

Response to Questions received from the Lower San Joaquin River Committee on the Real Time Management Program Framework Document

February 21, 2014 DRAFT

1. Have we established goals and objectives for a Real-time Management System? For example is salt export the primary goal or is maintaining the best quality in the SJ River that we can the primary goal?

The main goal is maximizing salt export while consistently meeting salinity objectives and while reducing the need for Reclamation to make releases from New Melones Reservoir to meet salinity objectives. The proposed Real-Time Management Program addresses the goal by coordinating the scheduling of return flows and reservoir releases so as to stay within the River's assimilative capacity.

2. What is involved in developing a real-time management program for the San Joaquin River?

There are several elements to a real-time management program: (a) developing a real-time telemetered monitoring network; (b) developing a flow and water quality forecasting model; (c) enhancing data exchange and information sharing between stakeholder entities, regulators and water agencies; (d) creating an institutional entity to work with stakeholders to help schedule salt export.

3. Who is visualized as the 'operations manager' of a Real-time Management System?

The parties have agreed to organize themselves through a Memorandum of Understanding, with a Steering Committee to govern activities. Model forecasts and operations coordination could be made by this group, or by designated staff in the MOU participating agencies or by consultants selected for this purpose. In the past weekly forecasts were made in rotation by staff from Berkeley National Laboratory, DWR and the Regional Board, and these entities could continue to provide forecast information to the MOU Participants .

4. How extensive a monitoring and reporting network is needed to establish a Real-time Management System?

The current River monitoring network is probably sufficient for the initiation of the program. All major bridges over the San Joaquin have sensors deployed reporting to USGS NWIS sites or DWR CDEC sites. The major west-side tributaries, Mud and Salt Slough have continuous monitoring reporting to CDEC. The minor westside tributaries are in the process of being restored on CDEC. Eastside tributaries have gauges that report to CDEC; however east-side return flows from MID and TID are not currently provided in real-time from these irrigation districts, so over time systems would be needed to provide that information.

Each water district that drains to the river will need to develop their own internal sensor networks to: (a) characterize flow and salt loads within the system; and (b) support operational control of salt loads generated within the District. Operations might include surface or subsurface drainage recycling or reuse, temporary storage in ground or in surface holding ponds.

5. Has a review of existing structural flow and quality monitoring been conducted and recommendations for upgrading these facilities been made?

Yes – in fact work is underway to rehabilitate the west-side tributary stations. In recent years upgrades have been made to Mud and Salt Slough sites – replacing Campbell Scientific EC sensors with YSI sondes – which are more reliable and have improved accuracy. An acoustic Doppler sensor was purchased for Lander Avenue but has not been reinstalled since a Lander Bridge retrofit. Within Grasslands Water District an early sensor network was replaced with a YSI-EcoNET sensor network.

6. Is the Real-time Management System visualized as an active real-time reporting network or is it visualized as an ‘after-the-fact’ review of operations to decide on how to improve management in the future?

It is visualized as stated “real-time,” meaning a model is used to estimate River assimilative capacity over a future two week period based on current River hydrology and input solicited from both east and west-side dischargers and east-side reservoir operators. Major diverters will also be polled to obtain best-guess diversion pumping over the same two week period.

7. What is the role of the dischargers vs the water delivery managers in conducting a Real-time Management System?

They are sometimes one and the same –water deliveries are typically managed through water districts, while districts and stakeholders often have drainage facilities serving their own areas as well as from stakeholders upstream. In future drainage districts might play a greater role in monitoring of salt load export to the River and helping to schedule these discharges based on weekly or monthly salt loading targets – set by the entity responsible for Basin-wide coordination.

8. How accurate do we need to be in the data that is used in a Real-time Management System?

The data needs to undergo QA before being released. Hydrologic data management systems such as Kisters WISKI have the capability of automating some of these QA procedures once the QA data has been imported into the WISKI database. We are exploring faster ways of accomplishing this – allowing direct export to the WISKI database from the field. It is important stakeholders have confidence in the data or less they will be reluctant to share and disseminate.

9. Not all factors in flow and quality can be managed or controlled (i.e. accretions to the river). How are these taken into account in a Real-time Management System?

These are estimated by the model. These accretions are dynamic and can change with season and water year type. The model estimates these fluxes based on the relative stage difference between river and groundwater table. It is correct that these are not readily manipulated.

10. How is the Real-time Management System incorporated into a regulatory process?

It is enshrined in the Basin Water Quality Control Plan – however this Plan is not prescriptive about how this should be carried out and implemented. This provides flexibility within the stakeholder community to craft their own salt load control and management program.

11. Can a Real-time Management System be operated without the assistance of the eastside water supply agencies?

Elements of the program can be conducted at any scale. However the ideal system would be one where data and forecast operations were shared Basin-wide and feedback loops whereby the system readjusts to each new control action are recognized.

12. How do we account for withdrawals from the SJ River under a Real-time Management System?

In the past we had flow and EC monitoring stations installed in both Patterson ID and West Stanislaus ID diversions. These stations provide real-time access to current pump diversion data which, in combination with projected pumping over the next two weeks, produced good forecasts.

13. How are Friant and the San Joaquin River Restoration Program incorporated into a Real-time Management System?

The SJRRP has its own real-time flow management system. Ideally, since the RTWQM Program's WARMF-SJR model has been extended to Friant Dam both SJRRP and RTWQM programs would use a common model and share a common database. The River should be viewed and managed as a single River, not piecemeal as it is at present where one entity simulates the middle SJR between Friant and Mendota Pool and the other the River downstream of Vernalis. Significant efficiencies could be realized by fusing the two programs.

14. Have we established any cost figures for a Real-time Management System? Both development and operations costs?

We have reliable cost figures for the development of new monitoring stations but all other operations costs can only be defined when the various components of the system are better elaborated. We have discussed the following:

Each watershed/district will manage their own on-site water management and associated costs.

Reclamation, CV Water Board, DWR, and Westside Stakeholders (due to 2014 compliance deadline) are developing the RTMP WARMF SJR Forecasting Tool, Management Module, and WARMF On-line Application. The stations for the real-time data have existing owners and operators and at this time there is no reason to believe that RTMP costs will need to be assessed.

After 2019 or maybe before if Stakeholders desire, the WARMF On-line Application and River Forecasting may change how it is managed.

At this time no structures, impoundments, or construction of facilities are anticipated to meet WQO at Vernalis.

15. How do we visualize developing the protocols and links for developing a Real-time Management System? Are there agreements involved?

These protocols and linkages are evolving and can only bear fruit by close collaboration with water districts and other discharger entities that wish to implement. It is likely that some of these protocols will need to be customized for the entity engaged. It should be recognized that implementation in seasonally managed wetlands will differ from those for irrigated agriculture. Some of these may well involve agreements or MOU's.