOAQUIN RIVER BETWEEN
THE MOUTH OF THE MERCED RIVER AND THE AIRPORT WAY BRIDGE NEAR VERNALIS

WHEREAS, the California Regional Water Quality Control Board, Central Valley Region
(Central Valley Water Board) finds that:

1. The Central Valley Water Board adopted the *Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin* (Basin Plan) in 1975 and has amended it as necessary.
2. The Basin Plan may be amended in accordance with the Water Code section 13240, et seq.
3. Water Code section 13241 authorized the Central Valley Water Board to establish water quality objectives and Water Code section 13242 sets forth the requirements for a program for implementation for achieving water quality objectives.
4. The Federal Clean Water Act (CWA) Section 303 requires the Central Valley Water Board develop water quality objectives that are sufficient to protect beneficial uses designated for each water body found within its region. (33 U.S.C. § 1313).
5. The CWA Section 303 requires the Central Valley Water Board to review the Basin Plan at least every three years and, where appropriate, modify water quality objectives or beneficial uses in the Basin Plan.
6. The Lower San Joaquin River (LSJR) between the mouth of the Merced River to the Airport Way Bridge near Vernalis has been identified under the CWA Section 303(d) as an impaired waterbody due to salt and boron.
7. On 10 September 2004 the Central Valley Water Board adopted Resolution R5-2004-0108 amending its Basin Plan, in part, by adopting the Control Program for Salt and Boron Discharges (Control Program) into the LSJR. On 28 July 2006 the Office of Administrative Law approved the amendment to the Basin Plan. The first phase of the Control Program focused on meeting water quality objectives at Vernalis to protect the Delta. A second phase of the Control Program was to develop salinity water quality objectives and an implementation program for the section of river upstream of Vernalis.
8. The Central Valley Water Board staff held a CEQA scoping session on 11 May 2005 to receive public input and to identify any significant issues that must be considered for development of proposed salinity water quality objectives in the Lower San Joaquin River.
9. The Central Valley Water Board held a public workshop on the proposed amendment on 8 February 2006.
10. The Central Valley Water Board staff held a CEQA scoping session on 30 March 2009 to receive additional public input and to identify any significant issues that must be

considered to limit the scope of development of proposed salinity water quality objectives in the Lower San Joaquin River to Reach 83 (from the Merced River to Vernalis).

11. In March 2010 the Central Valley Water Board staff posted a draft report titled *Salt Tolerance of Crops in the Lower San Joaquin River [Stanislaus to Merced River Reaches (draft Soil Salinity Report)]* for public review and comment, and in June 2010 staff posted a revised draft Soil Salinity Report that incorporated minor public comments received prior to 19 May 2010.
12. In June 2010, responsibility for continuing work started by Central Valley Water Board staff on the policy and science needed to develop salinity objectives and support a Basin Plan Amendment, including completion of the Soil Salinity Report, was incorporated into the stakeholder lead Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) Initiative. The CV-SALTS Initiative formed the Lower San Joaquin River subcommittee to complete the task.
13. The LSJR Committee conducted a review of literature related to salinity impacts on beneficial uses in the Lower San Joaquin River Basin. The LSJR Committee utilized white papers prepared for the CV-SALTS Initiative to evaluate salinity impacts on agricultural irrigation supply, stock watering, municipal and domestic supply, and aquatic life.
14. In April 2016 the Central Valley Water Board posted the final Soil Salinity Report titled *Revisions to the 2010 Salt Tolerance of Crops in the Lower San Joaquin River (Merced to Stanislaus River Reaches) and 2016 Addendum* on its internet site.
15. On 17 August 2016 the Central Valley Water Board held a public workshop on key elements of the proposed amendment.
16. The Proposed Amendment will:
 1. Clarify compliance requirements of the first phase of the Control Program adopted by the Central Valley Water Board in Resolution R5-2004-0108 in order to meet salinity objectives at Vernalis.
 2. Establish salinity water quality objectives within Reach 83 of the LSJR (from the Merced River to Vernalis) that would require that electrical conductivity at 25 degrees Celsius not exceed 1,550 micro Siemens per centimeter ($\mu\text{S}/\text{cm}$) as a 30-day running average, except during Extended Dry Periods, when the water quality objective would require that electrical conductivity not exceed 2,470 $\mu\text{S}/\text{cm}$ as a 30-day running average and 2,200 $\mu\text{S}/\text{cm}$ as an annual average using at a minimum the previous four consecutive quarterly samples.
 3. Incorporate an implementation program into the Basin Plan to achieve proposed salinity water quality objectives.
 4. Set an electrical conductivity performance goal of 1,350 $\mu\text{S}/\text{cm}$ during certain months and water-year types, based on modeling results of expected water quality.

5. Require a monitoring and surveillance program to evaluate the effectiveness of the implementation program in attaining the salinity water quality objectives.
 6. Require compliance with the proposed salinity water quality objectives by 1 January 2020.
 7. Require re-evaluation of the effectiveness of the control efforts and ability to achieve performance goals ten years after adoption of the water quality objectives.
17. The proposed Amendment will revise Chapter 1 – Introduction, Lower San Joaquin River Watershed and Subareas description of the East Valley Floor Subarea to remove the reference to a drain.
 18. The proposed Amendment will revise Chapter 3 – Water Quality Objectives, Water Quality Objectives for Inland Surface Waters, Salinity to add electrical conductivity water quality objectives in the LSJR upstream of the Airport Way Bridge to the mouth of the Merced River (Reach 83 of the San Joaquin River). The objectives are adjusted during extended dry periods.
 19. The proposed Amendment will revise Chapter 4 – Implementation, Actions and Schedule to Achieve Water Quality Objectives, Agricultural Drainage Discharges in the San Joaquin River Basin, Control Program for Salt and Boron Discharges into the Lower San Joaquin River to: 1) clarify the intent of the first phase regarding salt load limits necessary to comply with the electrical conductivity water quality objectives at the Airport Way Bridge near Vernalis; 2) identify locations within Reach 83 to evaluate compliance with the upstream salinity objectives; 3) provide guidance for point source dischargers when making reasonable potential determinations; 4) identify performance goals; 5) identify criteria for determining extended dry periods; and 5) review effectiveness of the Control Program in meeting performance goals and adjust water quality objectives as appropriate.
 20. The proposed Amendment will revise Chapter 5 – Surveillance and Monitoring to add the following section: Salt and Boron Discharges into the Lower San Joaquin River. The section will specify compliance monitoring locations for the water quality objectives and performance goal.
 21. The Central Valley Water Board has considered the costs of implementing the proposed amendment as discussed in the Substitute Environmental Documentation.
 22. The Proposed Amendment includes an estimate of the cost of the proposed implementation program to agriculture and identifies potential sources of financing, as required by Water Code section 13141.
 23. The costs of implementing the Proposed Amendment are reasonable considering the size of the geographic area affected by the Amendment and considering that the proposed alternative does not require new salinity mitigation measures, above the measures already being implemented or planned for implementation. The estimated costs of compliance with this Amendment duplicate to some extent the costs of complying with existing Basin Plan water quality objectives, the waivers and waste discharge requirements adopted by the Central Valley Water Board to regulate discharges from irrigated lands, and the waste

discharge requirements adopted to regulate waste from publicly owned treatment works, industry and stormwater.

24. The scientific portions and scientific basis of the Proposed Amendment have undergone independent scientific peer review in accordance with Health and Safety Code Section 57004.
25. As described in the Staff Report, the proposed Amendment is consistent with State Water Resources Control Board Resolution 68-16 (*Statement of Policy with Respect to Maintaining High Quality of Waters in California*).
26. The regulatory action meets the “necessity” standard of the Administrative Procedures Act, Government Code, section 11353, subdivision (b).
27. In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. The proposed amendment does not lessen water quality protections in any portion of the basin that is currently, or is expected to, serve as a domestic or municipal water source. The proposed amendment is consistent with Water Code section 106.3.
28. The Central Valley Water Board is the Lead Agency under the California Environmental Quality Act (CEQA)(Pub. Resources Code, § 21000 et seq.) and is responsible for evaluating potentially significant environmental impacts that may occur as a result of the proposed amendment. The Secretary of Resources has determined that the Board’s Basin Planning Process qualifies as a certified regulatory program pursuant to Public Resources Code section 21080.5 and California Code of Regulations, title 14, section 15251(g). This determination means that the Board may prepare Substitute Environmental Documentation, which includes the Staff Report and an Environmental Checklist, instead of preparing an environmental impact report. The Substitute Environmental Documentation satisfies the requirements of State Water Board’s regulations for the implementation of CEQA for exempt regulatory programs. (Cal. Code Regs., tit. 23, §§ 3775 et seq.)
29. The Central Valley Water Board staff developed and evaluated alternatives for the proposed Amendments with stakeholder input, which was provided through the LSJR Committee during approximately monthly meetings since June 2010.
30. Central Valley Water Board staff prepared a draft Amendment and a Staff Report dated February 2017. The Staff Report included a description of the proposed Amendments, an analysis of reasonable alternatives to the proposed Amendments, an analysis of the reasonably foreseeable environmental impacts of the methods of compliance, and an analysis of the reasonably foreseeable alternative methods of compliance with the proposed Amendments.
31. Central Valley Water board staff completed an Environmental Checklist that concluded that the proposed Amendments do not have the potential to significantly impact the environment. Because the proposed Amendments do not have the potential to significantly impact the environment, no mitigation measures are proposed, and the Board need not make a statement pursuant to California Code of Regulations, title 14, section 15093.

32. The Central Valley Water Board staff has circulated a Notice of Public Hearing/Notice of Filing, a written Staff Report, an Environmental Checklist, and the proposed Amendment to interested individuals and public agencies, including persons having special expertise with regard to the environmental affects potentially involved with the proposed Amendment, for review and comment in accordance with state environmental regulations. (Cal. Code Regs., tit. 23, section 3775.)
33. On 6 April 2017, the Central Valley Water Board held a public hearing for the purpose of receiving testimony on the draft amendment. Notice of the public hearing was sent to all interested persons and published in accordance with Water Code section 13244.
34. The Central Valley Water Board received public comments on the draft Staff Report, Environmental Checklist, and proposed amendment from 17 February 2017 through 14 April 2017, and has prepared a final draft staff report dated May 2017 which includes responses to comments received on the February 2017 draft.
35. On 10 May 2017 the Central Valley Water Board staff posted a revised draft Staff Report/SED, Environmental Checklist, and proposed amendment that includes revisions made to address some of the public comments received.
36. The Central Valley Water Board held a public hearing on 9 June 2017, for the purposes of receiving testimony and considering approval of the proposed Basin Plan Amendment. Notice of the public hearing was sent to all interested persons and published in accordance with Water Code section 13244.
37. Based on the record as a whole, including the Staff Report, Environmental Checklist, proposed amendment, and public comments received, the Central Valley Water Board concurs with staff's conclusion that no actions are expected to cause a potentially significant impact to the environment as a result of the adoption of the proposed amendment. The Central Valley Water Board finds that the record as a whole and the procedures followed by staff comply with applicable CEQA requirements. (Cal. Code Regs., tit. 23, § 3775 et seq., Pub. Res. Code §§ 21080.5, 21083.9, and 21159, Cal. Code Regs., tit. 14, § 15250 et seq.)
38. The proposed amendment must be approved by the State Water Board, the Office of Administrative Law (OAL), and the United States Protection Agency (USEPA). The proposed amendment becomes effective under state law after OAL approval and becomes effective under the federal Clean Water Act after USEPA approval.
39. The Central Valley Water Board finds that the proposed Amendment was developed in accordance with Water Code section 13240, et seq.

THEREFORE BE IT RESOLVED:

1. Pursuant to Water Code section 13240, et seq., the Central Valley Water Board, after considering the entire record, including oral testimony received at the hearing, hereby approves the Staff Report and adopts the Amendments into the Sacramento and San Joaquin River Basin Plan as set forth in Attachment 1.

2. The Executive Officer is directed to forward copies of the Basin Plan Amendment to the State Water Board in accordance with the requirements of section 13245 of the Water Code.
3. The Central Valley Water Board requests that the State Water Board approve the Basin Plan Amendment in accordance with the requirements of Water Code sections 13245 and 13246 and forward it to OAL and the USEPA for approval. The Central Valley Water Board specifically requests USEPA approval of all Basin Plan Amendment provisions that require USEPA approval.
4. If during its approval process the Central Valley Water Board staff, State Water Board or OAL determines that minor, non-substantive corrections to the language of the Amendment are needed for clarity or consistency, the Executive Officer may make such changes, and shall inform the Central Valley Water Board of any such changes.
5. The Central Valley Water Board hereby approves and adopts the CEQA Substitute Environmental Documentation, which was prepared in accordance with Public Resources Code section 21159, California Code of Regulations, title 14, section 15187, and California Code of Regulations, title 23, section 3777.
6. Following approval of the Basin Plan Amendment by the OAL, the Executive Officer shall file a Notice of Decision with the Secretary for Resources in accordance with Public Resources Code section 21080.5, subsection (d)(2)(E), and California Code of Regulations, title 23, section 3781.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Central Valley Region, on 9 June 2017.

Original signed by Pamela C. Creedon

PAMELA C. CREEDON, Executive Officer

Attachments

Attachment 1: Proposed Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins to establish Water Quality Objectives in the Lower San Joaquin River (Mouth of the Merced to Vernalis)

Attachment 1

PROPOSED BASIN PLAN AMENDMENT LANGUAGE

The proposed changes to the Basin Plan are as follows. Text additions to the existing Basin Plan language are underlined. Text deletions to the existing Basin Plan are in ~~strike through~~. Minor non-substantive changes to the Basin Plan Amendment language made by the Central Valley Water Board's Executive Officer on 30 October 2017 and 26 December 2017 are indicated by double underline and ~~double strike through~~.

CHAPTER 1 INTRODUCTION

Modify the Basin Plan under the heading, "3. East Valley Floor" (page I-3.00), as follows:

3. East Valley Floor

This subarea includes approximately 413 square miles of land on the east side of the LSJR that drains directly to the LSJR between the Airport Way Bridge near Vernalis and the Salt Slough confluence. The subarea is largely comprised of the land between the major east-side drainages of the Tuolumne, Stanislaus, and Merced Rivers. This subarea lies within central Stanislaus County and north-central Merced County. Numerous drainage canals, ~~including the Harding Drain~~ and natural drainages, ~~drain~~ occur in this this subarea. The subarea is comprised of the following minor subareas:

CHAPTER III WATER QUALITY OBJECTIVES

Modify the Basin Plan under the heading, "Salinity" (page III-6.02), as follows:

Electrical Conductivity and Total Dissolved Solids-- Special Cases in the Sacramento and San Joaquin River Basins Other Than the Delta

The objectives for electrical conductivity and total dissolved solids in Table III-3 apply to the water bodies specified. To the extent of any conflict with the general Chemical Constituents water quality objectives, the more stringent shall apply, with the exception of the electrical conductivity water quality objectives for Reach 83 of the San Joaquin River, which the Board has determined to be protective of all beneficial uses within Reach 83.

Modify the Basin Plan under the heading, “Salinity” (Table III-3 on page III-7.00), as follows:

Table III-3
 ELECTRICAL CONDUCTIVITY AND TOTAL DISSOLVED SOLIDS

<u>PARAMETER</u>	<u>WATER QUALITY OBJECTIVES</u>	<u>APPLICABLE WATER BODIES</u>
Electrical Conductivity (at 25°C)	Shall not exceed 230 micromhos/cm (50 percentile) or 235 micromhos/cm (90 percentile) at Knights Landing above Colusa Basin Drain; or 240 micromhos/cm (50 percentile) or 340 micromhos/cm (90 percentile) at I Street Bridge, based upon previous 10 years of record.	Sacramento River (13, 30)
	Shall not exceed 150 micromhos/cm (90 percentile) in well-mixed waters of the Feather River.	North Fork of the Feather River (33); Middle Fork of the Feather River from Little Last Chance Creek to Lake Oroville (36); Feather River from the Fish Barrier Dam at Oroville to Sacramento River (40)
	Shall not exceed 150 micromhos/cm from Friant Dam to Gravelly Ford (90 percentile).	San Joaquin River, Friant Dam to Mendota Pool (69)
	<u>Shall not exceed 1550 micromhos/cm (as a 30-day running average), except during Extended Dry Periods^{4a}, when concentrations shall not exceed 2470 micromhos/cm (as a 30-day running average) and 2200 micromhos/cm (as an annual average using at a minimum the previous four quarterly samples)</u>	<u>San Joaquin River between the Mouth of Merced River and the Airport Way Bridge near Vernalis (83)</u>
Total Dissolved Solids	Shall not exceed 125 mg/l (90 percentile)	North Fork of the American River from the source to Folsom Lake (44); Middle Fork of the American River from the source to Folsom Lake (45); South Fork of the American River from the source to Folsom Lake (48, 49); American River from Folsom Dam to Sacramento River (51)
	Shall not exceed 100 mg/l (90 percentile)	Folsom Lake (50)
	Shall not exceed 1,300,000 tons	Goose Lake (2)

CHAPTER IV IMPLEMENTATION

^{4a} See Chapter Page IV-32.00 for definition of an Extended Dry Period

CHAPTER IV IMPLEMENTATION

Modify the Basin Plan under the heading, “Control Program for Salt and Boron Discharges into the Lower San Joaquin River (LSJR)” (pages IV-32.00 through IV-32.07), as follows:

Control Program for Salt and Boron Discharges into the Lower San Joaquin River (LSJR)

The goal of the salt and boron control program is to achieve compliance with salt and boron water quality objectives without restricting the ability of dischargers to export salt out of the San Joaquin River basin.

For the purpose of this control program, nonpoint source land uses include all irrigated lands and nonpoint source discharges are discharges from irrigated lands.

Irrigated lands are lands where water is applied for producing crops and, for the purpose of this control program, includes, but is not limited to, land planted to row, field and tree crops as well as commercial nurseries, nursery stock production, managed wetlands, and rice production.

This control program is phased to allow for implementation of existing water quality objectives, while providing the framework and timeline for implementing future water quality objectives.

The salt and boron control program establishes ~~salt load limits~~ 1) a method for determining the maximum allowable salt loading to the LSJR from discharges to achieve compliance with salinity water quality objectives (WQOs) at the Airport Way Bridge near Vernalis with salt and boron water quality objectives for the LSJR and 2) WQOs and an implementation program for salinity between the mouth of the Merced River and the Airport Way Bridge. ~~The Regional Water Board establishes a method for determining the maximum allowable salt loading to the LSJR. Load allocations are established for nonpoint sources and waste load allocations are established for point sources.~~

Salt Loading and the Vernalis Salinity Control Program

Load allocations to specific dischargers or groups of dischargers are proportionate to the area of nonpoint source land use contributing to the discharge. Control actions that result in salt load reductions will be effective in the control of boron.

Load allocations are established for nonpoint sources and waste load allocations are established for point sources.

~~The salt and boron control program establishes timelines for: 1) developing and adopting salt and boron water quality objectives for the San Joaquin River upstream of the Airport Way Bridges near Vernalis; 2) a control program to achieve these objectives; and 3) developing and adopting a groundwater control program.~~

Per the amendments to the Basin Plan for control of salt and boron discharges into the ~~lower San Joaquin River (LSJR)~~ basin, approved by the Regional Water Board in Resolution No. 88-195, Resolution No. 2004-0108, and Resolution No.

R5-2017-0062 and incorporated herein, the Regional Water Board will take the following actions, as necessary and appropriate, to implement this control program:

1. The Regional Water Board shall use waivers of waste discharge requirements or waste discharge requirements to apportion load allocations to each of the following seven geographic subareas that comprise the LSJR:
 - a. San Joaquin River Upstream of Salt Slough
 - b. Grassland
 - c. Northwest Side
 - d. East Valley Floor
 - e. Merced River
 - f. Tuolumne River
 - g. Stanislaus River

These subareas are described in Chapter 1 and in more detail in Appendix 41.

2. Dischargers of irrigation return flows from irrigated lands are in compliance with this control program if they meet any of the following conditions:
 - a. Cease discharge to surface water
 - b. Discharge does not exceed 315 μ S/cm electrical conductivity (based on a 30-day running average)
 - c. Operate under waste discharge requirements that include effluent limits for salt
 - d. Operate under a waiver of waste discharge requirements for salt and boron discharges to the LSJR
3. The Regional Water Board will adopt ~~a~~ wavers of waste discharge requirements or waste discharge requirements for salinity management, or incorporate into ~~an~~ existing agricultural wavers or waste discharge requirements, the conditions required to participate in a Regional Water Board approved real-time management program. Load allocations for nonpoint source dischargers participating in a Regional Water Board approved real-time management program are described in Table IV-4.4. Additional waiver conditions or waste discharge requirements will include use of Regional Water Board approved methods to measure and report flow and electrical conductivity. Participation in a Regional Water Board approved real-time management program and attainment of salinity water quality objectives at the Airport Way Bridge near Vernalis will constitute compliance with this control program.
4. The Regional Water Board will adopt waste discharge requirements with fixed monthly base load allocations specified as effluent limits for nonpoint source discharges that do not meet conditions specified in ~~a~~ wavers of waste discharge requirements or waste discharge requirements for salinity management. Entities operating under ~~WDRs~~ waste discharge requirements, or that will be required to operate under ~~WDRs~~ waste discharge requirements in order to comply with other programs, may participate in a Regional Water Board approved real-time management program in lieu of additional ~~WDRs~~ waste discharge requirements for salinity if they meet the conditions specified in the waiver of ~~WDRs~~ waste discharge requirements for salinity management, as described in item 3.

5. Fixed monthly base load allocations and the method used to calculate real-time load allocations are specified in Table IV-4.4.
6. Waste Load Allocations are established for point sources of salt in the basin. NPDES permitted discharges shall not exceed the salinity water quality objectives established for the LSJR at the Airport Way Bridge near Vernalis unless the discharger is a member of a Regional Water Board-approved real time management program or a pollutant trading program consistent with the Control Program for Salt and Boron Discharges into the LSJR. The Regional Water Board will revise NPDES permits to incorporate ~~TMDL allocations~~ the requirements of the Control Program when the permits are renewed or reopened at the discretion of the Regional Water Board.
7. Supply water credits are established for irrigators that receive supply water from the Delta Mendota Canal (DMC) or the LSJR between the confluence of the Merced River and the Airport Way Bridge near Vernalis as described in Table IV-4.4.
8. Supply water Load Allocations are established for salts in irrigation water imported to the LSJR Watershed from the Sacramento/San Joaquin River Delta as described in Table IV-4.4.

Per Resolution No. R5-2014-0150, the Regional Water Board will attempt to enter into adopted a revised Management Agency Agreement (MAA) with the U.S. Bureau of Reclamation, replacing a 2008 MAA to address salt imports from the DMC to the LSJR watershed. The MAA shall include provisions requiring the U.S. Bureau of Reclamation to:

- a. Meet DMC load allocations; or
- b. Provide mitigation and/or dilution flows to create additional assimilative capacity for salt in the LSJR equivalent to DMC salt loads in excess of their allocation.

The Regional Water Board shall request a report of waste discharge from the U.S. Bureau of Reclamation to address meet DMC discharges load allocations if a MAA is not established by 28 July 2008 meeting the provisions identified above does not remain in place.

9. The Regional Water Board will review and, if necessary, update the load allocations and/or waste load allocations by 28 July 2012 and every 6 years thereafter. Any changes to waste load allocations and/or load allocations can be made through subsequent amendment to this control program. Changes to load allocations will be implemented through revisions of the applicable waste discharge requirements or waivers of waste discharge requirements. Changes to waste load allocations will be implemented through revisions of the applicable NPDES permits.
10. The Regional Water Board encourages real-time water quality management and pollutant trading of waste load allocations, load allocations, and supply water allocations as a means for attaining salt and boron water quality objectives while maximizing the export of salts out of the LSJR watershed. This control program shall in no way preclude basin-

wide stakeholder efforts to attain salinity water quality objectives in the LSJR so long as such efforts are consistent with the control program.

11. The established waste load allocations, load allocations, and supply water allocations represent a maximum allowable level. The Regional Water Board may take other actions or require additional reductions in salt and boron loading to protect beneficial uses.
12. Salt loads in water discharged into the LSJR or its tributaries for the express purpose of providing dilution flow are not subject to load limits described in this control program if the discharge:
 - a. complies with salinity water quality objectives for the LSJR at the Airport Way Bridge near Vernalis;
 - b. is not a discharge from irrigated lands; and
 - c. is not provided as a water supply to be consumptively used upstream of the San Joaquin River at the Airport Way Bridge near Vernalis.
13. Entities providing dilution flows, as described in item 12, will obtain an allocation equal to the salt load assimilative capacity provided by this flow. This dilution flow allocation can be used to: 1) offset salt loads discharged by this entity in excess of any allocation or; 2) trade, as described in item 10. The additional dilution flow allocation provided by dilution flows will be calculated as described in Table IV-4.4.
- ~~14. It is anticipated that salinity and boron water quality objectives for the San Joaquin River from Mendota Dam to the Airport Way Bridge near Vernalis will be developed and considered for adoption in the second phase of this TMDL, according to time schedule in Table IV 4.1.~~

Table IV 4.1: Schedule for developing water quality objectives for salt and boron in the LSJR from Mendota Dam to the Airport Way Bridge near Vernalis

Milestone	Date
Staff report on criteria needed to protect beneficial uses	October 2004
Staff report and Regional Water Board workshop on water quality objectives that can reasonably be achieved	June 2005
Draft second phase TMDL with water quality objectives and program of implementation for LSJR from Mendota Dam to Airport Way Bridge near Vernalis	September 2005
Board Hearing for consideration of adoption	June 2006

Compliance with Water Quality Objectives Upstream of the Airport Way Bridge near Vernalis

- ~~15. Salinity and boron water quality objectives for the San Joaquin River from Mendota Dam to the Airport Way Bridge near Vernalis will be implemented using the implementation framework described in this ‘Control Program for Salt and Boron Discharges into the Lower San Joaquin River’ or other implementation mechanisms, as appropriate.~~
1. Per the amendments to the Basin Plan for control of salt and boron discharges into the LSJR basin between the Airport Way Bridge near Vernalis and the mouth of the Merced River, approved by the Regional Water Board in Resolution No. 88-195 and Resolution No. R5-2017-0062, and incorporated herein, the following actions will be implemented:
- a. The Regional Water Board will determine nonpoint source discharge compliance with electrical conductivity and boron WQOs using data collected at Crows Landing and Maze Road. Daily average electrical conductivity data will be utilized to calculate the 30-day running averages for electrical conductivity compliance; weekly boron concentration data will be utilized to calculate the monthly average and maximum boron concentrations for compliance.
 - b. The Regional Water Board has established a non-regulatory performance goal for the LSJR that represents a potentially-achievable 30-day running average that is lower than the WQO. As the Salt and Boron Control Program is implemented, the Regional Water Board will continue to evaluate whether this performance goal is achievable during the irrigation seasons of Wet, Above Normal, Below Normal, and Dry Water Years, as specified in Table IV-4.1.

Table IV-4.1: Electrical Conductivity Performance Goal Periods (except during Extended Dry Periods)

<u>WY Type</u>	<u>Irrigation Season</u>		<u>Non-irrigation Season</u>
	<u>Mar-Jun</u>	<u>Jul-Sept</u>	<u>Oct-Feb</u>
<u>Wet</u>	<u>1350 µS/cm</u>		
<u>Above Normal</u>	<u>1350 µS/cm</u>		
<u>Below Normal</u>	<u>1350 µS/cm</u>		
<u>Dry</u>	<u>1350 µS/cm</u>		
<u>Critical</u>			

- c. Attainment of the electrical conductivity Performance Goal will be evaluated using data collected at Crows Landing and Maze Road.
- d. Ten years after Regional Water Board’s adoption of the Basin Plan Amendment, and based on the evaluations described in the subparagraphs above, the Regional Water Board will consider reopening the Basin Plan to potentially revise the LSJR electrical conductivity WQOs.
- e. During an Extended Dry Period, the electrical conductivity WQO will be 2470 µS/cm (30-day running average) to protect the AGR beneficial use. In addition, during an Extended Dry Period, the electrical conductivity WQO for protection of the potential MUN beneficial use shall be 2200 µS/cm as the average of the previous four (4) consecutive quarterly samples at a minimum.

An Extended Dry Period is based in part on the water year type numeric indicator identified in the State Water Board's San Joaquin Valley "60-20-20" Water Year Hydrologic Classification² as follows:

- Wet – 5
- Above Normal – 4
- Below Normal – 3
- Dry – 2
- Critically Dry – 1

The indicator values will be used as follows to determine when an Extended Dry Period is in effect:

- An Extended Dry Period shall begin when the sum of the current year's 60-20-20 indicator value and the previous two year's 60-20-20 indicator values total six (6) or less.
- An Extended Dry Period shall be deemed to exist for one water year (12 months) following a period with an indicator value total of six (6) or less.

2. In addition to meeting the requirements of the Vernalis Salinity Control Program, considerations for NPDES permitted discharges to the LSJR are as follows:

- a. When evaluating whether an NPDES point source discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion of the EC WQOs for the Lower San Joaquin River, the Regional Water Board should consider available dilution of the effluent in the receiving water, and may consider dilution as determined down to the first downstream diversion that provides AGR irrigation supply or MUN beneficial use in establishing mixing zones for those beneficial uses.
- b. If an NPDES point source discharge is deemed to have reasonable potential to cause or contribute to an instream excursion above the EC WQOs, water quality-based effluent limits shall be required. For publicly-owned treatment works (POTWs), the water quality-based effluent limitations may be established in terms of EC concentration or total dissolved solids (TDS) loading to account for site-specific consideration of dry weather versus wet weather conditions. However, concentration and loading limits shall not be applied at the same time. When establishing water quality-based effluent limitations for POTWs in terms of TDS loading, an EC to TDS ratio of 0.64 shall be used to convert EC concentrations to TDS concentrations, unless a discharger-specific ratio can be demonstrated. The design average dry weather flow of the POTW shall be used to calculate the TDS loading limits.
- c. For NPDES point source discharges, if water quality-based effluent limits are required:
 - i. effluent limitations for protection of AGR beneficial uses shall be expressed as monthly averages instead of thirty-day running averages;
 - ii. effluent limitations for protection of MUN beneficial uses should be expressed as an annual average.

² The method for determining the San Joaquin Valley Water Year Hydrologic Classifications is defined in the State Water Board Revised Water Right Decision 1641, March 2000, Figure 2, page 189. This method uses the best available estimate of the 60-20-20 San Joaquin Valley water year hydrologic classification at the 75% exceedance level using the best available data published in the California Department of Water Resources' ongoing Bulletin 120 series.

- d. The Regional Water Board will incorporate the requirements of the EC water quality objectives for the Lower San Joaquin River when the NPDES permits are renewed or reopened at the discretion of the Regional Water Board.

~~16. A groundwater control program for sources of salt discharges into the LSJR will be developed by June 2020 if water quality objectives in the LSJR are not being attained.~~

Implementation Priority and Schedules

Salt Loading and the Vernalis Water Quality Objectives

~~17.~~The Regional Water Board will focus control actions on the most significant sources of salt and boron discharges to the LSJR. Priority for implementation of load allocations to control salt and boron discharges will be given to subareas with the greatest unit area salt loading (tons per acre per year) to the LSJR (Table IV-4.2). The priorities established in Table IV-4.2 will be reviewed by 28 July 2012 and every 6 years thereafter.

Table IV-4.2: Priorities for implementing load allocations¹

Subarea	Priority
San Joaquin River Upstream of Salt Slough	Low
Grassland	High
Northwest Side	High
East Valley Floor	Low
Merced River	Low
Tuolumne River	Medium
Stanislaus River	Low
Delta Mendota Canal ²	High
¹ Priorities based on the unit area salt load from each subarea and mass loading from the DMC ² Delta Mendota Canal is not a subarea	

Time Schedules for Implementation

481. The Regional Water Board will incorporate base load allocations into waste discharge requirements and real-time load allocations into conditions of waiver of waste discharge requirements by 28 July 2008. Dischargers regulated under a waiver of waste discharge requirements for dischargers participating in a real-time management program for the control of salt and boron in the LSJR shall comply with the waiver conditions within 1 year of the date of adoption of the waiver.

492. Existing NPDES point source dischargers are low priority and subject to the compliance schedules for low priority discharges in Table IV-4.3. New point source discharges that begin discharging after the date of the adoption of this control program must meet the requirements of the Control Program for Salt and Boron Discharges into the ~~Lower San Joaquin River~~ LSJR upon the commencement of the discharge.

Table IV-4.3: Schedule for Compliance with the load allocations for salt and boron discharges into the LSJR

Priority	Year to implement ¹	
	Wet through Dry	Critical Year
High	8	12
Medium	12	16
Low	16	20
¹ number of years from the effective date [28 July 2006] of this control program		

463. A groundwater control program for sources of salt discharges into the LSJR will be developed by June 2020 if water quality objectives in the LSJR are not being attained.

Water Quality Objectives Upstream of the Airport Way Bridge near Vernalis

1. The electrical conductivity water quality objectives for the San Joaquin River between its confluence with the Merced River and the Airport Way Bridge near Vernalis will be implemented by 1 January 2020.

Table IV-4.4 Summary of Allocations and Credits

BASE SALT LOAD ALLOCATIONS													
Base Load Allocations (thousand tons of salt)													
Year-type ¹	Month / Period												
	Jan	Feb	Mar	Apr 1 to Apr. 14	Pulse Period ²	May 16 to May 31	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wet	41	84	116	23	72	31	0	0	5	45	98	44	36
Abv. Norm	44	84	64	26	71	14	0	0	0	44	58	35	32
Blw. Norm	22	23	31	11	45	8	0	0	0	38	41	34	30
Dry	28	39	25	5	25	1	0	0	0	25	31	27	28
Critical	18	15	11	0	0	0	0	0	0	19	30	26	23

REAL-TIME SALT LOAD ALLOCATIONS
<p>Nonpoint source dischargers operating under waiver of waste discharge requirements <u>or waste discharge requirements</u> must participate in a Regional Water Board approved real-time management program and meet real-time load allocations. Loading capacity and real-time load allocations are calculated for a monthly time step. The following method is used to calculate real-time load allocations. Flows are expressed in thousand acre-feet per month and loads are expressed in thousand tons per month.</p>
<p>Loading Capacity (LC) in thousand tons per month is calculated by multiplying flow in thousand acre-ft per month by the salinity water quality objective in $\mu\text{S/cm}$, a unit conversion factor of 0.8293, and a coefficient of 0.85 to provide a 15 percent margin of safety to account for any uncertainty.</p> <p>LC = Q * WQO * 0.8293 * 0.85 where: LC = total loading capacity in thousand tons per month Q = flow in the San Joaquin River at the Airport way Bridge near Vernalis in thousand acre-feet per month WQO = salinity water quality objective for the LSJR at Airport Way Bridge near Vernalis in $\mu\text{S/cm}$</p>
<p>The sum of the real-time Load Allocations (LA) for nonpoint source dischargers are equal to a portion of the LSJR's total Loading Capacity (LC) as described by the following equation:</p> <p>LA = LC - L_{BG} - L_{CUA} - L_{GW} - ΣWLA Where: LA = sum of the real-time Load Allocations for nonpoint source dischargers L_{BG} = loading from background sources L_{CUA} = consumptive use allowance L_{GW} = loading from groundwater ΣWLA = sum of the waste load allocations for all point sources</p>
<p>Background loading in thousand tons is calculated using the following equation: L_{BG} = Q * 85 $\mu\text{S/cm}$ * 0.8293</p>

Table IV-4.4 Summary of Allocations and Credits (continued)

Consumptive use allowance loading is calculated with the following equation: $L_{CUA} = Q * 230 \mu\text{S/cm} * 0.8293$																								
Monthly groundwater Loading (L_{GW}) (in thousand tons)																								
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec													
15	15	30	32	36	53	46	27	16	13	14	15													
Waste load allocations for individual point sources are calculated using the following equation: $WLA = Q_{PS} * WQO * 0.8293$ <p>where: WLA = waste load allocation in thousand tons per month Q_{PS} = effluent flow to surface waters from the NPDES permitted point source discharger (in thousand acre-feet per month) WQO = salinity water quality objective for the LSJR at Airport Way Bridge near Vernalis in $\mu\text{S/cm}$</p>																								
APPORTIONING OF SALT LOAD ALLOCATION																								
An individual discharger or group of dischargers can calculate their load allocation by multiplying the nonpoint source acreage drained by the load allocation per acre. $LA \text{ per acre} = \frac{LA}{\text{nonpoint source acreage}} \text{ Total}$ <p>As of 1 August 2003, the total nonpoint source acreage of the LSJR Basin is 1.21-million acres. Nonpoint source land uses include all irrigated agricultural lands (including managed wetlands). Agricultural land includes all areas designated as agricultural or semi-agricultural land uses in the most recent land use surveys published by the California Department of Water Resources. California Department of Water Resources land use surveys are prepared and published on a county-by-county basis. Multiple counties or portions of counties may overlay a given subarea. The land use surveys must be used in combination with a Geographic Information System to quantify the agricultural land use in each subarea. Nonpoint source land areas will be updated every 6 years though an amendment to the Basin Plan if updated California Department of Water Resources land use surveys have been published. The following land use surveys (or portions thereof) are used to quantify agricultural land use in the LSJR watershed.</p>																								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px 5px;">County</th> <th style="padding: 2px 5px;">Year of most recent land use survey¹</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px 5px;">Merced</td> <td style="padding: 2px 5px;">1995</td> </tr> <tr> <td style="padding: 2px 5px;">Madera</td> <td style="padding: 2px 5px;">1995</td> </tr> <tr> <td style="padding: 2px 5px;">San Joaquin</td> <td style="padding: 2px 5px;">1996</td> </tr> <tr> <td style="padding: 2px 5px;">Fresno</td> <td style="padding: 2px 5px;">1994</td> </tr> <tr> <td style="padding: 2px 5px;">Stanislaus</td> <td style="padding: 2px 5px;">1996</td> </tr> </tbody> </table> <p>¹-as of 1 August 2003</p>													County	Year of most recent land use survey ¹	Merced	1995	Madera	1995	San Joaquin	1996	Fresno	1994	Stanislaus	1996
County	Year of most recent land use survey ¹																							
Merced	1995																							
Madera	1995																							
San Joaquin	1996																							
Fresno	1994																							
Stanislaus	1996																							
Acreage of managed wetlands is based on the boundaries of the federal, private and state owned wetlands that comprise the Grassland Ecological Area in Merced County. Agricultural lands (as designated in DWR land uses surveys) within the Grassland Ecological Area are counted as <u>an</u> agricultural land use and not as managed wetlands. All other lands within the Grassland Ecological Area are considered to be managed wetlands.																								
CONSUMPTIVE USE ALLOWANCE																								
In addition to the base load allocations or real-time load allocations shown above, a consumptive use allowance (L_{CUA}) is provided to each discharger: $L_{CUA} \text{ in tons per month} = \text{discharge volume in thousand acre-feet per month} * 230 \mu\text{S/cm} * 0.8293$																								

Table IV-4.4 Summary of Allocations and Credits (continued)

SUPPLY WATER CREDITS													
A supply water credit is provided to irrigators in the Grassland and Northwest Side Subareas that receive water from the DMC. This DMC supply water credit is equal to 50 percent of the added salt load, in excess of background, delivered to Grassland and Northwest Side subareas. The following fixed DMC supply water credits apply to dischargers operating under base load allocations:													
DMC supply water credits (thousand tons)													
Year-type ¹	Month / Period												
	Jan	Feb	Mar	Apr 1 to Apr. 14	Pulse Period ²	May 16 to May 31	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NORTHWEST SIDE SUBAREA													
Wet	0.0	0.2	0.0	0.7	1.4	0.7	2.0	2.6	2.6	1.0	0.9	0.6	0.0
Abv. Norm	0.0	0.0	0.0	0.8	1.9	1.0	2.3	2.3	2.6	1.2	0.8	0.3	0.0
Blw. Norm	0.0	0.0	0.0	1.0	2.6	1.5	3.4	4.2	3.3	2.5	1.9	0.8	0.0
Dry	0.0	0.0	0.0	0.1	0.3	0.2	0.3	0.5	0.5	0.2	0.2	0.0	0.0
Critical	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRASSLAND SUBAREA													
Wet	2.1	5.9	13.9	7.8	17.3	8.8	22.6	20.8	23.2	17.2	16.0	10.4	3.7
Abv. Norm	1.2	4.8	9.4	10.4	24.7	13.6	27.6	20.3	24.5	23.9	16.6	7.5	2.6
Blw. Norm	1.4	5.7	13.8	12.5	29.5	15.9	32.6	29.2	29.8	32.9	25.3	12.8	4.5
Dry	2.2	6.7	15.9	11.1	23.4	11.2	22.9	23.1	24.0	28.0	23.7	13.0	5.3
Critical	3.3	8.9	17.2	10.2	24.1	13.3	33.3	32.5	31.8	27.5	28.7	13.6	5.9
The following method is used to calculate real-time DMC supply water credits in thousand tons per month and applies to dischargers operating under real-time load allocations.													
Real-time CVP Supply Water Credit = $Q_{CVP} * (C_{CVP} - C_{BG}) * 0.8293 * 0.5$													
Where:													
Q_{CVP} = volume of water delivered from CVP in thousand acre-feet per month ³													
C_{CVP} = electrical conductivity of water delivered from CVP in $\mu\text{S}/\text{cm}^3$													
C_{BG} = background electrical conductivity of 85 $\mu\text{S}/\text{cm}$													
For irrigators in the Northwest Side Subarea an additional supply water credit is provided to account for salts contained in supply water diverted directly from the LSJR (LSJR diversion water credit). The LSJR diversion credit is equal to 50 percent of the added salt load (in excess of background) in supply water diverted from the San Joaquin River between the confluence of the Merced River and the Airport Way Bridge near Vernalis. The following fixed LSJR supply water credits apply to dischargers operating under base load allocations:													
LSJR supply water credits (thousand tons)													
Year-type ¹	Month / Period												
	Jan	Feb	Mar	Apr 1 to Apr. 14	Pulse Period ²	May 16 to May 31	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wet	0.0	0.6	9.2	6.2	9.4	11.0	17.2	23.5	20.5	9.5	1.3	0	0
Abv. Norm	0.0	0.8	5.0	7.4	12.3	11.2	21.8	24.9	20.3	10.7	1.5	0	0
Blw. Norm	0.0	0.6	5.5	7.0	14.4	13.4	27.3	33.1	24.9	13.9	2.4	0	0
Dry	0.0	0.7	5.3	6.4	11.1	10.7	27.5	34.0	20.3	11.4	2.4	0	0
Critical	0.0	0.8	4.5	5.1	14.8	10.6	25.2	28.5	22.3	8.7	2.5	0	0

Table IV-4.4 Summary of Allocations and Credits (continued)

<p>The following method is used to calculate Real-time LSJR supply water credits in thousand tons per month and applies to dischargers operating under real-time load allocations.</p> <p>Real-time LSJR Supply Water Credit = $Q_{LSJR\ DIV} * (C_{LSJR\ DIV} - C_{BG}) * 0.8293 * 0.5$</p> <p>Where: $Q_{LSJR\ DIV}$ = volume of water diverted from LSJR between the Merced River Confluence and the Airport Way Bridge near Vernalis in thousand acre-feet per month⁴ $C_{LSJR\ DIV}$ = electrical conductivity of water diverted from the LSJR in $\mu\text{S}/\text{cm}^4$ C_{BG} = background electrical conductivity of 85 $\mu\text{S}/\text{cm}$</p>
<p>SUPPLY WATER ALLOCATIONS</p>
<p>The U.S. Bureau of Reclamation DMC load allocation (LA_{DMC}) is equal to the volume of water delivered from the DMC (Q_{DMC}) to the Grassland and Northwest side Subareas at a background Sierra Nevada quality of 85 $\mu\text{S}/\text{cm}$.</p> <p>$LA_{DMC} = Q_{DMC} * 85 \mu\text{S}/\text{cm} * 0.8293$</p>
<p>DILUTION FLOW ALLOCATIONS</p>
<p>Entities providing dilution flows obtain an allocation equal to the salt load assimilative capacity provided by this flow, calculated as follows:</p> <p>$A_{dil} = Q_{dil} * (C_{dil} - WQO) * 0.8293$</p> <p>Where: A_{dil} = dilution flow allocation in thousand tons of salt per month Q_{dil} = dilution flow volume in thousand acre-feet per month C_{dil} = dilution flow electrical conductivity in $\mu\text{S}/\text{cm}$ WQO = salinity water quality objective for the LSJR at Airport Way Bridge near Vernalis in $\mu\text{S}/\text{cm}$</p>
<p>¹ The water year classification will be established using the best available estimate of the 60-20-20 San Joaquin Valley water year hydrologic classification (as defined in Footnote 17 for Table 3 in the State Water Resources Control Board's <i>Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary</i>, May 1995 December 2006) at the 75% exceedance level using data from the Department of Water Resources Bulletin 120 series. The previous water year's classification will apply until an estimate is made of the current water year.</p> <p>² Pulse period runs from 4/15-5/15. Period and distribution of base load allocation and supply water credits between April 1 and May 31 may change based on scheduling of pulse flow as specified in State Water Board <u>Revised</u> Water Rights Decision 1641. Total base load allocation for April 1 through May 31 does not change but will be redistributed based on any changes in the timing of the pulse period</p> <p>³ Methods used to measure and report the volume and electrical conductivity of water delivered from the CVP to irrigated lands must be approved by the Regional Water Board as part of <u>the waste discharge requirements or waivers of waste discharge requirements</u> conditions required to participate in a Regional Water Board approved real-time management program</p> <p>⁴ Methods used to measure and report the volume and electrical conductivity of water diverted from the SJR between the confluence of the Merced and the Airport Way Bridge near Vernalis must be approved by the Regional Water Board as part of the waiver conditions required to participate in a Regional Water Board approved real-time management program</p>

CHAPTER V SURVEILLANCE AND MONITORING

Modify the Basin Plan by adding a new heading and text to the bottom of page V-5.00, as follows:

Salt and Boron Discharges into the Lower San Joaquin River

The amendments to the Basin Plan that established boron and electrical conductivity WQOs for discharges into the lower San Joaquin River (LSJR) between the mouth of the Merced River and the Airport Way Bridge near Vernalis were approved by the Regional Water Board in Resolution No. 88-195 and Resolution No. R5-2017-0062, incorporated herein. The Regional Water Board will review data collected at Crows Landing and Maze Road to determine compliance with the LSJR electrical conductivity WQOs and attainment of the Performance Goal. Daily average electrical conductivity measurement calculations will be utilized to calculate the 30-day running average for WQO compliance and Performance Goal attainment. The Regional Water Board will review boron concentration data collected weekly at Crows Landing to determine if the monthly average or maximum boron WQOs are being exceeded. Should the boron objectives be exceeded at Crows Landing, boron analyses should be expanded to weekly sampling at Maze Road and the Airport Way Bridge near Vernalis. To evaluate changing loads into the system that may result from changing management activities and/or changes in hydrology, continuous flow monitoring is recommended in the river at Crows Landing, Maze Road and the Airport Way Bridge near Vernalis.