

Staff Report

Update on Revised Management Agency Agreement (MAA) with the U.S. Bureau of Reclamation and Development of a Real Time Salinity Management Program

Purpose. The purpose of this Information Item is to provide an update to the Central Valley Water Quality Control Board (Central Valley Water Board) on the status of activities related to the *Control Program for Salt and Boron Discharges into the Lower San Joaquin River* (Control Program). At the Central Valley Water Board meeting in March of this year, staff from the Central Valley Water Board, the US Bureau of Reclamation (Reclamation), and the San Joaquin Valley Drainage Authority (SJVDA) reported on the status of the Control Program. Work on key components of the Control Program, including needed revisions to the December 2008 Management Agency Agreement (MAA) between the Central Valley Water Board and Reclamation, and development of a Salinity Real-Time Management Program (RTMP) were presented.

A proposed revised MAA and a RTMP Framework document were released for public review and comment on 4 June 2014. On 27 June 2014, an update was released indicating that the draft document would be considered for approval at the Board meeting on 9/10 October 2014, and extending the closing date for public comment to 18 August 2014. Public comments were received from the San Joaquin Tributary Authority and Stockton East Water District (Attachment A) with final comments received on 27 August. Comments were primarily focused on the need for Reclamation to take responsibility for leading efforts to mitigate salt loads imported through the DMC, allow public review of the workplan detailing Reclamation salt management activities for the coming year, and to reduce reliance on New Melones Reservoir dilution flows. Staffs from the Central Valley Water Board, Reclamation, and the SJVDA have prepared draft responses to comments and have updated the draft revised MAA and draft RTMP Framework based on the comments received. The draft revised MAA is currently under review by Reclamation. Both the draft revised MAA and the draft RTMP Framework are scheduled for Board consideration during the December 2014 meeting.

Background. The Control Program was adopted into the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basin* (Basin Plan) in September 2004. The Office of Administrative Law approved the amendment on 28 July 2006. The goal of the Control Program is to achieve compliance with salt and boron water quality objectives at Vernalis, the boundary of the Delta, without restricting the ability of dischargers to export salt out of the Lower San Joaquin River (LSJR) basin (Figure 1). The Vernalis objectives for salinity are 700 micro Siemens per centimeter ($\mu\text{S}/\text{cm}$) electrical conductivity from April 1st through August 31st, and 1,000 $\mu\text{S}/\text{cm}$ from September 1st through March 31st. The salinity objectives were developed to protect the agriculture beneficial use in the South Delta. The Control Program noted that “*Control Actions that result in salt load reductions will be effective in the control of boron*”.

The Control Program has several components. One component requires the Central Valley Water Board to use waste discharge requirements (WDRs) or waivers of WDRs to apportion salt load allocations to each of the seven geographic subareas (see Figure 2) that comprise the

LSJR watershed and to salt loads imported by the Delta Mendota Canal (DMC) which is owned by Reclamation.

Dischargers of irrigation return flows are in compliance with the Control Program if they meet any of the following conditions:

1. Cease discharge to surface water,
2. Discharge does not exceed 315 $\mu\text{S}/\text{cm}$ electrical conductivity (30-day running average),
3. Operate under WDRs that include effluent limits for salt, or
4. Operate under a waiver of WDRs for salt and boron discharges.

The Control Program also provides dischargers the opportunity to participate in a Central Valley Water Board approved RTMP. Participation in an approved RTMP and attainment of salinity and boron water quality objectives constitutes compliance with the Control Program.

To address impact of salt loads from the DMC, the Control Program provides Reclamation the opportunity to either adhere to load allocations specified in WDRs or to enter into a MAA with the Central Valley Water Board clarifying how it will mitigate imported salt from the DMC.

The Control Program includes a timeline for implementation with initial control actions on the most significant sources of salt and boron discharges to the LSJR. Priority for implementation of load allocations was given to subareas with the greatest unit area salt loading (tons per acre per year) and to the DMC. Table 1 presents the priority compliance schedule in the Control Program for each of seven subareas and the DMC.

The Central Valley Water Board and Reclamation executed an MAA in December 2008. The 2008 MAA acknowledges uncertainty regarding the potential for establishing a RTMP for the river. To address this uncertainty, specific tasks were incorporated into the MAA including performing initial RTMP monitoring, quantification, and evaluation.

During the Central Valley Water Board meeting on 3 February 2011, staff from the Central Valley Water Board and Reclamation gave presentations on the status of the MAA activities performed in 2009 and 2010, and the efforts under way to update the MAA. At that time, Central Valley Water Board staff was directed to review Reclamation technical studies, once completed, and prepare an updated MAA.

On 28 March 2014, Central Valley Water Board, Reclamation, and SJVDA staffs updated the Board on activities performed after February 2011 including the following:

- Two technical LSJR Watershed salinity memorandi: 1) Water Budget, Westside Salt Assessment, and 2) Salt and Nitrate Budget, Westside Salt Assessment;
- Pilot studies tracking salinity discharges from Mud Slough, the Grassland Resource Conservation District (GRCD), and the Grassland Bypass Project (GBP);
- A preliminary revised MAA;
- A pilot salt load forecasting model with input from local stakeholders as well as staff from the Department of Water Resources and Central Valley Water Board; and,

- A RTMP Framework document in collaboration with the Westside San Joaquin River Watershed Coalition and other interested parties.

Revised MAA. Based on the results of the efforts performed under the 2008 MAA, staff from the Central Valley Water Board and Reclamation, and other stakeholders and interested parties determined that a RTMP for the control of salinity was viable. Therefore, Central Valley Water Board and Reclamation staffs prepared a draft revised MAA. The draft revised MAA outlines Reclamation commitments over a five-year term and references a work plan that Reclamation will develop annually. The work plan will prioritize and forecast needs and funding for each coming year over the term of the MAA. The first workplan is to be submitted for approval on 31 December 2014, after review by stakeholders. Subsequent workplans are due 90 days prior to the beginning of the next federal fiscal year. Workplans will document the following:

- Program status.
- Descriptions of propose activities.
- Schedule of activities.
- Funding sources of proposed activities.

In the draft revised MAA, Reclamation agrees to the following:

- Offset a minimum of 25% of the excess DMC salt load, participate in projects to reduce salt load, participate in projects to improve discharge scheduling, and take other actions to provide assimilative capacity for salt in the LSJR.
- Actively support a Central Valley Water Board approved RTMP.
- Submit annual work plans for approval 90 days prior to the beginning of the next federal fiscal year, with the first due by 31 December 2014.
- Implement the annual work plans.
- Submit annual activities reports 90 days after the end of the federal fiscal year.
- Continue to provide technical support and appropriated financial assistance for salinity management to wildlife refuges in the SJR and the Grassland Resource Conservation District and Federal Water Supply Contractors.
- Pursue funding including grant funding for salinity control efforts in the LSJR basin.

In the draft revised MAA, the Central Valley Water Board agrees to the following:

- That the successful and timely implementation of the revised MAA is a cooperative means of achieving the requirements set forth in the Basin Plan.
- The RTMP will be developed jointly between the Central Valley Water Board, Reclamation, and stakeholders.
- Continued evaluation of Reclamation's progress and support its efforts toward revised MAA implementation.
- Regular presentations describing Reclamation's activities and assessing the RTMP at public meetings.

In the draft revised MAA, both agencies agree to the following:

- To comply with State and Federal laws and regulations.
- That results of studies completed under the first MAA and current circumstances warrant an update of the 2008 MAA.
- That revisions to the revised MAA must be signed by the Central Valley Water Board Executive Officer and the Reclamation Mid-Pacific Regional Director. Significant revisions to the revised MAA will be made part of the Central Valley Water Board public review process.
- That annual work plans will be reviewed by staffs of Reclamation and Central Valley Water Board, and stakeholders before finalization.
- Reclamations salinity management program will consist of mitigation and dilution flows, salt load reduction activities, support of the RTMP, CV-SALTS participation, and other actions to be determined as required.

Real Time Salinity Management. As a result of the efforts performed under the 2008 MAA indicating the viability of a RTMP, Reclamation, and other stakeholders and interested parties prepared a RTMP Framework document. An important concept for development of a RTMP is “assimilative capacity.” Assimilative capacity of the LSJR can be defined as the mass load of salt that can be safely discharged to the river without exceeding the water quality objectives at Vernalis. The draft RTMP framework document describes a set of water monitoring and management actions coordinated in conjunction with real time forecasts of river water quality to discharge salt during times that the river has assimilative capacity. Proper phasing of the effort is critical to insure that salinity management can be adapted based on changes in water quality, water supplies, flow regimes, and other ongoing regulations and potential projects. The framework document describes a phased approach to logically transition into a fully functioning RTMP.

Implementation of the RTMP described in the framework document includes four phases scheduled over the next 60 months. As the fully functional RTMP is being developed, Reclamation will continue to insure that salinity objectives are met at Vernalis through a combination of mitigation and dilution flows, and salt reduction strategies.

The first RTMP phase will be completed on 31 December 2014. The second, third, and fourth phases are scheduled for completion in 12, 36, and 60 months, respectively, after 31 December 2014. The following summarizes activities identified for each phase in the RTMP framework document.

Phase 1: Initiation Phase.

- Complete prior to 31 December 2014,
- Develop a River Forecast Model approach for the RTMP,
- Identify the monitoring stations necessary for the River Forecast Model,
- Determine the appropriate forecasting interval,
- Develop operation and maintenance requirements for the monitoring stations (for the forecasting model) along with costs and funding for the monitoring stations,

- Complete pilot studies on tracking discharge salinity that includes existing activities and monitoring in the Mud Slough drainage area, including the drainage of the Grasslands Resource Conservation District (GRCD) and the Grassland Bypass Project (GBP); and salt control techniques at GBP,
- Develop a Memorandum of Understanding (MOU) to organize participants and provide a mechanism for additional participants,
- Develop Management Agency Agreement between Reclamation and the Central Valley Water Board that identifies Reclamation activities supporting a RTMP.

Phase 2: Development Phase.

- Begin at first compliance date and complete in 12 months,
- Stakeholders participating in the RTMP will demonstrate and refine salinity management methods. Stakeholders can evaluate the GRCD demonstration project networked monitoring and control system and the GBP salinity control techniques for useful program development information,
- Participants throughout the program will as necessary improve the existing monitoring stations, install additional stations, and cooperate to further develop a model to be used to forecast SJR assimilative capacity,
- Initial participants in the RTMP will cooperate under the MOU including developing approaches for funding the necessary activities,
- Develop the data platform to support the River Forecast Model,
- Outreach will continue for additional stakeholders.

Phase 3: Early Implementation Phase.

- Complete 36 months from first compliance date,
- One or more cooperating agencies or other entities will conduct programmatic weekly forecasting of assimilative capacity in the SJR. Data sharing is of utmost importance to the successful implementation of the RTMP; key stakeholders will be asked to share flow and water quality information throughout the basin,
- The RTMP participants will analyze the need for additional infrastructure and identify necessary funding requirements through the MOU,
- Develop and recommend specific additional management practices needed to better coordinate the real time operation of discharges to the San Joaquin River,
- Continue outreach for additional stakeholders.

Phase 4: Implementation Phase.

- Completed 60 months from first compliance date,
- RTMP Participants will be implementing monitoring, data networking, management practices and utilizing the forecast model to coordinate the timing of discharges,
- RTMP participants will be addressing long-term funding and management needs,

- Additional parties would join by their Basin Plan compliance date. The future level of participation by additional regulated parties in the real time management program is difficult to predict. It is anticipated, however, since the alternative will be fixed load allocations, the coordinated and collaborative approach envisaged under a RTMP would be more cost-effective in the long term,
- It is further anticipated that during Phase 4 continuous implementation will bring about improvements to data processing, quality assurance and the river assimilative capacity forecast modeling.

The Westside San Joaquin River Watershed Coalition on behalf of participating agencies and individuals within its boundaries, and the Grassland Basin Drainers on behalf of all of its participants have executed a Memorandum of Understanding (MOU). The executed MOU has been incorporated as an attachment into the RTMP Framework document. The annual salinity management work plan that Reclamation agreed to submit in the draft revised MAA will be an attachment to the RTMP Framework.

Public Comments on the Draft Revised MAA and draft RTMP Framework. As indicated above, the draft revised MAA and draft RTMP Framework document were released for public review and comment in June 2014 with comments due by 18 August. Comments were received from the San Joaquin Tributary Authority and Stockton East Water District. Comment letters (Attachment A) were posted on the Central Valley Water Board Webpage at: http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/vernalissalt_boron/index.shtml#aug2014draftmaa.

The majority of comments focused on three areas:

- A need for Reclamation to responsibility for leading efforts to mitigate salt loads imported through the Delta Mendota Canal;
- Allow public review of the annual work plan that is referenced in both the draft MAA and draft RTMP; and,
- Reduce reliance on New Melones Reservoir dilution flows.

The draft MAA and RTMP framework were revised based on comments received and are currently undergoing additional review by Reclamation. Central Valley Water Board, Reclamation and the San Joaquin Valley Drainage Authority staffs are summarizing responses which will be posted on the Central Valley Water Board website along with the revised documents, prior to the Central Valley Water Board's December meeting when it will consider adoption of the revised MAA and RTMP Framework.

Other Activities. Although stakeholders are committed to developing a fully functional RTMP, several activities are being conducted in parallel with the effort:

- Reclamation is continuing to release mitigation flows to meet its water rights permit requirements including compliance with the Vernalis salinity objectives,

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- Provisions of the Control Program have been incorporated by reference into both the Western San Joaquin and Eastern San Joaquin WDRs General Orders under the Irrigated Lands Regulatory Program, and
- The Central Valley Water Board staff is working with LSJR stakeholders on the identification of appropriate salinity and boron water quality objectives for the river between its confluence with the Merced River and Vernalis. The RTMP is being evaluated as one of the implementation alternatives to meet salinity objectives within that reach of the river.



Figure 1. San Joaquin River Basin

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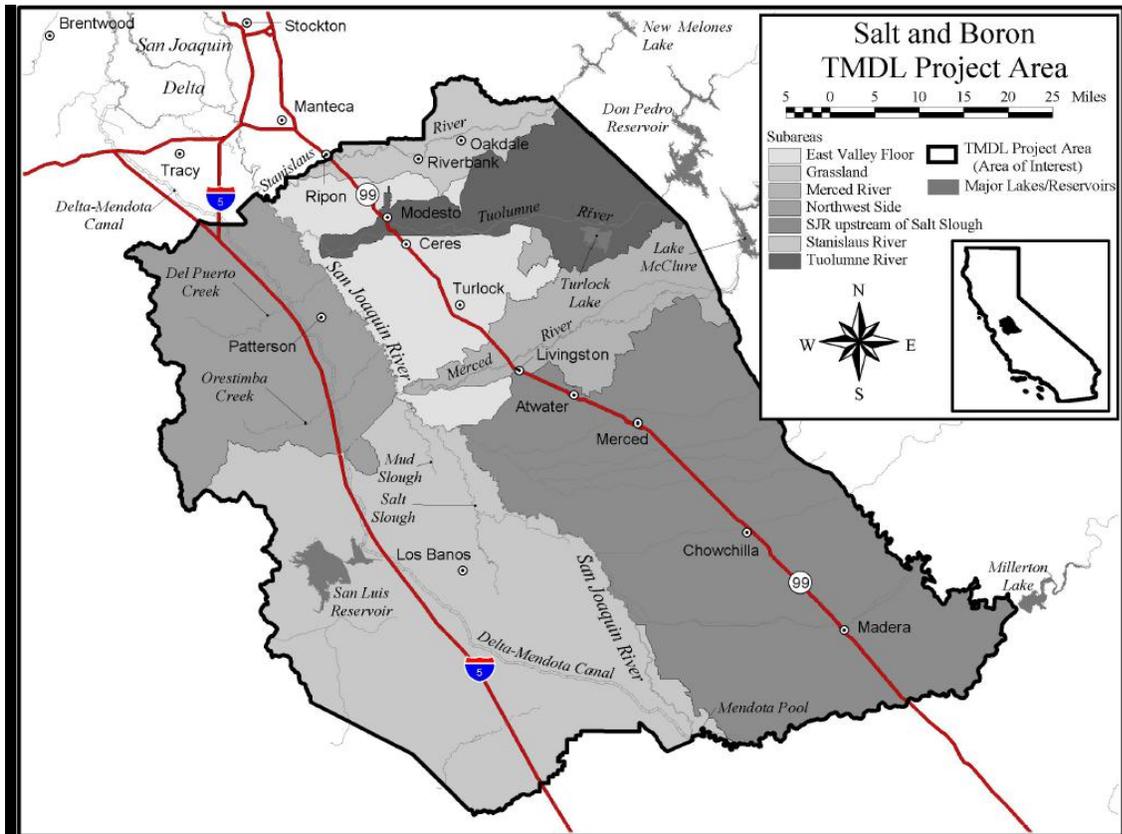


Figure 2. Control Program Subareas

Subarea	Map No.	Wet through Dry Water Year Type Deadline	Critical Water Year Type Deadline
Northwest Side	4	July 28, 2014	July 28, 2018
Grassland	2	July 28, 2014	July 28, 2018
Delta Mendota Canal (DMC) ^a	labeled	July 28, 2014	July 28, 2018
Tuolumne River	6	July 28, 2018	July 28, 2022
East Valley Floor	3	July 28, 2022	July 28, 2026
SJR Upstream of Salt Slough	1, 1a	July 28, 2022	July 28, 2026
Merced River	5	July 28, 2022	July 28, 2026
Stanislaus River	7	July 28, 2022	July 28, 2026

^a DMC is not a Subarea

Table 1. Lower San Joaquin Subarea Salt and Boron Control Program Compliance Schedule