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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Mr. Thomas Howard
Acting Executive Director
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

Dear Mr. Howard:

Thank you for submitting the total maximum daily loads (TMDLs) to address salts and boron in lower San Joaquin River. The submission was dated August 7, 2006 and supplemental information was received on December 8, 2006. The State of California adopted TMDLs to address salts and boron in the San Joaquin River (Merced River to South Delta Boundary), as identified on the State's 2002 Clean Water Act Section 303(d) list.

Based on EPA's review, I have concluded the TMDLs adequately address the pollutants of concern, and will, upon implementation, result in attainment of applicable water quality standards. The TMDLs include allocations as needed, take into consideration seasonal variations and critical conditions, and provide an adequate margin of safety. The State provided adequate opportunities for the public to review and comment on the TMDLs. All required elements are adequately addressed; therefore, the TMDLs are hereby approved pursuant to Clean Water Act Section 303(d)(2).

The State's submittal also contains a detailed plan for implementing the TMDLs. Current federal regulations do not define TMDLs as containing implementation plans; therefore, EPA is not taking action on the implementation plan provided with the TMDLs. However, EPA generally concurs with the State's proposed implementation approaches. Please note, EPA is specifically not taking action on the time schedules for implementation. If the Regional Board contemplates including schedules of compliance in NPDES permits, it can only do so if they are consistent with a compliance schedule-authorizing provision that has been submitted to EPA under CWA 303(c) and approved by EPA.

The enclosed review discusses the basis for this approval decision in greater detail. We appreciate the State and Regional Boards' work to complete and adopt the TMDLs and look forward to our continuing partnership in TMDL development. If you have questions concerning this approval, please call me at (415) 972-3572 or Debra Denton at (916) 341-5520.

Sincerely yours,

Alexis Strauss, Director 8 Feb. 2007
Water Division

Enclosure
cc: Pamela Creedon, Central Valley RWQCB

TMDL Checklist

Document name: TMDLs for Salt and Boron in Lower San Joaquin River at the Airport Way Bridge near Vernalis
State: California
Waterbody: Lower San Joaquin River from the Stanislaus River Confluence to the Airport Way Bridge near Vernalis (Delta Boundary)
Pollutant(s): Salt and Boron
Date of State Submission: August 7, 2006
Date of Supplemental info: December 8, 2006
EPA Reviewer: Debra Denton

Review Criteria	Comments
1. Submittal Letter: Letter indicates final TMDL(s) for specific water(s)/pollutant(s) were adopted by state and submitted to EPA for approval under 303(d).	Submittal letter dated August 7, 2006. On September 10, 2004, the Central Valley Regional Water Quality Control Board (RWQCB) adopted Resolution No. R5-2005-0108 establishing TMDLs for salts and boron in the lower San Joaquin River. The State Board approved these TMDLs on November 16, 2005 via Resolution No. 2005-0087. The State Office of Administrative Law approved the TMDLs on July 21, 2006 (File no. 06-0705-02S). Supplemental information regarding the existing NPDES permits in the watershed was provided on December 8, 2006. The submittal addresses one segment of the lower San Joaquin River (near Vernalis) that was identified on the State's 2002 CWA Section 303(d) list for electrical conductivity and boron. The submittal acknowledges that electrical conductivity is the measurement for dissolved salts, the corresponding pollutant of concern. Electrical conductivity (salts) serves as surrogate for boron. The submittal includied the TMDL staff report and the Basin Plan amendment both dated September 10, 2004.
2. Water Quality Standards Attainment: TMDL(s) and associated allocations are set at levels adequate to result in attainment of applicable standards.	(TMDL Staff report, Table 2-2) The numeric targets are the existing numeric water quality objectives for salinity and boron in the lower San Joaquin River (SJR) near Vernalis. The SJR near Vernalis is the most upstream location where salinity water quality objectives have been established. The salinity and boron objectives include numeric water quality objectives for the irrigation season (April 1 to August 31) and non-irrigation season (September 1-March 31).
3. Numeric Target(s): Submission describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. Numeric water quality target(s) for TMDL identified, and adequate basis for target(s) as interpretation of water quality standards is	(TMDL report, Table 2-4) The numeric targets are the Central Valley RWQCB Basin Plan's existing water quality objectives for salt and boron for SJR near Vernalis: Salinity (EC) irrigation season = 700 uS/cm and non-

Review Criteria	Comments
provided.	irrigation season = 1,000 uS/cm (expressed as a maximum 30 day running average) Boron irrigation season = 0.80 mg/L and non-irrigation season = 1.0 mg/L (expressed as a monthly mean).
4. Source Analysis: Point, non-point, and background sources of pollutants of concern are described, including the magnitude and location of sources. Submittal demonstrates all sources have been considered.	The source analysis for this TMDL is comprised of four major components: 1) a description of the mass emissions from the lower San Joaquin River as measured at the Airport Way Bridge near Vernalis, 2) the geographic analysis that apportions the lower San Joaquin River watershed into component geographic subareas (n = 7), 3) a discussion of categories of point and nonpoint pollutant sources in the watershed for each subarea, and 4) a summary and evaluation of the salt and boron loads that are attributable to the nonpoint sources which comprise the majority of controllable salt loads to the lower San Joaquin River. Based on the discussion of land uses and pollutant loads in the watershed, it appears that all significant sources of salt and boron have been considered and, as necessary, accounted for in the TMDLs. The TMDL report sufficiently described and identified all significant sources of salt and boron for each sub-area and the waterbody impaired. (TMDL report, pages 1-25 to 1-51)
5 (a) TMDL—Submittal identifies the total allowable load, which is set equal to or less than the loading capacity. TMDL is expressed in terms of mass-based, concentration-based or other equivalent approaches that are consistent with federal requirements. If TMDL is expressed with seasonal aspects, please describe. 5. (b) Allocations—Submittal identifies appropriate wasteload allocations for all point sources and load allocations for all non-point sources. If point sources are present, submittal identifies existing NPDES permits by name and number. If no point sources are present, wasteload allocations are zero. If no non-point sources are present, then load allocations are zero. Allocations are expressed in terms of mass-based, concentration-based or other equivalent approaches; the submittal explains why it is reasonable and appropriate to express the TMDL in those terms.	(TMDL report, pages 1-54 to 1-84; BPA, Table IV-4.4) (a) The loading capacity is calculated by multiplying flow in thousand acre feet per month by the salinity water quality objective in uS/cm, and a unit conversion factor of 0.8293. The TMDL or loading capacity is expressed in terms of mass per time (thousand tons per month) and is appropriate for the pollutants of salt and boron. The TMDLs also accounts for seasonal considerations and it is consistent with the water quality objectives and protection of the agricultural beneficial uses. (b) Load allocations are established for nonpoint sources which comprise the vast majority of both salt and boron loads to the river. Load allocations are set by sub-area in proportion to sub-area sizes. The submittal describes that control actions that result in reducing salt load allocations will be also be effective in reducing loads of boron. Waivers of waste discharge requirements or waste discharge requirements will be used to implement load allocations in each of the seven geographic sub-areas. The Central Valley RWQCB will attempt to enter into a Management Agency Agreement with the US Bureau of Reclamation to address all imports from the

	Delta Mendota Canal to the lower San Joaquin River watershed. A summary of allocations as expressed in tons of salt is delineated in the Basin Plan Amendment, Table IV-4.4. This table also demonstrates the appropriate calculations for those participating in real-time load allocations and the calculation for appropriating salt load allocation. Waste load allocations are established for point sources. Point source loads are relatively minor. Waste load allocations are established for point sources of salt in the basin. The dischargers currently subject to these allocations were clarified in an email dated December 8, 2006 and include: The City of Modesto Water Quality Control Facility (NPDES No. CA0079103, WDR Order No. 5-01-120) and the City of Turlock Water Quality Control Facility (NPDES No. CA0078948, WDR Order No. 5-01-122). These two facilities discharge to surface water during some parts of the year. NPDES permitted discharges will not exceed the salinity water quality objectives established for the lower San Joaquin River at the Airport Way Bridge near Vernalis. The salt wasteload and load allocations appropriately serve as the wasteload and load allocations for boron. EPA concludes these TMDLs include waste load and load allocations that are consistent with the provisions of CWA and federal regulations.
6. Link Between Numeric Target(s) and Pollutant(s) of Concern: This submittal describes relationship between numeric target(s) and identified pollutant sources. For each pollutant, describes analytical basis for conclusion that sum of wasteload allocations, load allocations, and margin of safety does not exceed the loading capacity of the receiving water(s).	(TMDL report, pages 1-84 to 1-88) The submittal adequately describes the relationship between the numeric targets, pollutant sources and the total assimilative capacity (loading capacity) of the waterbody. For these TMDLs the existing water quality objectives for salinity and boron are used as numeric targets, therefore an analytical link between the numeric targets and protection of designated beneficial uses of the lower San Joaquin River has already been established. The linkage analysis for these TMDLs is intended to demonstrate the waste load allocations and load allocations will result in attainment of the water quality objectives. For the linkage analysis, output from the hydrologic DWRSIM model is used to calculate the assimilative capacity of the lower San Joaquin River at the Airport Way Bridge near Vernalis over the same 73-year period of record used to develop the design flows. The total expected load includes waste load allocations, load allocations, the estimated salt loading from groundwater, background loading, and consumptive use allowance loading.

	The submittal identifies that electrical conductivity is a measurement of dissolved salts, the causative pollutant. It also acknowledges that boron is a minor constituent of dissolved salts. In the TMDL report, an exhaustive linkage analysis and a comparison between measured boron and electrical conductivity (salt) at Vernalis is illustrated in Figure 4-5 on page 1-87. The relationship between EC and boron established in the linkage analysis indicates that salt load allocations will serve adequately as surrogate allocations for boron loads. The analysis demonstrates the load reduction scenarios reflected in the final TMDLs and allocations will be sufficient to meet water quality objectives for salt and boron.
7. Margin of Safety (MOS): Submission describes explicit and/or implicit margin of safety for each pollutant.	(TMDL report, page 1-60) The TMDL incorporates an implicit margin of safety by using the lowest modeled flow representing the most critical low flow conditions expected as a design flow for each of the 60 month and water-year type combinations evaluated. Consequently, the fixed allocations developed in these TMDLs are conservative and designed to meet the numeric targets and water quality objectives under the most critical low flow conditions expected. EPA considers this an appropriate approach for dealing with uncertainty concerning the relationship between TMDLs, WLAs, LAs, and water quality conditions.
8. Seasonal Variations and Critical Conditions: Submission describes method for accounting for seasonal variations and critical conditions in the TMDL(s)	(TMDL report, page 1-57) The submittal relies on water quality objectives which are identified and applicable for specific seasons. Also, the TMDL model develops flow routines by categorizing flow data based on water year type and month. Water year type is based on the SJR Index of the unimpaired flows. The water year classification scheme identifies water years as critical, dry, below normal, abnormal or wet, thereby incorporating critical conditions. The monthly allocations address seasonal variations. The state's analysis adequately accounts for the seasonal variations in critical conditions by examining water year type including wet and critical years.
9. Public Participation: Submission documents provision of public notice and public comment opportunity; and explains how public comments were considered in the final TMDL(s).	The Central Valley RWQCB adequately held public meetings and responded to written and oral comments from the public. The Central Valley RWQCB public hearing was held on September 10, 2004. California SWRCB also held a public hearing November 16, 2005 for approval of this TMDL. Stakeholder comments were addressed in these workshops and hearings. The State demonstrated how it provided sufficient opportunities for public comment.

10. Technical Analysis: Submission provides appropriate level of technical analysis supporting TMDL elements.	The TMDL analysis provides an acceptable review and summary of available information about salt and boron in the watershed, and a sufficiently clear discussion of analytical methods used to calculate these TMDLs. EPA concludes that California was reasonably diligent in its technical analysis of electrical conductivity (salts) and boron in lower San Joaquin River.

TMDLs were adopted for electrical conductivity and boron to address the following impaired San Joaquin River segment on the 2002 303(d) list:

- San Joaquin River (Merced River to South Delta Boundary)

The following reaches are on the 2006 proposed 303(d) list, which contain waterbody name changes and narrow the scope of the Salt and Boron TMDL for the San Joaquin River near Vernalis:

- San Joaquin River (Stanislaus River to Delta Boundary)