

APPENDIX B

**Outreach to Participating Organizations Informing
Development of the Draft Monitoring Special Study**

APPENDIX B

OUTREACH TO PARTICIPATING ORGANIZATIONS INFORMING DEVELOPMENT OF THE DRAFT MONITORING SPECIAL STUDY

In line with the requirements outlined in Section B(1)(iv) of the 2018 Bay–Delta Plan, the California Department of Water Resources (DWR) and U.S. Bureau of Reclamation (Reclamation) have worked with participating organizations¹ to develop and implement a Monitoring Special Study (MSS).

- a. Monitoring Special Study: Prior to development of the long-term Monitoring and Reporting Plan, described below, DWR and USBR shall work with State Water Board staff and solicit stakeholder input to develop and implement a special study to characterize the spatial and temporal distribution and associated dynamics of water level, flow, and salinity conditions in the southern Delta waterways.

This Appendix B summarizes some of the outreach DWR and Reclamation have engaged in leading up to the distribution of the April 2022 draft MSS Plan and shows how feedback received from participating organizations has informed development of the MSS.

B.1. APPROACH TO SOLICITATION AND DOCUMENTATION OF INPUT

The goal of the outreach process is to gather input from participating organizations to inform the development of the MSS study plan, as follows.

- Discuss the technical studies proposed by DWR and Reclamation.
- Build consensus about the specific issues and questions the studies should address.
- Gather input on and discuss study design.
- Identify existing data sources and how that data can be incorporated into the MSS and distributed for further analysis.
- Provide study status updates and presentations on completed technical work.

As part of development of the MSS, the State Water Resources Control Board has instructed DWR and Reclamation to hold periodic meetings with participating organizations, no less than quarterly, throughout implementation of the plan. In 2021 and 2022, DWR hosted three Coordination Meetings with participating organizations which focused on the MSS. In addition to those meetings, five technical workgroup meetings were held, which were designed to delve deeper into specific topic areas and solicit input on the process from participating organizations. The following sections list the participating organizations, list the coordination and technical workgroup meetings held, and summarize some of the objectives of the meetings in more detail.

B.1.1. LIST OF PARTICIPATING ORGANIZATIONS

The participating organization contact list consists of 78 representatives from the following organizations.

¹ The terms “*participating organizations*” or “*interested parties*” have been used in lieu of the term “*Stakeholders*”.

- Contra Costa Water District
- California Farm Bureau Federation
- California Department of Water Resources
- Central Valley Regional Water Quality Control Board
- Hydraulic Systems
- Mountain House Community Services District
- Naglee–Burk Irrigation District
- Office of the Delta Watermaster
- Pescadero Irrigation District
- River Islands/Reclamation District 2062
- Restore the Delta
- South Delta Water Agency
- San Joaquin Tributary Authorities
- State Water Contractors
- State Water Resources Control Board
- Tracy Wastewater
- University of California, Davis
- University of California, Davis Extension
- United States Bureau of Reclamation
- Westlands Water District
- West Side Irrigation District/Byron Bethany Irrigation District

B.1.2. LIST OF MEETINGS HELD WITH PARTICIPATING ORGANIZATIONS

B.1.2.1. Coordination Meeting #1: May 6, 2021

Coordination Meeting #1 objectives were as follows.

- Identify and discuss the studies that DWR and Reclamation proposed.
- Answer questions and gather input on the study tools.
- Chart the path forward for development of study designs.

DWR staff provided technical presentations for each of the MSS technical studies, including the following.

- Salinity Point Source Sampling and Ion Sampling
- High-Speed Salinity Transect Mapping

- Paradise Cut Flushing Study
- Semi-implicit Cross-scale Hydroscience Integrated System Model (SCHISM) three-dimensional (3D) Hydrodynamic and Water Quality Modeling
- Water Quality Data Integration (Data Assimilation)
- Monitoring Special Studies Informing Future Compliance Monitoring

Common questions and comments discussed during this meeting included the following.

- Bathymetry
 - Additional coordination and data needed in the South Delta
- Accessibility
 - Need to make proposed models understandable to the general public
 - Look into Citizen science to allow public to participate in data collection
- Paradise Cut Flushing
 - Water source and volume needed to flush system
- Groundwater
 - Consider groundwater data collection and analysis in study designs
- Salinity
 - How to distinguish between salinity sources using ion fingerprinting techniques
 - Consideration of flux measurements as method of salinity source identification
 - Groundwater contributions to salinity in main river channels

B.1.2.2. Coordination Meeting #2: October 12, 2021

The goals of Coordination Meeting #2 were to continue outreach to participating organizations on the MSS and build long-term collaboration by completing the following.

- Providing updates on development of the MSS and how DWR and Reclamation are integrating input from participating organizations and current drought conditions into study designs.
- Gathering input from participating organizations on:
 - Locations of key issues or areas to ensure that the MSS study questions and study designs are aligned with these issues and areas
 - Study questions the MSS will be designed to address

This meeting utilized the interactive platform Mural to enhance collaboration. Mural exercises provided the opportunity for participants to provide anonymous input on a virtual whiteboard in response to specific discussion topics and questions. Common questions and comments discussed during this meeting included:

- *1980 Effects of the CVP Upon the Southern Delta Water Supply Report*
 - Request to review the report and consider its conclusions
- 2021 Water Quality Conditions
 - Interest in modeling water quality conditions observed in 2021
 - Why was water quality good during a critically dry water year?
 - Do models predict the observed conditions?

- Want to understand how New Melones flow and San Joaquin River flow affected southern Delta water quality in 2021
- Linkage of MSS to Bay–Delta Plan
 - How technical studies address Bay–Delta Plan requirements?
 - Need for a larger plan showing how technical studies fit together
- Groundwater
 - Can groundwater salts be traced to a source?
 - Need to define groundwater
- State Water Project (SWP) and Central Valley Project (CVP) Operations
 - Investigate how SWP/CVP actions may affect assimilative capacity for local sources of salinity
 - How do CVP and SWP operations affect salinity, inflow, circulation, and channel flows in the southern Delta?
- Comprehensive Operations Plan (COP)
 - Identification of specific performance goals
 - Does the COP affect salinity, water levels, and/or aquatic habitat in the southern Delta?

B.1.2.3. Coordination Meeting #3: May 17, 2022

The goals of Coordination Meeting #3 were to undertake the following.

- Present updates on the draft MSS and each technical study.
- Describe how the draft MSS has been informed by 2021 data collection, research, and input from participating organizations.
- Provide the opportunity for participants to ask clarifying questions to inform their written comments on the draft MSS Plan.

Staff provided an overview of the MSS and updates on the technical studies and announced that the MSS was being separated from the COP. Common questions and comments discussed during this meeting included the following.

- Modeling
 - Why does data go through Delta Simulation Model II (DSM2) prior to going into SCHISM?
 - Concerns about data assimilation process and inferring salinity sources
 - Need to gather data to confirm past assessments
 - Concerns with concept of equifinality misrepresenting data assimilation results
- Feedback
 - How will prior feedback be incorporated into the MSS?
 - Desire for an iterative process for participants to provide meaningful feedback
- Data collection
 - Interest in the timing, direction, location, and duration of high-speed salinity transects
 - Request for dye studies in other areas, including Doughty Cut and confluence of Paradise Cut and Old River
 - Can dye studies trace groundwater?

B.1.2.4. Technical Workgroup Meetings

Date	Topic	Objective
June 14, 2021	Paradise Cut ¹	To delve deeper into the spatial temporal distribution and associated dynamics of water level, flow, and salinity conditions in and around Paradise Cut.
July 17, 2021	Water Quality Data Integration (Data Assimilation)	To have a focused follow-up discussion with more technical details about water quality data integration (Data Assimilation) in the South Delta.
July 19, 2021	Salinity Point Source Sampling	To focus on the salinity point source sampling and increased ion sampling study plan.
January 13, 2022	SCHISM & Related Modeling	To gain a deeper understanding of the SCHISM model, including the difference between SCHISM and DSM2, ongoing refinements, and applications.
January 26, 2022	Bathymetry 1	To review which sections of the south Delta have been surveyed and identify and agree on data gaps and areas to focus on in order to maximize resources.
February 2, 2022	Bathymetry 2	
February 9, 2022	Bathymetry 3	
March 17, 2022	The 1980 Report	To review the specific technical studies and activities within the MSS workplan and the framework of the 1980 report relative to the scope and objectives of the MSS as articulated in the amendments to the 2018 Bay-Delta water quality control plan.

¹ As a follow-up to the Paradise Cut Technical Workgroup Meeting, South Delta Water Agency (SDWA) hosted DWR to observe current conditions on Paradise Cut and visit the weir disconnecting the San Joaquin River from Paradise Cut. DWR also visited parts of Pescadero Tract and learned more about the irrigation practices and hydrologic conditions. The site visit occurred on August 5, 2021, and was attended by 11 people from DWR and the Technical Workgroup.

B.1.3. DOCUMENTATION OF INPUT

Verbal and written comments from participants were compiled and either informed subsequent meetings or discussions leading up to publication of the draft MSS Plan, or reviewed to confirm that they were addressed in the Draft MSS. Input from participating organizations was collected throughout the process in several ways, including the following.

- Development and distribution of meeting notes
- Personal communications with DWR and Reclamation staff
- Creation of a Response to Comments Document (Appendix A)
- Inclusion of MSS comments from the past submittal of the December 2020 draft COP MSS document (See Appendix A.3)

B.2. HOW INPUT FROM PARTICIPATING ORGANIZATIONS WAS USED TO INFORM DEVELOPMENT OF THE MSS

Input received from participants has informed planning and implementation of Coordination Meetings with participating organizations that ultimately led to the submittal of the Draft MSS Plan and Technical Study workplans. Input will continue to be sought from participating organizations during implementation

of the MSS through future coordination meetings, technical workgroup meetings, and other forms of outreach.

The following section outlines some of the major topics discussed with participating organizations since beginning the MSS outreach process. Although not all of the discussion topics are within the scope of the MSS, engagement with interested parties has informed development of the MSS, and many of these major topics have been incorporated into the draft MSS Plan.

B.2.1. COMMENTS ADDRESSED IN PLANNING AND IMPLEMENTING THE OUTREACH PROCESS FOR DEVELOPMENT OF THE MSS

- a. **Addition of technical workgroup meetings:** Following the first Coordination Meeting on May 6, 2021, it became clear that, in addition to the large, more formal, facilitated meetings, focused technical discussions would be helpful for addressing technical questions, delving more deeply into details around each technical study, and providing for a technical dialogue around the study approach, scope, and technical details.
- b. **Technical workgroup topics:** Topics for the technical workgroups were largely selected based on questions or comments from participating organization meetings that preceded it, based on the volume of questions or comments on the study (e.g., the June and July 2021 Paradise Cut, Water Quality Data Integration, and Salinity Point Source Sampling technical workgroup meetings) or specific items that were raised that required specific/focused discussion (e.g., August 2021 Paradise Cut site visit, January and March 2022 SCHISM, and 1980 Report technical workgroup meetings).
- c. **Action items and one-on-one follow-up:** DWR staff were assigned action items following each meeting and undertook follow-up with specific organizations on topics ranging from notifications regarding drone flights, obtaining and sharing existing data (e.g., groundwater, sampling locations, data), coordinating with SDWA on the 2021 modeling scenario and bathymetry data collection, and continuing detailed technical discussions related to methodology of technical studies.

B.2.2. COMMENTS ADDRESSED IN DEVELOPMENT OF THE MSS

- a. **Overview of studies/scope:** During the outreach process, there have been a number of questions and comments regarding the overall scope and goals of the MSS, including the following.
 - i. **Geographic scope:** Overall spatial scope and the area of focus for the MSS is defined as, "...the three river segments, San Joaquin River from Vernalis to Brandt Bridge, Middle River from Old River to Victoria Canal, and Old River/Grant Line Canal from Head of Old River to West Canal." Water quality and flow data measured at Vernalis will be used to represent the San Joaquin River inputs. New Melones Dam and salinity management in the San Joaquin Valley are outside the scope of the MSS.
 - ii. **Data collection:** DWR and Reclamation spent much of 2021 gathering data to inform design of the technical studies and identify data gaps in existing monitoring data. In addition to water quality and flow data, there was coordination specifically on collection of updated bathymetry data with SDWA to ensure that an effort underway for collecting new bathymetry data could be used for the SCHISM modeling. Participants are welcome to identify and provide data that will further inform completion of the MSS.

- iii. **Clarify the MSS objectives:** The draft MSS focuses on three primary goals which are essential to characterizing the spatial and temporal distribution and associated dynamics of water level, flow, and salinity conditions in the southern Delta waterways to inform development of a Long-Term Monitoring and Reporting Plan (LTMRP) and the COP of potential project management actions. See section 1 of the draft MSS Plan for goals.
 - iv. **Clarify the linkage of the MSS to the Bay–Delta Plan:** A clearer explanation of the connection between the MSS and Bay–Delta Plan is provided in the draft MSS Plan, released in April 2022. The technical studies, described in the MSS, are designed to characterize salinity, flow, and water levels in the southern Delta. As described in the response to CCWD-1 (draft MSS Plan, Appendix A), the data and analysis obtained from the MSS will be used to inform the COP of potential project management actions and a Long-Term Monitoring and Reporting Plan (LTMRP) that will identify potential solutions to noncompliance with existing salinity standards. The goal of the MSS is to better characterize hydrodynamic and water quality conditions in the southern Delta.
 - v. **Linkage to the COP, performance goals and reach-level compliance:** The MSS focuses on three primary goals that are essential for characterizing the spatial and temporal distribution and associated dynamics of water level, flow, and salinity conditions in the southern Delta waterways. It is not part of the COP, but findings from the MSS technical studies will inform future amendments to the COP.

Outputs of the MSS will also be used to inform development of the LTMRP and would address the question of performance goals, how reach-wide compliance could be characterized and monitored, and what other physical/operations changes (e.g., permanent operable gates, temporary drought salinity barriers) might be employed to improve salinity compliance.
 - vi. **How the technical studies fit together:** Section 4 and Figure 4-1: Flow Chart of MSS Monitoring and Modeling Efforts of the Draft MSS show conceptually how the studies fit together and integrate.
 - vii. **1980 Report:** The 1980 report is primarily focused on water quality and quantity in the San Joaquin River upstream of Vernalis and analyzed conditions prior to presence of the temporary barriers and prior to construction of several State Water Project and Central Valley Project facilities. While an updated analysis of the 1980 Report may be desired, the study area of the 1980 Report is outside the scope of the MSS and focusing efforts upstream of Vernalis would shift focus and resources away from the primary goals and purpose of the MSS.
- b. **2021 modeling scenario:** There was a consensus amongst DWR, Reclamation, and participating organizations that 2021 was a unique water year that should be modeled given multiple unusual and special circumstances that occurred, including good interior southern Delta water quality conditions during a dry water-year type. The SCHISM Hydrodynamic and Water Quality Modeling Work plan (Draft MSS Plan, Attachment 3) has proposed to model a full range of flow and salinity conditions, including the specific conditions present in 2021. The conditions existent in 2021 and other years will be used to validate the accuracy of the predictive capacity of the models. However, operation of New Melones is outside of the MSS scope.
 - c. **Analysis of flow data:** The MSS will include collection and analysis of data on water quality, flows (including null flows), and water levels. In particular, flow data from existing flow stations and

additional temporary flow stations are included in analysis and modeling efforts of the MSS. The data collection and modeling and analysis planned within the four technical studies included in the MSS are designed to identify areas of uncertainty (with modeling) and gather additional data (Point Source and Ion Sampling and High-speed Salinity Transect Mapping). The feedback loop between the sampling and the modeling is shown in MSS Figure 4-1: Flow Chart of MSS Monitoring and Modeling Efforts. This work should identify specific uncertainties in local diversions and indicate what further investigation is needed.

- d. **Consider groundwater in the analysis.** The Draft MSS Plan does not include collection and analysis of groundwater data due to limitations associated with access to groundwater wells and data. However, per the responses to SWRCB-23 and SDWA-18 (draft MSS Plan, Appendix A), groundwater investigations have not been entirely ruled out, although DWR and Reclamation have prioritized resources to focus on characterizing surface water flow and specific conductance (EC). If provided with groundwater data or opportunity to access existing wells, DWR and Reclamation could include analysis of groundwater salinity sources. Without assistance from participating organizations, groundwater data collection and analysis would not be feasible due to constraints outside of DWR and Reclamation's control.
- e. **Salt sources, isotope data collection and fingerprinting:** Salinity profile and source attribution is not explicitly part of the MSS Goal #1: Characterize the spatial and temporal distribution and associated dynamics of water level, flow, and salinity conditions in the southern Delta waterways. However, in meeting this goal, sources of salinity are likely to be characterized. Overall, the MSS will be undertaken to characterize hydrodynamic and water quality conditions in the southern Delta, including salinity sources, flows, and fluxes. Currently, flux and flows are prioritized over isotope sampling in the Draft MSS Plan. With respect to salinity source, the Salinity Point Source and Ion Sampling Study includes plans for temporary additional water quality monitoring stations and ion sampling locations, shown in Table 4, Figure 22, and Figure 26 of Attachment 2 to the draft MSS Plan.
- f. **Inclusion of Projects in data analysis:** Analysis of water project operations are a key component, but not the only component of actions/operations in the southern Delta that will be analyzed in the MSS. DWR and Reclamation have included modeling and monitoring elements in all four proposed technical studies that will result in either data collection, modeling, or analysis of potential project impacts to water levels, flow, and salinity in the southern interior Delta. Per section 3 of the Draft MSS, the SCHISM model will be used to define and assess different approaches to compliance across the three river segments and can be used to assess the likelihood of compliance under different flow regimes. Simulations will also be performed to assess the relative influence of Vernalis inflow, Vernalis water quality, SWP/CVP exports, and in-Delta sources.

B.2.3. COMMENTS RELATED TO IMPLEMENTATION OF THE MSS

- a. **Accessibility – making the models and analyses transparent and understandable:** DWR and Reclamation will continue to offer technical workgroup meetings on the SCHISM and Data Assimilation models so that they can be better understood and accessible to those interested in further analysis of the models. Additional collaboration with participating organizations is also possible for reviewing flux inputs, gates, station outputs, and any other components participants may be interested in learning more about.
- b. **Citizen Science:** DWR reviewed the materials on Citizen Science and potential applications and provided an overview during Coordination Meeting #2. Participating organizations (and individuals) were encouraged to share data and observations with the MSS team. This is particularly true for an

analysis of groundwater; without involvement of participating organizations, groundwater data collection and analysis would not be feasible.

- c. **Ongoing input and collaboration approaches such as using break-out groups and technical workgroups:** DWR and Reclamation appreciate information on processes that have successfully resolved longstanding issues. As work progresses into analysis and synthesis to inform long-term monitoring and updates to the COP, we expect that the structure of meetings will change to support the appropriate level of collaboration to delve into and resolve technical issues.
- d. **Input and planning of the Paradise Cut technical Study:** Due to drought conditions anticipated to occur during the study period and the potential increased salinity loads that flushing Paradise Cut could introduce to Old River, DWR and Reclamation are proposing to delay the Paradise Cut Flushing Study (see Draft MSS, Section 1). As a result, specific design details have not been determined in the Draft MSS Plan.

REFERENCES

State Water Resources Control Board. 2018. *Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Estuary*. December 12.