CV-SALTS Executive Committee Meeting

Thursday, June 23, 2022 9:00 AM – 12:45 PM

https://us06web.zoom.us/j/81585136405?pwd=UnVCYVBTN3RIazFmV3dlWUU4THZoUT09

Meeting ID: 815 8513 6405 **Passcode:** 425970

Dial-in: 253 215 8782

Posted 06-14-2022 – Revised 06-22-22

1) **Welcome and Introductions – Chair** – (10 mins)
   a) Committee Roll Call and Membership Roster
   b) Review and Approve May 19, 2022 Meeting Notes

2) **Basin Plan Amendments – Implementation Update** – Patrick Pulupa, Anne Walters (20 mins)
   - Program Implementation
     - Management Zone progress and deadlines
     - Enforcement Activities MZ and P&O

3) **Management Zones – Status Update** – (20 mins)
   - SAFER Funding of Co-Contaminant Impacts by MZs : VWC, Kaweah, Kings, and Tule – Daniel Cozad
   - Management Zone Progress and Outreach
     - CV-SALTS Nitrate Program Progress & Results
     - Outreach and Implementation Status
     - LINK TO > Management Zone Program Summary

4) **Prioritization & Optimization Study** – (2 hrs)
   - Overview and Discussion Facilitation – Bobbi Larson
   - Baseline Characterization Report: Status Update – Richard Meyerhoff/Tom Grovhoug
   - Analytical Tools/Models Identification and Evaluation – Tom Grovhoug
     - Report by Tools Evaluation Small Group
   - Sensitive Beneficial Use Protection (Task 3.1): Introduction - Richard Meyerhoff/Tom Grovhoug
   - Data Management System Selection – Mike Cornelius/Richard Meyerhoff
     - Recommend Approval of Final Data Management Plan

5) **SAMP (Sampling & Monitoring Program)** – Daniel Cozad (30 mins)
   - Draft Conceptual Framework – Review & Comment
     - Surface Water/Data Management System Components - Melissa Turner/Mike Johnson, MLJ Environmental
     - Groundwater Component - Vicki Kretsinger/Barbara Dalgish, LSCE

6) **PEOC Status Update** – Nicole Bell (10 mins)
   - **LINK** to Outreach Matrix - Outreach Tracking
     - Quarterly Email Update – June 2022
7) **Review Meeting Schedule/Location** – (5 mins.)
   - PEOC Meeting: **August 19, 2022, 9:30 – 10:30 AM – Zoom**
   - Policy Meeting: **August 25, 2022, Tentatively 9:00 – 3:00 - Zoom (Final times/Location TBD)**

CV-SALTS meetings are held in compliance with the Bagley-Keene Open Meeting Act set forth in Government Code sections 11120-11132 (§ 11121(d). The public is entitled to have access to the records of the body which are posted at http://www.cvsalinity.org.

One or more Central Valley Regional Water Quality Control Board members may attend.

CV-SALTS Committee Rosters

Executive Committee Membership			CV-SALTS Executive Committee Meetings -2021-2022											
Voters	Category/Stakeholder Group	Name	11-Mar	8-Apr	13-May	10-Jun	19-Aug	16-Sep	21-Oct	18-Nov	13-Jan	10-Feb	17-Mar	7-Apr	19-May	23-Jun
1	Central Valley Water Board	Patrick Pulupa	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	
Alt	Central Valley Water Board	Anne Walters	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
2	State Water Resources Control Bd.	Darrin Polhemus														
3	Department of Water Resources	Barrett Kaasa	✓													
Alt	Department of Water Resources	Jesus Mercado			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
4	US Bureau of Reclamation	Grace Windler					✓	✓	✓	✓	✓	✓	✓	✓		
Alt	US Bureau of Reclamation	Jun Wang													✓	
5	Environmental Justice															
6	Environmental Water Quality	TBD														
CV Salinity Coalition																
1	So. San Joaquin WQC	Nicole Bell	✓	✓	✓	✓	✓	✓	✓		✓	✓			✓	
2	City of Stockton	Deedee Antypas	✓	✓	✓	✓	✓		✓		✓	✓		✓	✓	
3	California Cotton Growers	Chris McGlothlin	✓			✓	✓				✓	✓				
4	City of Fresno	Rosa Lau-Staggs							✓							
5	CA Leaque of Food Processors	Trudi Hughes									✓					
Alt	CA Leaque of Food Processors	Rob Neenan	✓	✓	✓		✓	✓		✓	✓	✓		✓	✓	
6	NCWA/SVWQC	Bruce Houdesheldt	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
7	City of Tracy	Stephanie Hiestand	✓		✓	✓			✓	✓	✓	✓	✓	✓	✓	
Alt	City of Tracy	Aloke Vaid														
8	Sacramento Regional CSD	Chris Hunley					✓		✓	✓	✓	✓				
Alt	Sacramento Regional CSD	Sam Safi	✓	✓	✓		✓	✓	✓	✓			✓	✓	✓	
9	San Joaquin Tributaries Authority	Jonathan Marz	✓	✓	✓	✓	✓	✓	✓				✓	✓		
Alt	San Joaquin Tributaries Authority	Valerie Kincaid														
10	Valley Water Management	Melissa Thorme	✓	✓	✓	✓	✓	✓	✓	✓						
Alt	Valley Water Management	Jason Meadors		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		
11	California Rice Commission	Tim Johnson	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
12	City of Davis	Josie Tellers	✓		✓	✓	✓	✓	✓		✓	✓			✓	
13	Tulare Lake Drainage District	Mike Nordstrom	✓			✓										
14	Western Plant Health Assoc.	Renee Pinel														
15	City of Vacaville	Mindy Boele	✓		✓	✓	✓	✓	✓	✓	✓	✓			✓	
Alt	City of Vacaville	Justen Cole														
16	Dairy Cares	J.P. Cativiela	✓		✓	✓	✓	✓	✓			✓	✓	✓	✓	
Alt	Dairy Cares															
17	Westlands Water District	Zac Just		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Alt	Westlands Water District	Kori Peterson		✓								✓	✓	✓	✓	
18	East San Joaquin WQ Coalition	Parry Klassen	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓		
Comm. Chairs/Co-chairs																
1	Chair Executive Committee	Debbie Webster CVCWA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
2	Vice Chair Executive Committee	Mike Wackman SJ Co/Delta V	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	
3	Technical Advisory Committee															
	Technical Advisory Committee	Nigel Quinn, LBL	✓	✓	✓	✓	✓	✓	✓		✓	✓			✓	
4	Public Education and Outreach	Nicole Bell														
5	Economic and Social Cost Committee	David Cory, SJVDA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

CV-SALTS Committee Rosters

Participant Names			CV-SALTS Executive Committee Meetings -2021-2022												
Last	**First**	**Organization**	11-Mar	8-Apr	13-May	10-Jun	19-Aug	16-Sep	21-Oct	18-Nov	13-Jan	10-Feb	17-Mar	7-Apr	19-May	23-Jun
Aguilar	Marisol						✓									
Agus	Eva	East Bay MUD								✓						
Atume	Ngodoo	CWA	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	
Au-Yeung	Cindy	CVRWQCB		✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	
Bean	Jessica	SWRCB														
Beckstead	Christina	Madera Farm Bureau				✓	✓						✓	✓		
Bejarano	Antonio	WWD	✓	✓	✓			✓		✓						
Belt	David	CVRWQCB						✓								
Bradford	Mark												✓	✓		
Brown	Laura									✓						
Cady	Mark	CDFA	✓	✓	✓				✓		✓	✓			✓	
Campbell	Morgan												✓	✓		
Cornelius	Mike	GEI											✓	✓	✓	
Cremers	Noelle	Wine Institute	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		
Cruikshank	M.						✓									
Dailey	Hannah	CVRWQCB												✓	✓	
Dalgish	Barb	LSCE								✓	✓	✓	✓	✓	✓	
Dransoff	Zack	CRC	✓	✓	✓											
Dunham	Tess	Kahn, Soares & Conway	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Dunn	Debra	Kings River Cons District	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	
Fuller	Dustin	TLDD		✓	✓	✓		✓	✓	✓						
Fuller	Jennifer	CVRWQCB		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	
Fulton	Ryan									✓						
Gallock	Charlotte	KRWQC		✓			✓	✓		✓	✓	✓	✓		✓	
Gardiner	Charles	Catalyst Communications	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	
Gore	Bob	Gualco Group/CIPA	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	
Gosling	Doug															
Grovhoug	Tom	LWA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Guttierrez	Christine	GEI Consultants														
Guzman	Jenalyn	OPP/SWRCB											✓	✓		
Hearn	Stephanie	GEI	✓	✓	✓	✓	✓				✓	✓				
Horne	Randy	Valley Water Mgmt.														
Kadara	Denise	CVRWQCB									✓	✓				
Khang	True	CVRWQCB	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Kretsinger Grabert	Vicki	LSCE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

ADDITIONAL PARTICIPANTS:

CV-SALTS Committee Rosters

Participant Names			CV-SALTS Executive Committee Meetings -2021-2022												
Last	**First**	**Organization**	11-Mar	8-Apr	13-May	10-Jun	19-Aug	16-Sep	21-Oct	18-Nov	13-Jan	10-Feb	17-Mar	7-Apr	19-May	23-Jun
Laputz	Adam	CVRWQCB		✓	✓			✓			✓	✓	✓	✓	✓	
Larson	Bobbi	Somach Simmons & Dunn	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
LeClaire	Joe	LeClaire & Associates	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Liu	Yuan	CCWD		✓	✓		✓					✓				
Longley	Karl	CVRWQCB	✓							✓	✓	✓	✓	✓	✓	
Loving	Jennifer	City of Fresno								✓		✓				
McReynolds	Scott	CVRWQCB		✓												
Mendes	Justin	Tulare Lake Basin WSD	✓			✓	✓				✓	✓	✓	✓		
Meyerhoff	Richard	GEI Consultants	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Miller	Kenneth	Formation Environmental											✓	✓		
Ocampo	Eddie	Self-Help Enterprises													✓	
Petersen	Chris	GEI Consultants									✓	✓				
Petersen	Chris	SLDMWA			✓		✓									
Pope	Aaron	Catalyst Communications	✓		✓								✓	✓		
Prescott	Darrin	Grenian		✓		✓		✓			✓	✓	✓	✓		
Razor	Matthew						✓									
Robinson	Kathryn	CRLA				✓										
Robinson	Kristi	Chowchilla MZ						✓	✓	✓	✓	✓			✓	
Rutherford	Sara	KBWQA	✓			✓	✓	✓	✓		✓	✓				
Schuil	Charlotte									✓	✓	✓	✓	✓		
Seyfried	Scott	SWRCB	✓													
Soto	Sammy	CVRWQCB						✓	✓				✓	✓	✓	
Staggs	Rick	City of Fresno								✓			✓	✓	✓	
Takeda	Jackie	GEI Consultants							✓							
Taylor	Hope									✓						
Tillman	Stephanie	LANDIQ	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Tran	Mikayla	Sustainable Conservation											✓	✓		
Trouchon	Mike	LWA						✓	✓	✓	✓	✓	✓	✓	✓	
Warren	Eric	CVRWQCB			✓											
Wehr	Ellen	Grassland Water Dist			✓											
Witty	J.						✓			✓	✓	✓				
Zimmerman	Christine	IOPA	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	

ADDITIONAL PARTICIPANTS:

CV-SALTS Executive Committee Meeting - Summary Action Notes

For May 19, 2022 – 9:00 AM to 11:45 AM

Attendees are listed on the Membership Roster

DISCUSSION ITEMS

1) Welcome and Introductions
   a) Executive Committee Chair, Debbie Webster, brought the meeting to order, and roll call was completed.
   b) Bruce Houdesheldt moved, and Stephanie Hiestand seconded, and by general acclamation the April 7, 2022, Meeting Action Notes were approved.

2) Basin Plan Amendments – Implementation Update
   - Patrick Pulupa provided an update on the status of implementation activities in the Salt and Nitrate Control Programs.
     - Regional Board staff has been briefing State Water Board members on the status of implementation of the salt and nitrate programs.
     - Enforcement efforts to address non-filers in both the Nitrate and Salt Control Programs will begin to take shape over the summer. The enforcement actions will be similar to those previously undertaken with ILRP and Dairies.
       - Rob Neenan, Noelle Cremers, Debbie Webster, and Bob Gore asked for the list of non-filers to be forwarded to them for follow-up with their members.
     - The annual update on the CV-SALTS program is scheduled for the June 7, 2022, State Water Board Meeting.
   - General Update - All documents which do not meet ADA requirements for accessibility will be removed from the Regional Board website effective July 1, 2022.

3) Management Zones – Status Update
   - Daniel Cozad provided a status update on the SAFER Funding of Co-Contaminants testing. The agreement for Valley Water Collaborative is nearing finalization. Kaweah Water Foundation is in the process of developing a budget and scope of work, using the Valley Water Collaborative agreement as a template. Kings Water Alliance and Tule Management Zone are also in the beginning stages of developing their SAFER agreements.
   - Daniel presented the latest version of "CV-SALTS Nitrate Program Progress & Results and Year 1 Outreach Activities."

4) Prioritization and Optimization Study
   - Bobbi Larson provided an overview of discussion topics and informational items:
     - Baseline Data Acquisition – Presentation on Phased Approach
     - Analytical Tools and Models – Informational Report from Small Group Meeting
     - Data Management Systems – Summary of Comments Received/Release of Revised Draft
   - **Baseline Characterization Report** - Richard Meyerhoff presented a working draft of the Table of Contents for the Report. Some of the feedback from the Committee on the draft:
     - Include a discussion about how the Basin Plans deal with salinity in the introductory section of the document.
     - Replace the term "San Joaquin River Valley" with "San Joaquin River Basin."

- How is the unique nature of the Delta going to be characterized in the report?
- There were no stated objections from the committee in response to the proposal for a two-phase development of Task 4.1.6, Characterization of Key Sources of Salt Loading.
- Will not having the data at the end of Phase 1 impact the ability to Calibrate the Tools in Tasks 4, and 4.3? How will the timing play out for the phased approach and tool calibration?

- **Analytical Tools/Models Identification and Evaluation** – Tom Grovhoug provided a recap of the first meeting of the Tools Evaluation Small Group. The group met on 5/18/22 and discussed two of the tool categories, Water Management and Watershed tools. The small group will be meeting through the summer with the goal of having recommendations for all five tool categories complete by September. Members of the Tools Evaluation Small Group: David Cory, Susan Paulson, Hanna Dailey, Adam Laputz, Michael Johnson, Jun Wang, Tess Dunham, Debbie Webster, and Bruce Houdesheldt.
- **Data Management Systems** – Mike Cornelius provided an update on the Data Management Plan. Comments received on the most recent version will be incorporated into a revised draft which will be distributed to the Committee on May 25th. Comments on the revision will be due June 6, 2022. A Final Data Management Plan is scheduled for approval at the June 23, 2022, Executive Committee meeting.

5) SAMP (Sampling & Monitoring Program)
   - Daniel Cozad provided a status update on the SAMP. A draft framework will be presented for review and comment at the June 23, 2022, meeting.

6) PEOC Status Update
   - Nicole Bell provided an update on PEOC activities. A copy of the proposed Outreach Timeline for 2022 was included in the package.

7) Review Meeting Schedule/Location
   - PEOC Meeting: **Friday, June 17, 2022, 9:30 – 10:30 AM – Zoom**
   - Policy Meeting: **Thursday, June 23, 2022, Tentatively 9:00 – 3:00 (Final Times TBD) - Zoom**

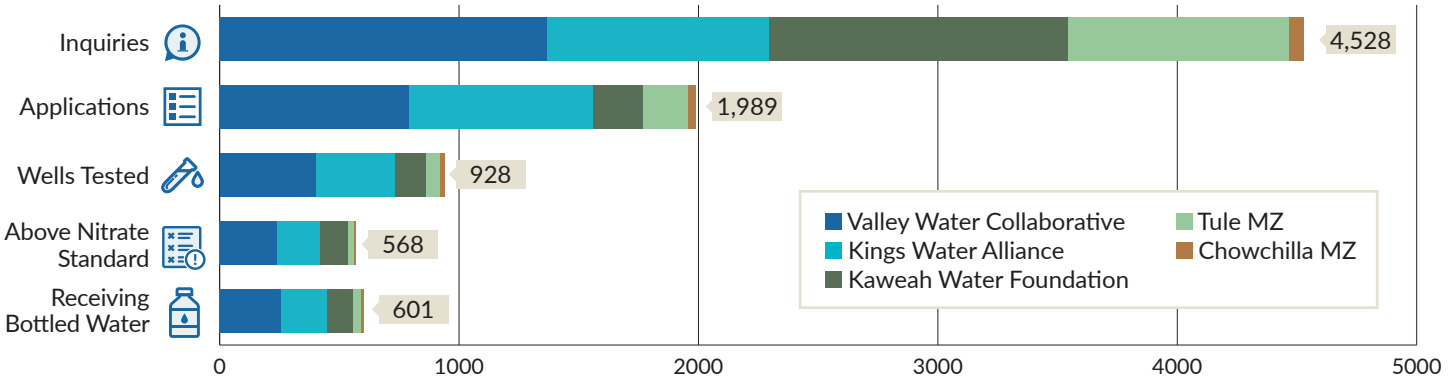
CV-SALTS Nitrate Program Progress & Results

PROGRAM GOAL

Provide safe drinking water to households whose wells exceed nitrate standards.

Households Processed for Bottled Water Deliveries

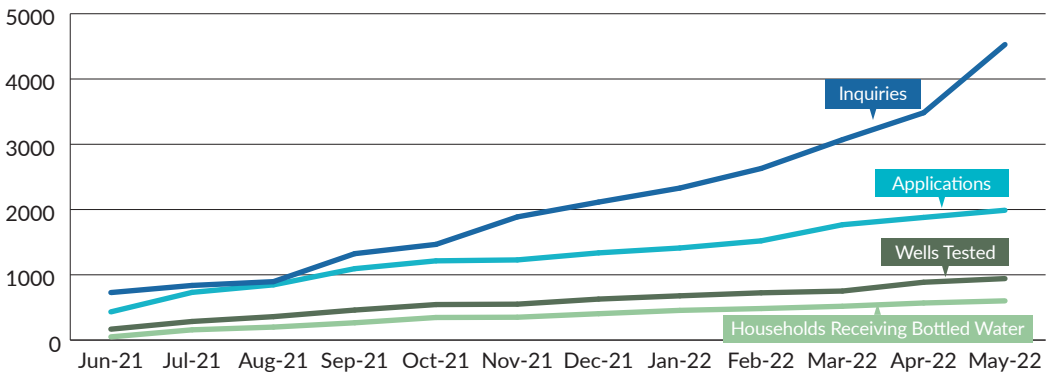
Outreach efforts generate inquiries. → Inquiries are contacted to explain the program and invite applications. → Applications are qualified and scheduled for testing. → Testing analyzes household well water. → If the sample exceeds safe standards, the household is scheduled for water delivery. → Water deliveries start.



61% 61% of wells tested have exceeded the nitrate standard

690 690 gallons per day provided to households from 7 free water fill stations.

Bottled Water Program Participation



35% 35% of applications were ineligible or referred to other programs.

34% 34% of applications have not responded to follow-up contacts.

Through May 2022

CV SALTS Central Valley Salinity Alternatives for Long-term Sustainability

YEAR 1 OUTREACH ACTIVITIES

Active Management Zones submitted Early Action Plans in 2021 for providing safe drinking water to households affected by high levels of nitrate in groundwater. Since then, Management Zones have been conducting community outreach and engagement to inform residents about the program, test private wells, and provide bottled water where needed.

ACTIVE MANAGEMENT ZONES

- Valley Water Collaborative
- Chowchilla Management Zone
- Kaweah Water Foundation
- Kings Water Alliance
- Tule Management Zone

POSTCARD & FLYERS

Management Zones use direct mail and door-to-door flyer distribution to get program information to potentially affected households. Rural areas pose a particular challenge for door-to-door efforts.

35 campaigns

144,762 household contacts

PROMOTION

Management Zones use radio, television, newspapers, road signs, and social media to describe and promote the program.

1,082 placements

1,460,000 impressions

MEETINGS & EVENTS

Management Zones hold in-person and online community meetings to describe the program and encourage applications.

101 events

2,827 participants

WEBSITES

Each Management Zone manages a website as an information source and means for residents to apply.

25,104 website visitors

1,275 online applications

ONE-ON-ONE DISCUSSIONS

Management Zones talk individually with residents at street events, door-to-door, and by phone to answer questions, follow-up on applications, and encourage participation.

101 events / activities

11,234 contacts

CENTRAL VALLEY SALINITY COALITION

CV SALTS
Central Valley Salinity Alternatives for Long-term Sustainablity

Prioritization & Optimization Study

6-23-22-

CVSALTS Executive Committee Presentation
Prepared by the Central Valley Salinity Coalition

Overview

Agenda Item: Baseline Data Characterization:

- January 13: Overview of baseline data characterization process
  - Data compilation small group assisting with data gaps
- May: Presentation re phased approach/alignment with tools selection

Overview

- Today: Discuss Process for review and comment on Baseline Data Characterization Report
  - Draft to be released July 1, 2022
  - Comments Due: August 1, 2022
  - Review of comments and responses: August 25, 2022 meeting

Overview

Agenda Item: Analytical Tools and Models

- February 10, March 17, April 7 meetings
  - Overview of candidate tools and models
  - Presentation of preliminary evaluation and selection criteria
  - Formation of Tools Evaluation Small Group
    - Meetings May 18 and June 15

CENTRAL VALLEY SALINITY COALITION

Overview

- Today
  - Presentation of Tools Evaluation Small Group recommendations on water management and watershed models
  - Discussion and **preliminary approval** of recommendations

Overview

- Agenda Item: Sensitive Beneficial Use Protection
  - Introduction to Topic
  - Review Tasks in Integrated Scope of Services

Overview

Agenda Item: Data Management Systems

- March 17 and April 7: Overview of Data Management Plan and Communication Portal Demo
- Two rounds of comments on Draft DM plan

Today

- Review of changes to draft and **approve** final Data Management Plan

PRIORITIZATION & OPTIMIZATION STUDY

CV-SALTS Executive Committee Meeting

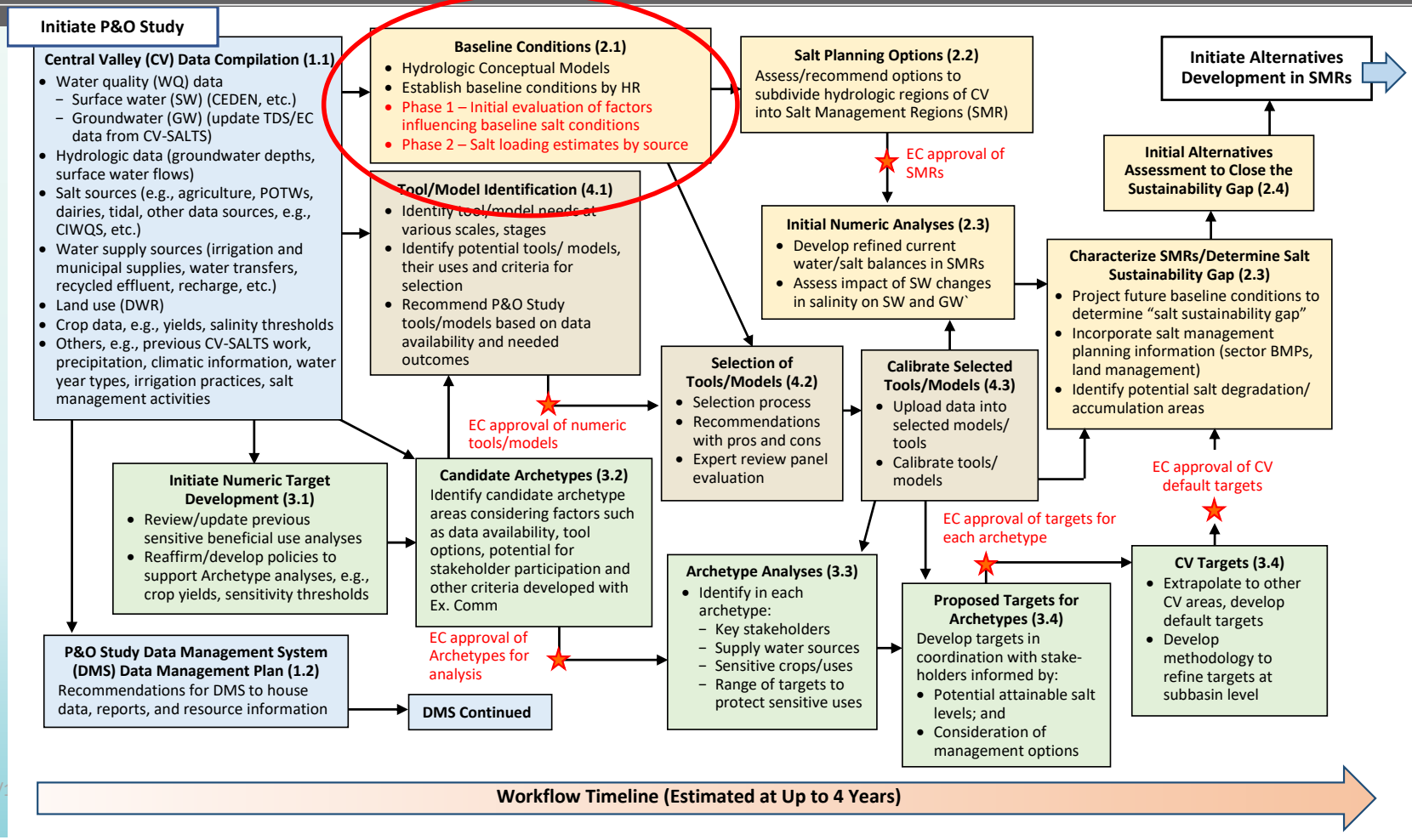
Technical Consultant Team Presentation

Baseline Characterization Report

June 23, 2022

CV SALTS
Central Valley Salinity Alternatives for Long-term Sustainability

PROPOSED WORKFLOW MODIFICATION – PHASED TASK 2.1

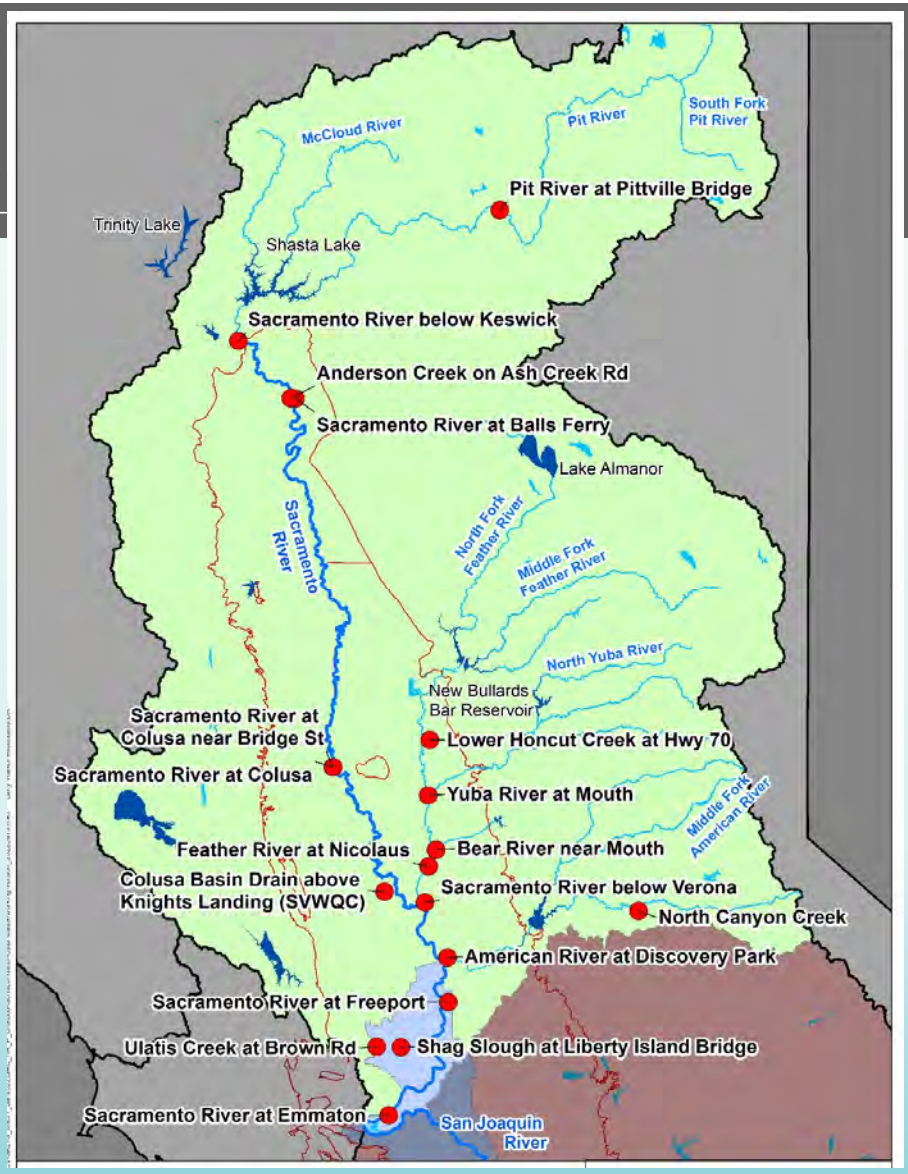


DRAFT BASELINE CHARACTERIZATION REPORT

- Primary Content of Draft
  - Introductory Section
  - Regulatory Framework Summary (Basin Plans, including Bay Delta Plan)
  - Central Valley Region Overview (topography, precipitation, water management history, salt management requirements)
  - Characterizations of each Hydrologic Region (surface water and groundwater characterizations)
  - Supporting References and Appendices
- Executive Summary and Summary of Findings Sections will be prepared later after comments received on draft

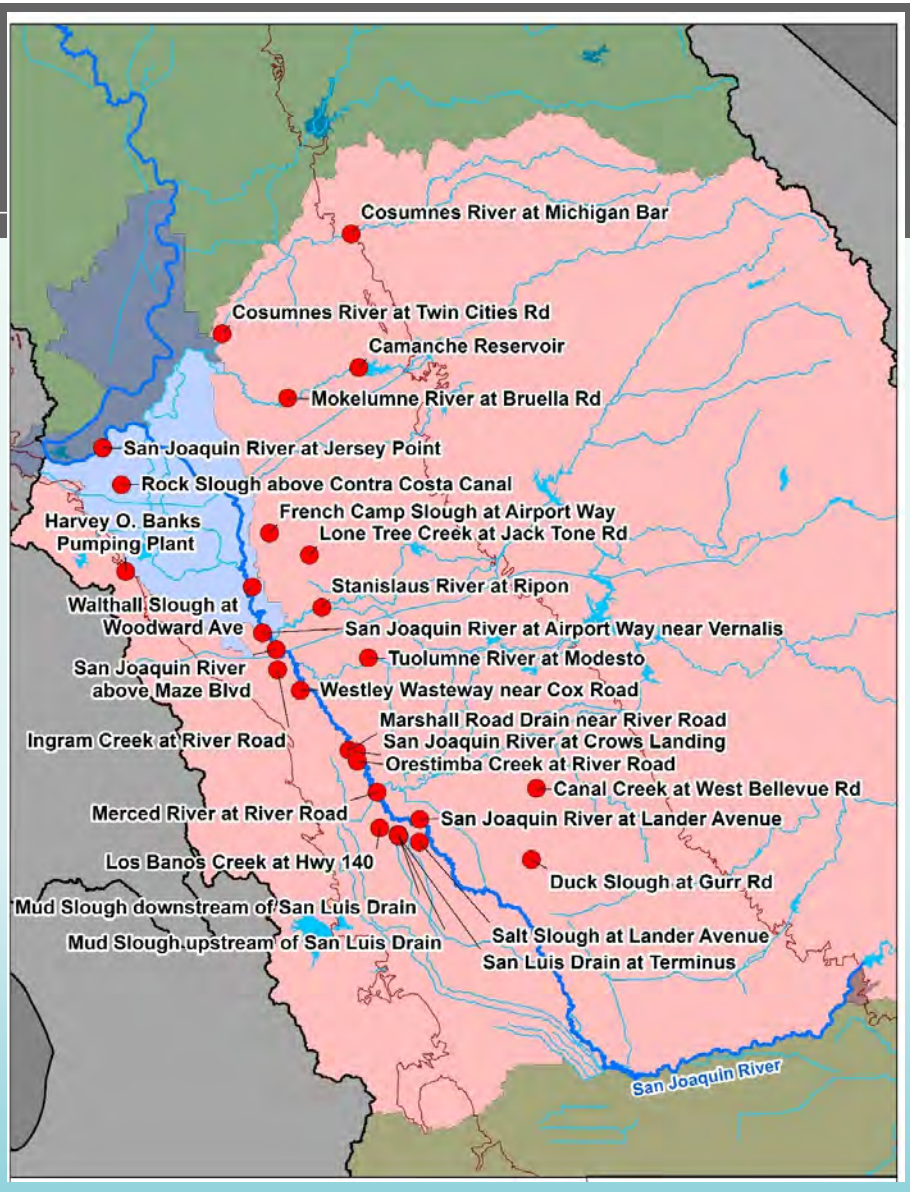
SURFACE WATER

- Sacramento River Hydrologic Region
  - Surface water sites included in characterization of ambient conditions and trends



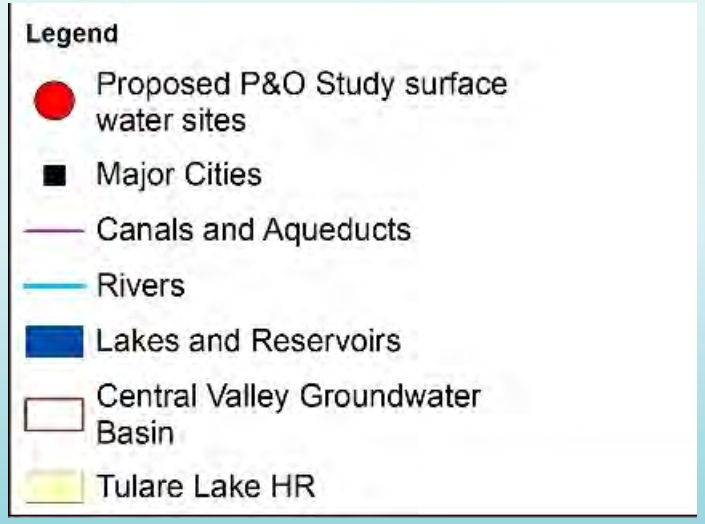
SURFACE WATER

- San Joaquin River Hydrologic Region
  - Surface water sites included in characterization of ambient conditions and trends



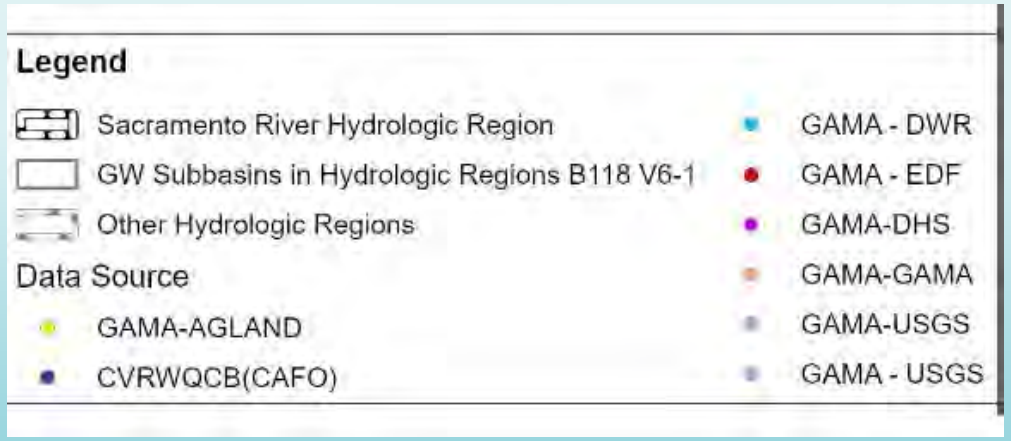
SURFACE WATER

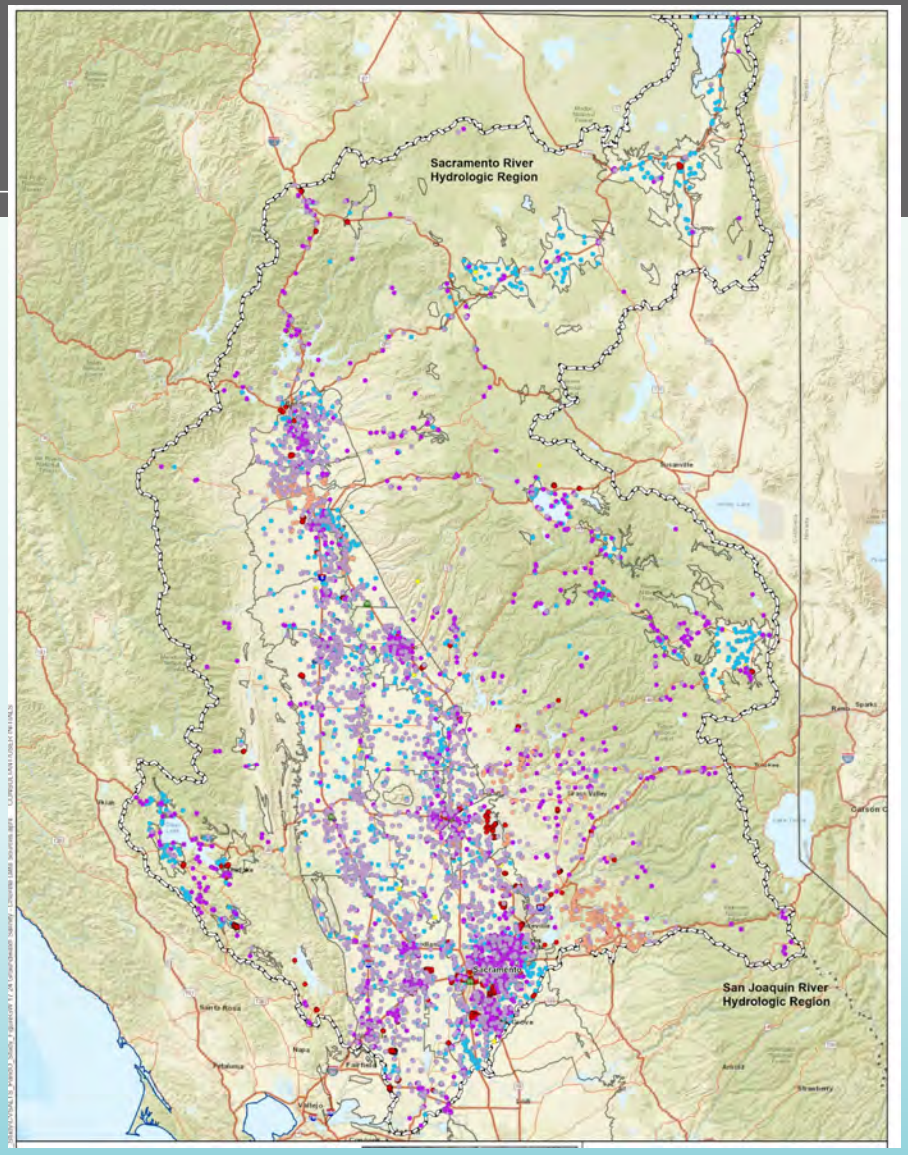
- Tulare Lake Hydrologic Region
  - Surface water sites included in characterization of ambient conditions and trends



GROUNDWATER

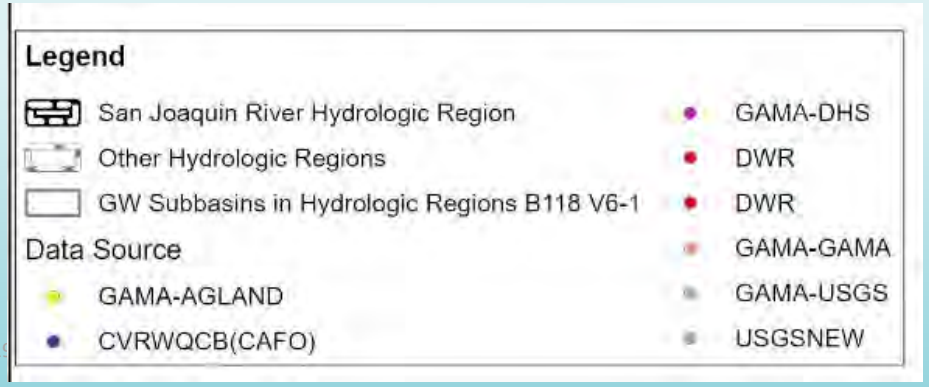
- Sacramento River Hydrologic Region
  - Total Dissolved Solids (TDS) well data sources to support groundwater characterization of ambient conditions and trends

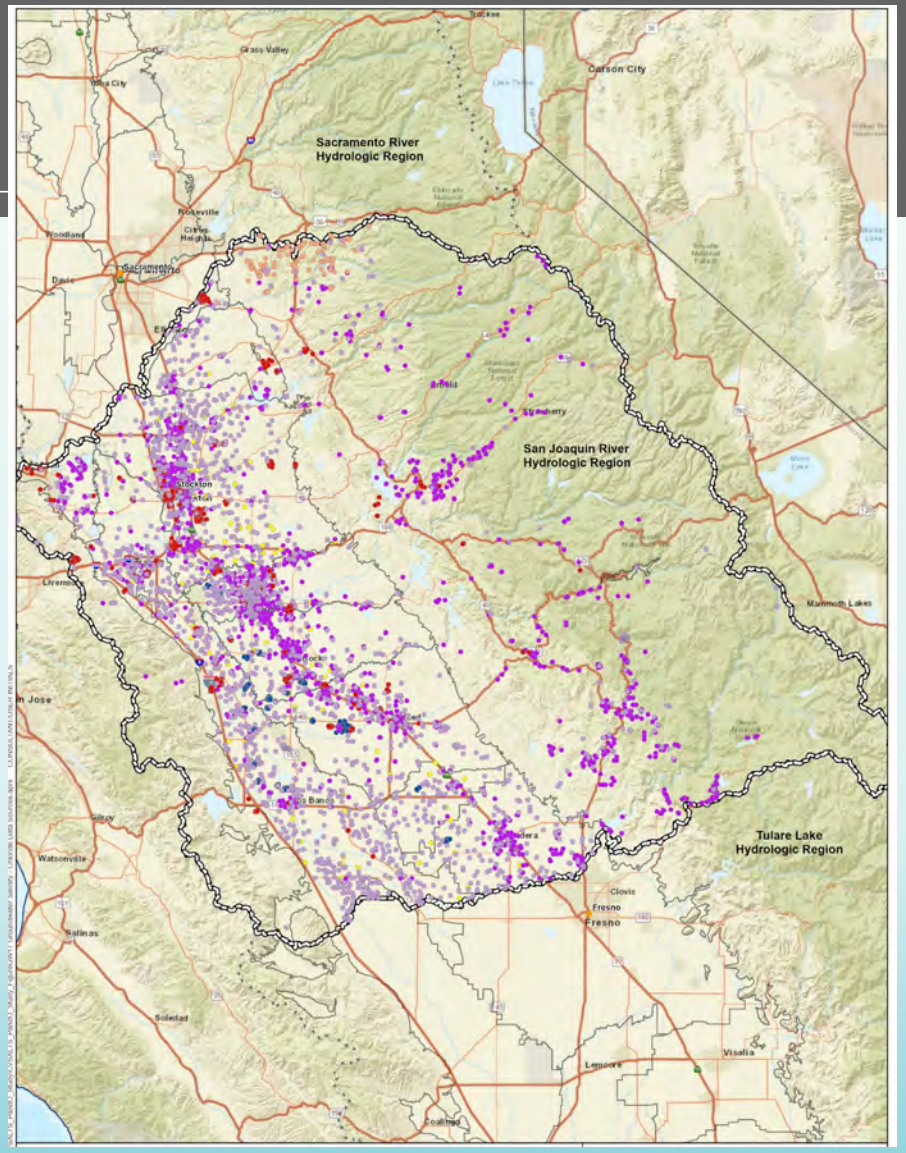




GROUNDWATER

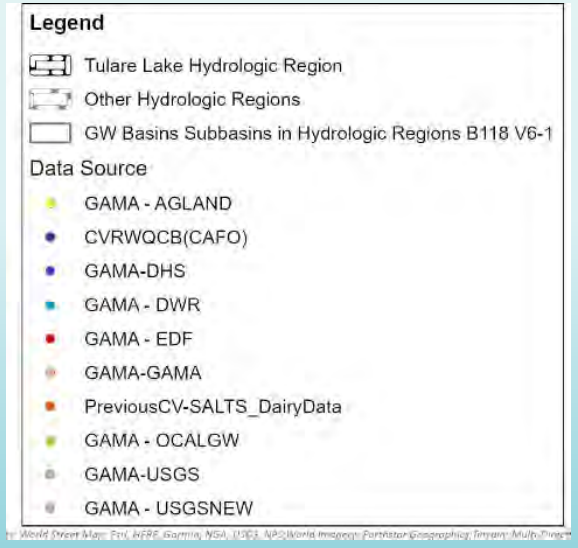
- San Joaquin River Hydrologic Region
  - Total Dissolved Solids (TDS) well data sources to support groundwater characterization of ambient conditions and trends

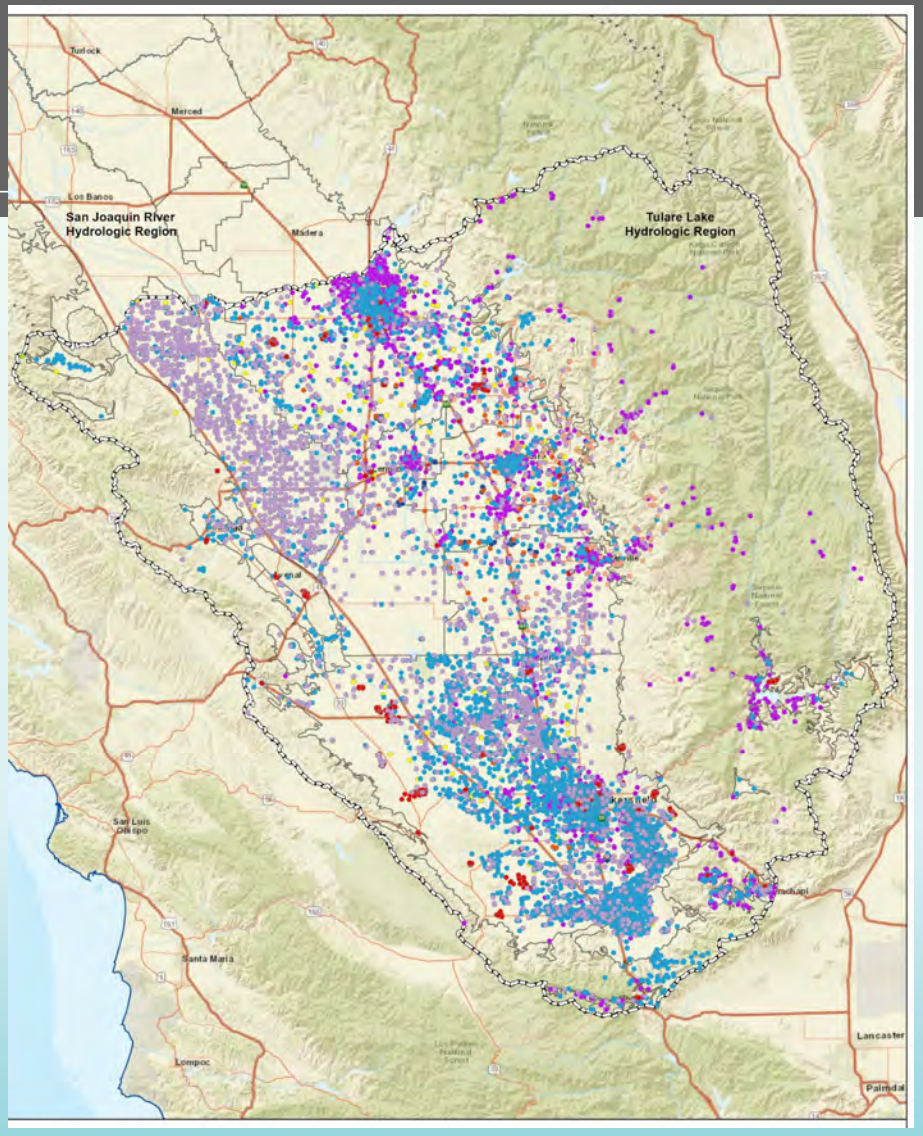




GROUNDWATER

- Tulare Lake Hydrologic Region
  - Total Dissolved Solids (TDS) well data sources to support groundwater characterization of ambient conditions and trends





RELEASE AND REVIEW SCHEDULE

- Expect notification that document is available to review by Close of Business (COB) Friday, July 1
  - *We will provide instruction on how to access the document, options for review and how to best comment*
- Targeting COB Monday, August 1 to receive comments
- August 25 Executive Committee – will provide summary of comments received and discuss how comments are being addressed
- Phase 2 addendum, which will focus on quantifying salt sources, will be prepared after modeling tools have been selected, developed and calibrated for use in generating those estimates

CVSALTS P&O Study
Tools Evaluation Small Group Meeting No. 2 – June 15, 2022

Report to the CV-SALTS Executive Committee
June 21, 2022

The P&O Study Tools Evaluation Small Group met on June 15, 2022, to continue its evaluation of candidate tools in the Water Management and Watershed categories. Introductions to and initial considerations of these candidate tools were made at the first meeting of the Small Group on May 18.

As a result of the presentations and discussion on June 15, the following recommendations have been developed by the Small Group for consideration by the Executive Committee at its June 23 meeting:

Water Management Tools

Recommendation:

It is recommended that the CalSim 3 tool be used in the P&O study.

Rationale:

The Small Group considered SacWAM and CalSim 3 as candidate tools under this category. The Small Group concluded that both tools are worthy candidates.

CalSim 3 was developed and is used by the California Department of Water Resources (DWR) and U.S. Bureau of Reclamation (USBR, or Reclamation) and others to assess water management alternatives in the Central Valley. It recently was updated (ca. 2021) and now includes linkage to a Central Valley groundwater model (C2VSim).

SacWAM was developed for the SWRCB for use in its planning processes related to the Bay-Delta Plan, water rights, and other uses.

The Small Group concluded that because CalSim 3 currently has greater coverage in the Central Valley, is the preferred water management tool by State and federal water supply agencies, and has a groundwater element that may be useful in the P&O study, it is the recommended tool for this category.

Watershed Tools

Recommendation:

It is recommended that CV-SWAT be used as the primary watershed model for the P&O study. It is also recommended that coordination and collaboration with Reclamation representatives and WARMF developers be implemented as part of the P&O study to take advantage of the extensive work that has

gone into WARMF model calibration and use, and to facilitate calibration and use of CV-SWAT, specifically in the areas of surface water hydrology and salinity transport to surface waters.[1]

Reclamation has indicated that it will provide the existing WARMF model and the instructions to use in conjunction with CV-SWAT, as needed.

Rationale:

The Small Group considered CV-SWAT and WARMF as candidate tools under this category. The Small Group concluded that both tools are good candidates, with strengths and weaknesses.

CV-SWAT is currently being used in the Central Valley in the Irrigated Lands Regulatory Program[2], specifically in the development of Groundwater Protection Formula, Values, and Targets for nitrate discharge below the rootzone to groundwater. Substantial effort and resources have been invested in CV-SWAT to calibrate crop models and management practices to Central Valley conditions. Furthermore, it has undergone evaluation and consideration by ILRP stakeholders and the Central Valley Water Board and provides advantages, as compared to WARMF, in its handling of cropping, evapotranspiration, irrigation/fertilizer/amendment practices, and root zone dynamics. CV-SWAT covers the entirety of the Region 5 boundary but must be modified for use in the P&O study to implement an existing salinity module and to calibrate surface water hydrology and associated salinity transport in the Central Valley at an appropriate planning level scale.

The WARMF model has been calibrated for surface water hydrology and salinity in the lower San Joaquin River Basin and has been improved in its simulation mechanism, user friendly graphic user interface (GUI), pre- and post-processing tools, and auto-calibration tools in the past 10 years with significant financial support from Reclamation. Reclamation is using and will continue to use WARMF for the Salinity forecasting and salt load management in the lower San Joaquin River Basin. WARMF has also been calibrated for use in other areas of the Central Valley, including the Sacramento Valley, eastside tributaries, and the Tule River area. WARMF coverage would need to be expanded to include the Tulare basin and to extend above reservoirs to cover the full extent of the Region 5 watershed to meet P&O study needs.

CV-SWAT is being recommended given its capability for detailed spatial representation and analysis of ET, cropping, crop management practices (irrigation, fertilization/soil amendments), and associated root zone processes, which are important to the P&O Study.

[1] Neither WARMF or CV-SWAT can fully capture fluxes to and from groundwater connected to surface waters. So, calibration to address this mechanism of salinity transport to surface waters will likely require one of the groundwater tools.

[2] Notably, Sacramento Valley rice land is not subject to the Groundwater Protection, Formula, Values and Targets process for nitrate as the requirement does not apply to rice lands. Thus, reference to the Irrigated Lands Regulatory Program here does not include application to Sacramento Valley rice acreage. Application of CV-SWAT to rice acreage in the Sacramento Valley will need to be evaluated and calibrated.

PRIORITIZATION & OPTIMIZATION STUDY

CV-SALTS Executive Committee Meeting

Technical Consultant Team Presentation

Data Management System (DMS)

June 23, 2022

CV SALTS
Central Valley Salinity Alternatives for Long-term Sustainability

PARTIAL P&O STUDY TIMELINE

- Schedule from approved Integrated Scope of Services (ISOS)

Task No.	Task Description	Year (Quarter)												
		'21	2022				2023				2024			
		4	1	2	3	4	1	2	3	4	1	2	3	4
1	**Data Development and Management**													
1.1	Data Compilation													
1.2	DMS Data Management Plan Development			★										
1.3	Establish DMS													
1.4	Implement and Maintain DMS													
2	**Baseline/Future Characterization of Salt Conditions**													
2.1	Baseline Characterization													
2.2	Long-term Salt Planning Options (ID SMRs)				★									
2.3	Characterize SMRs/ID Sustainability Gap													
2.4	Alternatives to Close Sustainability Gap													
3	Appropriate Numeric Salt Mgmt Targets													
3.1	Protection of Sensitive Beneficial Uses													
3.2	ID Candidates/Select Archetype Areas				★									
3.3	Archetype Analysis													
3.4	Numeric Target Development									★		★		
4	**Numeric Salt Management Tool Development**													
4.1	ID Needs and Candidate Tools/Models													
4.2	Select Tools/Models				★									
4.3	Calibrate Tools													
5	**Additional Technical and Regulatory Tasks**													
5.1	Regulatory Review Plan													
5.2	Salt Minimization Practices													
5.3	Groundwater Recharge Analysis													
5.4	Treatment Technologies Evaluation													
5.5	Salt Management Areas													
6	**Administrative Support Tasks**													
6.1	Progress Reports													
6.2	Phase 1 Funding & Governance Plan													

We Are Here

COMMENTS ON DRAFT DATA MANAGEMENT PLAN

Comments Received on June Draft of Data Management Plan			
Date	**Commentor**	**Agency**	**Edits**
5/31/2022	Bob Gore	Gualco Group	email
6/6/2022	Zac Just	Westlands WD	word doc
6/9/2022	Daphne Orzalli	CVSC	email

TYPES OF COMMENTS

- Use of ‘off-the-shelf’ tools
- Ownership of data stored
- Web Hosting
  - *Storage capabilities*
  - *File transfer times*
  - *Long-term project management of DMS*
- Succession Planning and Administrative Record Support
  - *Long-term planning for succession planning*
  - *Coordination of design to support Administrative Record*

RECOMMENDATIONS FOR CONSIDERATION

- Recommend Adoption of the DMP
  - *Module 1 – Document Management System*
    - Begin development of this module as described in Data Management Plan; periodic reports and/or demonstrations to the Executive Committee
  - *Module 2 – Model and Data Storage System*
    - Update Data Management Plan, as needed, after tools/models selected later in 2022
    - Obtain approval before initiating work on this module
  - *Module 3 – Communication Support Tool*
    - Begin to customize Communications Tool to support review of P&O Study draft documents

NEXT STEPS – 2022 DMS DEVELOPMENT SCHEDULE

Preliminary Draft Data Management Plan Submit for Review	Revised Draft **Data Management Plan*** for Review	**Final Data Management Plan*** for Executive Committee	If DMP Approved: Develop Approved Modules of DMS & Periodic Progress Reports
Submitted: April 19 Comments: May 2	**Submitted: May 27 Comments: June 9**	**Submitted: June 21**	**July - December**

* Finalization and approval of Model & Data Storage Module will coincide with Model/Tool selection process targeted for completion in September/ October

Questions & Discussion

CV-SALTS Prioritization & Optimization Study

Data Management Plan to Develop a Data Management System

Prepared for:

Central Valley Salinity Coalition and
CV-SALTS Executive Committee

Prepared by:

GEI Consultants
2868 Prospect Park Drive, Suite 400
Sacramento, CA 95670

June 2022

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1. Introduction

The purpose of this Data Management Plan (DMP) is to describe the anticipated Data Management System (DMS) needs of the CV-SALTS Prioritization and Optimization Study (P&O Study) and identify practical options that may be considered to meet those needs. The P&O Study is the first of three phases of the Central Valley Region's Salinity Control Program to identify and implement long-term strategies to address accumulation of salts.

The P&O Study Workplan included a requirement to establish a repository for data and information (e.g., task reports and technical memoranda, data files, GIS shapefiles, meeting agendas, notes and presentations, and key documents identified through literature reviews or that provide key support to P&O Study recommendations). All of the tools developed for the DMS and the materials stored on the DMS will be under the control of the CVSC. In general, the goal of the DMS is to provide some certainty to meet these data repository requirements at a (to be determined) cost and have the flexibility to expand its capacity and functionality to meet future needs.

Specifically, the DMS should be designed to operate under the following conditions:

- Preserve institutional knowledge about the P&O Study over the long-term
- Support succession planning as the participating personnel change over time, given the anticipated 10 to 15-year length of the P&O Study
- Streamline access by P&O Study participants to documents, data, and tools
- Support preparation of the administrative record for any future Central Valley Basin Plan amendments
- Provide the support necessary to keep the DMS operational and provide flexibility of expansion as needed
- Provide security and data backups as well as manage accessibility including individual login credentials for non-public users.

The DMS is not intended to store pre-existing publicly available and readily accessible data and information. For example, existing online programs like the State Water Resources Control Board's GeoTracker includes data for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater. Anyone may access these data via the State's GeoTracker website; therefore, these data need not be stored in the DMS. Instead, the DMS will store data and information processed in some manner, i.e., modified from its original publicly stored form, for use by the P&O Study so it can be provided to the public.

Based on input received at the March 17, 2022 and April 7, 2022 CV-SALTS Executive Committee meetings, the current direction provided on the P&O Study DMS includes development of the following tools:

- Document Management System
- Model and Data Storage System (MDSS)
- Communications Support Tools (optional)

The DMP's purpose is to identify cost-effective, easily implementable solutions to the data and information management needs to support ongoing planning activities.

Each of the three tools listed above is independent of the others and may be considered individually when it comes to cost and schedule. For example, design of the Document Management and Communications Support tools may begin immediately, while design for the MDSS may wait until the final selection of the numeric models and tools to be used in the P&O Study is complete in September 2022. Timing the design of the MDSS to commence when more complete information is available does not hinder or delay the schedule of designing the others in any way.

1.1 DMS Basic Elements and Functionality

The P&O Study's Integrated Scope of Services (ISOS) (October 27, 2021) identified several issues to consider when developing a DMS to support the needs of the Study. Specifically, the key elements of the DMS should be consistent with the following criteria:

- Provide a centralized, secure, one-stop location where all P&O Study documentation can be accessed.
- Have user-friendly menus so that information can be readily found and downloaded (as allowed by the user permissions).
- Support a range of file storage capabilities: databases, spreadsheets, word and pdf document files, GIS files, literature and reports, draft and final deliverables, etc.
- Include the ability to search for data or documents in the DMS.
- Establish rules for data to be uploaded to the DMS including Quality Assurance/Quality Control (QA/QC) requirements and documentation (including metadata documentation) of when/how data were QA/QC'd prior to upload into the DMS. This may need to consider the requirements of various programs and regulatory reporting requirements.
- Provide options to access databases or sources via a Live Link, if requested, instead of uploading data directly into the DMS.
- Incorporate archive capabilities as datasets/databases are updated over time.
- Include the ability to set user permissions, which may be varied based on the need for access.
- Be housed and accessed at a location that best serves the purposes of the P&O Study (e.g., CV-SALTS server or Contractor server – note this element includes discussion of "ownership" of the DMS).

- Provide other functionality, as determined through discussions with the Central Valley Salinity Coalition (CVSC) and CV-SALTS Executive Committee.
- Consider the use of Commercial Off-The Shelf software and tools where appropriate.
- Provide necessary documentation of the DMS and individual modules and administrative user's manual to support CVSC's long-term use and management of the DMS.

1.2 P&O Study DMS User Needs

The DMS development effort will provide a web-based DMS platform designed to meet the various needs described above. Individual DMS users may include anyone interested in the P&O Study ranging from the CVSC, Executive Committee, and Contractor staff to dischargers supporting P&O Study implementation, and the general public.

While anyone may access the DMS via a web-based interface to download posted information, the type and level of access may vary depending on pre-determined user permissions. Different levels of access or user permissions may be granted to different types of stakeholders, e.g., Central Valley Water Board staff, versus members of the general public. The permissions will allow individuals with specific, but varying, responsibilities to view, edit, search, upload, and download data.

The types of permissions will be specific to each tool developed (e.g., Document Management System versus the MDSS). Table 1 provides an illustrative example of how user permissions may be specified for different types of users. Note that this is an example only. Actual user types/permissions will be developed in collaboration with the CVSC and CV-SALTS Executive Committee.

Table 1. Sample User Types and Permission Descriptions (an illustrative example)

User Type	Description of User Permission
CVSALTS DMS Administrator	Manager or person with CVSC authority to allow access to modules of the DMS. This includes providing individual permissions by username and password to provide appropriate access to modules included in the DMS.
CVSALTS Staff	Staff member would have access to, view, and download materials from the Data Management System. In general, they would not have authority to upload, edit, or remove information from the DMS.
CVSALTS Consultant	Consultant staff with general access to the DMS, and individual access to portions of the DMS consistent with their roles and responsibilities. This may include uploading and downloading of models and model data associated with their roles and responsibilities.
CV-SALTS Executive Committee	Committee participants with permissions to view and download data and reports. Other permissions may be granted by the Administrator if Executive Committee members have different roles and responsibilities.
Public	Would not require log-in credentials, and would only have access to view, and in some cases, download, publicly available data or reports.

1.3 Integration with CV-SALTS Website

The DMS will be developed to integrate with the existing CV-SALTS website (owned by CVSC), which would include the added log-in link that provides access to the Data Management System modules. Usernames and passwords will be assigned by the DMS Administrator and need to be entered on the site before accessing protected information (see example in Figure 1).

Figure 1. CV-SALTS Website and Example Login Page

1.4 Web Hosting Options

Three options were considered as approaches to hosting web-based applications and data storage: contracted (GEI) servers, cloud storage, and client servers. Estimated costs for web-hosted options are described below.

1.4.1 Contracted (GEI) Servers

For this option, GEI would provide the facilities to create and maintain an Internet-accessible site. The system, including web applications, databases, and data files, would be deployed and hosted on GEI servers. The hosting would include: one web server hosting the web application, a dedicated Domain Name System configured for the site and pointed to the hosting server, a database server storing the database, and email connectivity allowing the host and site to send email to the users.

Advantages of utilizing GEI's servers relevant to the P&O Study include:

- **Data Security** – GEI's data storage is highly secure. GEI's IT Risk Governance is overseen by our Enterprise Risk Management Subcommittee. Following the Subcommittee charter, this committee will build out identified risk examples, controls action/response plans as well as identify any other risks that they believe are significant and possible and not currently represented in the register.
- **Maintenance** – GEI's IT staff perform routine system maintenance to keep server software updated and running so tools can operate smoothly and avoid downtime.

- **Troubleshooting** – GEI's in-house web developers are available for troubleshooting issues, fixing bugs identified by users, and implementing minor editorial changes.
- **Backup** – GEI's IT staff performs routine backup of data to a secondary location.

1.4.2 Cloud Storage

For this option, data would be stored by a third party, said to be in "the cloud." The physical storage would span multiple servers (sometimes in multiple locations), and the physical environment is typically owned and managed by a hosting company. The cloud storage providers are responsible for keeping the data available and accessible, and the physical environment secured, protected, and running. People and organizations buy or lease storage capacity from the providers to store user, organization, or application data.

Advantages of cloud storage relevant to the P&O Study include:

- **Cost** - Pay only for the storage the Study actually uses, typically based on an average of consumption during a month, quarter, or year. This does not mean that cloud storage is less expensive, only that it incurs operating expenses rather than capital expenses.
- **Storage Capacity** - Storage availability and data protection is included with the standard cost, eliminating any additional charges for updating technology, effort, availability, and protection.
- **Maintenance** - Storage maintenance tasks, such as accessing additional storage capacity, are provided by the service provider.
- **Backup** - Cloud storage can be used as natural disaster proof backup, as normally 2 or 3 different backup servers are located in different places around the globe.

1.4.3 Client Servers

The option to use client servers must be excluded at this time because the CV-SALTS program does not have its own servers to provide storage.

1.5 Software Use / Licensing Costs

The following software and licensing costs may be incurred by the client if they choose to host the management tools developed by GEI outside of GEI's servers.

Item	Description	Cost
Software License (SharePoint, SQL Server, and Java)	Third party licensing fee for use of SharePoint and database software to support the Document Management System	$1000/Month

1.6 GEI Website Maintenance Costs

The following website hosting and maintenance costs may be incurred by the client when hosting the management tools developed by GEI on GEI's servers.

Item	Description	Cost
GEI Cloud Server Hosting	Hosting the following client tools and applications on GEI servers: • Document Management System • Model and Data Storage System (MDSS) • Communications Support Tool	$500/Month
Data storage	Data storage up to 1 TB	$100/Month
Data transfer	Bandwidth and networking for data and document transfer between servers and users' computers	$100/Month
Routine maintenance and data backup	Routine system maintenance to keep server software updated and running so tools can operate smoothly and avoid downtime plus backup of data to a secondary location.	$300/Month
Troubleshooting and minor changes	Labor hours for troubleshooting issues and fixing bugs identified by users, and implementing minor/editorial changes requested by the clients	$170/hour (based on GEI Fee Schedule for current year)

1.7 Implementation Schedule

The approved P&O Study ISOS timeline includes the establishment of the DMS in Q3 and Q4 of 2022. Implementation and maintenance of the DMS will then continue through the duration of the P&O Study.

As noted above, each of the three DMS modules identified by the CVSC and CV-SALTS Executive Committee are independent and can be implemented on individual schedules. The DMS options recommended in this DMP can meet those schedule requirements.

2. Document Management System

The CV-SALTS Program requires a Document Management System to store documentation such as reports, analyses, notes, references, and necessary data files to replicate certain model runs. Several considerations can determine which available online systems provide the best flexibility, space, and features necessary for users to find and store the information needed throughout the duration of this project.

2.1 Purpose of the Document Management System

The purpose of the Document Management System is to provide a secure, on-line location to store P&O Study documents that can be easily accessed by P&O Study personnel. The DMS would provide the following functions and capabilities:

- Web accessible with username and password login
- Store documents (e.g., draft and final reports, key information sources, technical memoranda)
- Search capability
- Easy ability to download documents
- Ability to be transferred to a different location if needed
- Best Practices document to guide users regarding necessary standardization, such as suggested file naming conventions and folder structures
- Multiple access permissions (for viewing, editing, downloading, etc.) for different users
- Sufficient storage capacity, or the ability to increase storage capacity when needed
- Reasonable (affordable for the P&O Study) development and annual operations and maintenance costs

2.2 Document Management System Options

Several commercially available document management systems were considered during this initial evaluation, including the following:

- SharePoint
- Box
- Dropbox
- Google Drive
- Amazon WorkDocs

Each of these systems are described in this section. SharePoint is described at a greater level of detail than the other options because this system appears to be the best fit for the P&O Study.

2.2.1 SharePoint

2.2.1.1 What is SharePoint?

SharePoint is a web-based collaborative platform that integrates with Microsoft Office. SharePoint was developed as a secure place to store, organize, share, and access information from any web-capable device. Users can be assigned different levels of authorization, and be able to instantly view, edit, and/or share documents within the system, depending on their level of permission. SharePoint is highly customizable and can be edited by authorized users at any time to accommodate the changing needs of the program and user-base.

2.2.1.2 What are the Costs Associated with Using SharePoint as a Document/Data Library?

Housing large amounts of data is inherently expensive, and even formerly free services like Google Drive will soon begin charging fees when users store data above certain thresholds. An estimate of the potential number of users and storage requirements allows calculation of the costs of licenses and storage requirements. For planning purposes and cost comparison, we estimate 150 potential users with login permissions. This estimate does not include access to documents posted on the CV-SALTS website as is currently being done.

There are two options for implementing SharePoint for the CV-SALTS P&O Study:

- **New License** – Licenses for SharePoint vary depending on the storage size and available features. The most basic plans (known as "SharePoint Online") start at $5/user/month and offer 1 TB of OneDrive storage per user. More advanced plans (such as "Office 365 E3") start at $23/user/month and have more customizable storage options while offering more management features, desktop versions of Office applications, and an unlimited number of maximum users. Most plans require an annual commitment.
- **GEI License** – GEI has a company-based SharePoint license that enables GEI to create sites with large storage space and full features and could be used to create a document library for the P&O Study. GEI can grant a variety of different permissions to distinct groups on an as-needed basis. Once these permissions have been granted, the users associated with those email addresses will be able to view, edit, and/or download files, depending on their access level or type.

Since GEI retains the necessary licenses for SharePoint, which are charged by the total storage requirement and not the number of users, the only costs associated with its use are related to the time taken to populate the site and to assign tags to document/data files as appropriate. If more storage space is needed than GEI's current license allows, the additional premium to acquire more storage capacity would be a Study expense.

2.2.1.3 What can SharePoint Offer for our Document/Data Library?

As with other web and cloud-based platforms, SharePoint sites allow collaborative access to files, with the type of access (viewing, downloading, uploading, file editing, site editing, etc.) differing based on the type of authorization assigned to a user's email address. The site resizes content on different screen sizes, including those associated with different mobile devices. This means that whether a user is simply re-sizing their computer browser or using their smartphone, the interface is user-friendly and still easy to read and navigate.

The "Search in SharePoint" feature makes it simple for users to search anything across any site to which they have access. The search can be as specific as the known title of a file, or as generic as a term, generating a list of all files containing that term.

Tags/Categories

SharePoint allows the option of replacing traditional folder structures with "tags." Multiple tags can be assigned to any file and can be categorized to make file organization and reference easier while allowing additional features. Initially, tags associated with folder names can be assigned to files. From there, new tags can be agreed upon by the CVSC and CV-SALTS Executive Committee to facilitate easier navigation by users.

Tags can be created for information such as the following:

- Names of firms or authors associated with a file
- Topics or themes covered in the document
- Types of models related to the file
- Location (i.e. hydrologic region, groundwater sustainability agency, watershed)
- Maps
- Historical conditions
- Infrastructure

No limit exists on how many tags can be assigned to a file, so users can sort files by any tag(s) necessary to help their specific search needs.

Another advantage the tag system has over traditional file folder structures is the ability to browse multiple tags simultaneously. Unlike file folders and individual files that have to be opened one at a time, limiting the efficiency of browsing, lists of tags can be opened in sequence.

Some planning and coordination with the CVSC and CV-SALTS Executive Committee during the development of the tag system will be needed to provide appropriate flexibility to meet the needs of the P&O Study and secondarily to support other related efforts such as the preparation of the administrative record for potential future Basin Plan Amendments.

Version Control

SharePoint has a robust system of version control. Although only permitted users can edit documents, to further protect the integrity of documents, any edits to a document are logged, and

that document can be restored to any pre-edit state or saved as a new document. This avoids the need to continuously resave documents with new dates or new versions to separate altered files.

Best Practices Document

Some aspects of SharePoint, such as tagging and version control, may be new to the intended users. To enhance the effectiveness and efficiency of the SharePoint site, GEI will develop a Best Practices document to accompany the tool. This document will outline standards for file naming, folder use, and tagging. It will also address the use of version control.

Multi-type User Accommodation

To accommodate CV-SALTS's need for various types of users, a single SharePoint site can have multiple "views" for the same library that can be assigned to public or more restricted access. In this way, some information can be unavailable to the public while still allowing access to staff and other authorized individuals.

How Quickly can a SharePoint Site be Created?

SharePoint's flexibility allows for a site to be quickly created (in a few hours) for whatever data/information is already currently available, such as the documents currently on the CV-SALTS website. File organization can be easily edited to accommodate new types of data and documents when ready to be added.

For reference, 100 documents can be manually uploaded and assigned an initial tag associated with would-be folder names in 4-6 hours by an experienced SharePoint developer. Assigning additional tags will take more time, but this effort can be reduced with an established list of available tags and a system for which files get assignments. After the initial population of the SharePoint site anyone with the appropriate login credentials could add documents following the defined file naming and tagging conventions.

How Much Storage Space is Available and How Much Will CV-SALTS Need?

GEI's license permits storage of at least 1 TB of files in a site, and if necessary, this can be expanded pending further conversations and arrangements with GEI's IT Department. More storage space could be purchased from Microsoft that exceeds GEI's current allocation, or additional sites could be opened if needed. Additionally, after a set amount of time (e.g., two years) in which a file has not been opened, an automated message can be sent to the uploader (or other authorized users) asking if that file should be archived or kept in its current location. If no response is given within a certain time frame, or the user requests that the file be archived, the file will be moved to an archive location removing it from the site's main storage, and opening additional space. Archived files can be restored upon request using their tags.

To give a sense of scale, 1 TB (or 1,000 GB) gives the option of storing roughly 250,000 photos taken with a 12MP camera; 250 movies or 500 hours of HD video; or 6.5 million document pages. Each model run of CV-SWAT, CVHM, and C2VSIM takes between 10-25 GB of storage space for all relevant data (inputs, outputs, and metadata), and multiple model runs will

potentially need to occur for each Hydrologic Region (HR) and future archetype areas. GEI will continue to work with modelers to understand storage requirements to better store data files associated with model runs and adjust SharePoint recommendations based on those ongoing conversations.

How Easily can the SharePoint Library be Moved?

Transferability represents an important consideration for any document storage system. If library must move from one SharePoint site to another location (for example from GEI's SharePoint to another provider), several tools can aid in this transition. Metalogix, ShareGate, and AvePoint are examples of paid tools that largely automate the transition of files from one SharePoint site to another while maintaining the assigned tags. Similarly, tools are available to move all SharePoint files from their current site to other web and cloud-based platforms (Amazon Web Services, Google Cloud, etc.) while maintaining at least some of their organizing features. While other web platforms may not use SharePoint's "tagging" system, comparable multi-feature assignment abilities can be retained upon purchase of the necessary licenses.

Files can also be removed from SharePoint completely without sacrificing all of their groupings. SharePoint tags provide the ability to assign multiple categories to every file. If one of the assigned tags is a title field, this field can be used to transfer the SharePoint document organization to a traditional folder structure with folder names corresponding to the title field associated with that file. These files can be downloaded and navigated into a more traditional format, to ensure that even if SharePoint's more advanced tag features are gone, the files in the document library are still organized and readily movable by users with appropriate access and permission. From here, these folders can be housed on other servers or eventually uploaded to another web-based location.

If the CVSC were to retain its own license and create a custom SharePoint (or other cloud-based) site, the same effort would be needed to transfer the library to a different location.

2.2.2 Other Document Management Systems

2.2.2.1 Box

Box is geared toward businesses and enterprises. Box now includes enterprise collaboration features and cloud content management via integrations with Google Workspace, Microsoft 365/Office 365, and many others, along with enterprise-grade security and management options. A free plan for individuals offers 10GB of storage, a 250MB file upload limit, and the ability to share these files with limited permissions.

The paid accounts are as follows: Personal Pro, 100GB storage, $10/month; Business Starter, 100GB storage, $5/user/month; Business, unlimited storage, $15/user/month; Business Plus, unlimited storage, $25/user/month; Enterprise, unlimited storage, $35/user/month; Enterprise Plus, unlimited storage, custom pricing. (All business plans require at least 3 users. Prices shown are for annual payments.)

2.2.2.2 Dropbox

Dropbox has very similar functionality to "Box", and recently launched the ability to create Microsoft Office or Google Docs/Sheets/Slides files from within Dropbox and a new shared Spaces interface for team collaboration. Dropbox's free Basic plan for individuals offers 2GB of storage.

The paid accounts are as follows: Personal plans include Plus (1 user, 2TB storage, $10 per month) and Family (up to 6 users, 2TB shared storage, $17/month). Work plans include Professional (1 user, 3TB storage, $16.60/month); Standard (3+ users, 5TB storage, $12.50/user/month); Advanced (3+ users, unlimited storage, $20/user/month). For enterprise plans, contact Dropbox Sales. (Prices shown are for annual payments.)

2.2.2.3 Google Drive

Google Drive integrates with Google's productivity apps, such as Google Docs. With the Backup and Sync desktop client, the user is able to select Windows or MacOS computer folders can continually sync to Google Drive — files don't need to be kept in a designated folder, as with some services. Permissions on shared files can get complicated —commonly, file access is lost after links are shared with colleagues. Users can have 15GB of free storage (shared with other Google services).

The paid accounts are as follows: Google One plans for individuals: 100GB, $2/month; 200GB, $3/month; 2TB, $10/month; 10TB, $50/month; 20TB, $100/month; 30TB, $150/month. Google Workspace Essentials plans for businesses: 100GB per user/2TB pooled cloud storage, $8/user/month. Google Workspace plans for businesses: Business Starter: 30GB storage per user, $6/user/month; Business Standard: 2TB storage per user, $12/user/month; Business Plus: 5TB storage per user, $18/user/month; Enterprise (300+ users): unlimited storage, unknown pricing (the website indicates that interested parties must contact the sales team directly).

2.2.2.4 Amazon WorkDocs

Amazon WorkDocs provide is a standard online cloud document-sharing platform, with features including team sharing and inviting external users for cross-organizational collaboration, real-time Activity Feed to track site-wide collaboration actions by file, folder, or username, and granular searching.

The paid accounts are as follows: most regions cost $5 per user per month and include 1 TB of storage for each user.

2.2.2.5 Summary

A summary of the range of costs for commonly used cloud storage providers is provided on Table 2. Table 3 provides an estimate of the costs based on the assumption of 150 users.

Table 2. Summary of Commonly Used Cloud Storage Options, Unit Costs, and Deployment/Support Types

Contractor	Max Storage	Price/Month	Deployments	Support
Amazon (AWS)	Unlimited	First 50 TB/Month: $0.023 per GB Next 450 TB/Month: $0.022 per GB Over 500 TB/Month: $0.021 per GB	Cloud, SaaS, Web-Based	Email/Help Desk Phone Support 24/7 (Live Rep) Chat
Microsoft Sharepoint	Up to 25 TB	Variable based on license and level of services provided. Ranges from about $5/user/month /TB to $25/user/month/TB.	Cloud, SaaS, Web-Based	Email/Help Desk Phone Support 24/7 (Live Rep) Chat
Dropbox	Unlimited Storage	*Enterprise*: price available at request. Contact: https://experience.dropbox.com/contact	Cloud, SaaS, Web-Based	Email/Help Desk Phone Support 24/7 (Live Rep) Chat
eFile Cabinet	Unlimited Storage	$199 per user, per month	Cloud, SaaS, Web-Based	Email/Help Desk Phone Support 24/7 (Live Rep) Chat
Google Workspace	*Business plus*: 5 TB cloud storage per user; *Enterprise*: Unlimited	Business plus: 500 participants: $18 /user/month; Enterprise Contact https://workspace.google.com/contact-form/?source=gafb-pricing-enterprise-en	Cloud, SaaS, Web-Based	Email/Help Desk 24/7 (Live Rep) Chat
Google Cloud	Unlimited	Starting at $.004 per GB per month	Cloud, SaaS, Web-Based	??
WordPress	eCommerce: 200 GB	eCommerce: $45/month;	Cloud, SaaS, Web-Based	Email/Help Desk Chat

Table 3. Summary of Commonly Used Cloud Storage Options, Plans, and Total Costs

Service	Max Storage	Price/user/month	Total Cost Estimate per Month (150 user estimate)	Total Cost Estimate per Year (150 user estimate)
Box	Business Starter - 100 GB	$5	$750	$9,000
	Business - Unlimited	$15	$2,250	$27,000
	Business Plus - Unlimited	$25	$3,750	$45,000
	Enterprise - Unlimited	$35	$5,250	$63,000
	Enterprise Plus - Unlimited	Contact Sales for Details		
DropBox	Professional - 3 TB	$17	$2,490	$29,880
	Standard - 5 TB	$13	$1,875	$22,500
	Advanced - Unlimited	$20	$3,000	$36,000
	Enterprise - Unknown	Contact Sales for Details		
Google Drive	Google Workplace Essentials - 2 TB total	$8	$1,200	$14,400
	Business Starter - 30 GB	$6	$900	$10,800
	Business Standard - 2 TB	$12	$1,800	$21,600
	Business Plus - 5 TB	$18	$2,700	$32,400
	Enterprise - Unknown	Contact Sales for Details		
SharePoint	SharePoint Online 1 - 1 TB per user	$5	$750	$9,000
	SharePoint Online 2 - unlimited indivual cloud storage, contact sales for group limits	$10	$1,500	$18,000
	Office 365 E3 - unlimited indivual cloud storage, contact sales for group limits	$23	$3,450	$41,400
	GEI LICENSE	$0	$0	$0
Amazon WorkDocs	In most regions, 1 TB	$5	$750	$9,000

2.2.3 Recommendations

Based on cost as well as functionality and capability, at this time, we recommend use of SharePoint for both the CV-SALTS Document Management System and the Model Data and Storage System (described in the next section) for the following reasons:

- Provides the necessary web-access and security
- Provides version control of documents
- Integrates effectively with Microsoft applications
- Low cost to create the DMS
- Effective file management structure

- Can be managed by CV-SALTS staff (does not have to be GEI staff) once established
- Use of GEI's license to reduce annual storage costs (at least initially)
- Moveable to other non-GEI license and cloud storage
- Flexible and expandable to meet changing needs

3. Model and Data Storage System

The Model and Data Storage System (MDSS) for the CV-SALTS P&O Study will be informed by the model and data storage requirements of the models selected to be used for the P&O Study. The evaluation and selection of the models is not anticipated to occur until the Summer/Fall 2022. The development and use of models to support the CV-SALTS P&O Study will not occur until after that date, so the MDSS will not need to be developed on the same timeframe as the Document Management System or the Comments Module. Currently five different tool/model types are being considered:

- Water Management Model
- Watershed Model
- Delta Salinity Model
- Groundwater Model
- Crop Salinity Model

This summary is based on discussions with the Executive Committee on March 17 and April 7, 2022 and a meeting with the Modeling Technical Consultant Team on April 12, 2022. During the meetings, it was suggested that the development of the MDSS module of the DMS follow after the review and selection of the models so we can be better informed about the specific storage needs of each model type. After model/tool selection decisions have been made, a more definitive determination of the model and data storage requirements can be made.

3.1 General Assumptions

The following list contains the general assumptions associated with model and data storage needs.

- Establish a simple and efficient web-based system that is easy to use (so that it will be used) and provides essential storage and security for the models and data used to support the P&O Study.
- The models will not be run through the MDSS; instead, the MDSS serves only as a repository for key model-related files for model runs supporting key decisions.
- MDSS will make the package of models and data available to CV-SALTS so that when the P&O Study is done stakeholders will not have to ask the modelers for the model files.
- At this point, we are leaning toward SharePoint as the MDSS platform, if it provides the necessary security and data sharing features.
- More sophisticated custom tools are available, but at this time are considered beyond the needs of the P&O Study and would likely require increased costs to develop and use the

system. However, as the P&O Study moves forward, customization of the initial MDSS can be considered, if needed.

- The lead modelers will be responsible for assembling required information, e.g., the model packets (model code, input files, output files, pre- and post-processed information) to the MDSS. The cost to complete this work should be included in the annual P&O study budget to ensure this information is kept up to date.

3.2 What Data will be Stored in the MDSS

It is anticipated that additional discussions between the CVSC and the modeling team will be needed to determine which data and models will need to be accessible to meet regulatory and data transparency requirements. Some of the data management considerations regarding data and model accessibility include the following:

- MDSS will be used to store only those model runs used to support decision making; not every model run developed in the course of arriving at key decisions. This approach will reduce storage capacity requirements.
- Models and model data will be available to stakeholders but are not anticipated to be available for full public access. Consideration may be given to granting view-only access to the public or to sharing data by request.
- Models and data will be stored to simplify and streamline the delivery as well as provide certainty that the same model packages are delivered to each requesting party with requests being managed through the P&O Study staff.
- Models will take advantage of readily available publicly accessible data where possible to reduce storage requirements. Rather than storing all data needed to develop model runs, data available from publicly available websites will be accessed by links and/or station names to identify data source.

3.3 Storage Requirements

Estimates of the number of model runs for each model type and the storage requirements for each model run will be needed to estimate to total storage requirements for this module of the Data Management System. The actual storage requirements will be updated as additional information regarding the individual number of models runs and associated storage requirements are finalized. This will inform the total storage requirements needed for this module. The ability to download these large data sets is dependent upon connectivity to the internet.

- Based on initial conversations, the data sets for a single model run may range from 10 to 25 GB each.
- The number of model runs needed for each model type has not yet been estimated.
- The estimated storage requirements for the MDSS will be determined by estimating the storage requirements by model type, storage requirements for a model run, and number of model runs. Table 4 provides an initial estimate of the total MDSS storage requirements.

This estimate will be updated through ongoing coordination with the CVSC and the modeling team.

Table 4. Estimated Model Data Storage Requirements

	Estimated Storage Requirments (GB) for Complete Model Run	Number of Basline Model Runs	Number of Salt Management Scenarios	Climate Change Scenairos	Total Number of Model Runs	Storage Requirements (GB)
	A	B	C	D	E	F
					B+(C*D)	A*E
Water Management Model	10	1	3	3	10	100
Watershed Model	10	1	2	2	**5**	50
Delta Salinity Model	20	1	2	2	**5**	100
Groundwater Model	25	1	3	3	**10**	250
Crop Salinity Model	15	1	2	2	**5**	75
Total	80	5	12	12	35	575

3.4 Options

Two primary options were considered for development of the MDSS module. These include using a SharePoint platform (as described above), and the Library of Models approach described below. Two secondary alternatives were suggested by CV-SALTS partners and were considered as well. The secondary alternatives include Dropbox and Git.

3.4.1 SharePoint

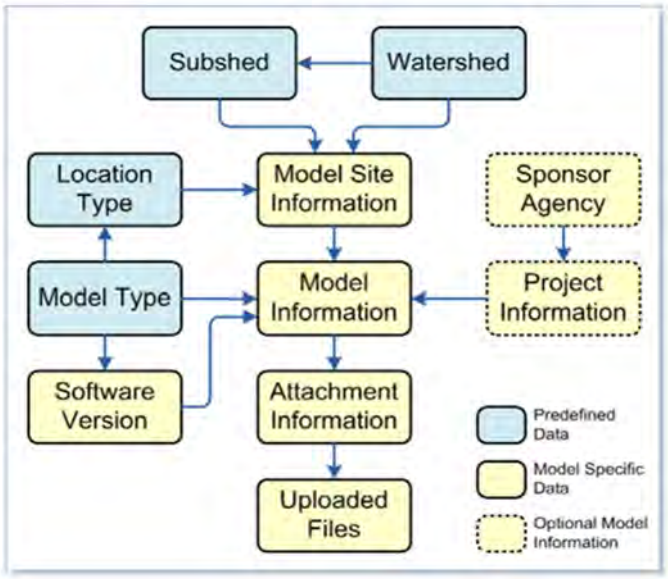
Based on the information provided in the prior section on the capabilities of SharePoint for the Document Management System and discussions with the CV-SALTS modeling team, SharePoint is appropriate for the MDSS for the following reasons:

- Provides the necessary web-based access and security
- Provides a low-cost option to create the MDMS that meets the needs of the P&O Study
- Provides an effective, easily searchable file management structure that can be managed by CV-SALTS staff once established (does not require GEI staff)
- Ability to use GEI's license to reduce annual storage costs
- Moveable to other non-GEI license and cloud storage
- Flexible and expandable to meet changing needs

3.4.2 Library of Models

The *Library of Models (LOM)* is a DMS previously developed by GEI to store and manage models and data for models. The LOM can support any type of model including the models being considered in the P&O Study. The LOM is more than just a depository of model input and output files; it also publishes metadata that provides information on each version of the model, each model attachment (e.g., model input, output, and the development criteria), the location or site modeled, the project associated with these models, the agency sponsoring the project, and the version of the modeling software used, as shown in Figure 2. Like any other library, the content in the LOM is organized according to defined criteria.

Figure 2. Schematic Illustration of the Relationship Between the LOM Content Components



An LOM is a very sophisticated tool that provides a high level of structure and organization to manage models and associated data sets. The LOM collects the metadata that defines the model type, location, sponsoring agency, project, and model information. To aid content contributors, a 26-step workflow was designed to collect the metadata, upload data files, etc. The LOM has a check-in guideline for each model type (e.g., a HEC-RAS model) that specifies how the data files should be prepared and what content should be added.

Access to the LOM can be controlled by user privileges as well as using content accessibility control.

- The LOM may also have a greater cost to develop and maintain than the MDSS and may require more time and effort from a MDSS administrator.
- The model check-in procedures may be more rigorous and beyond the needs of the P&O Study.

The capabilities of the LOM may exceed the needs for the P&O Study at this time, but some elements of the LOM may be useful to inform how the MDSS is organized and used.

3.4.3 DropBox

Dropbox is a file hosting service. DropBox files are stored in the cloud and are accessible from a computer, phone, or tablet. DropBox Business offers subscription plans based on the number of users. DropBox is an off-the-shelf tool that is not customizable to client specifications. However, if offers file sharing capabilities and could be utilized to store data.

3.4.4 Git

Git is a free and open source distributed version control system primarily used by programmers in conjunction with GitHub to store code in the cloud. While inherently flexible, Git is not user-friendly to a diverse set of users – it's generally used by those who understand code and coding.

3.5 Recommendations

At this time, we are recommending SharePoint for the MDSS. Table 5 compares some of the features of using SharePoint versus the Library of Models for model and data storage.

Table 5. Comparison of Features for SharePoint and Library of Models

Feature	SharePoint	LOM
Provides the necessary web-access and security	Yes	Yes
Low cost to create the DMS	Very Low	High
Effective file management structure	Yes	Yes
Cost to add model runs	Easy	More complicated
Once established, can be managed by non-GEI CV-SALTS staff	Yes	Yes, but complicated
Can initially use GEI's license to reduce annual storage costs	Yes	Yes
Easily moveable to other non-GEI license and cloud storage	Yes	Unsure
Flexible and expandable to meet changing needs	Yes	Limited

4. Communication Support Tool

This section describes an optional task to support the existing outreach efforts of the P&O Study. The P&O Study will produce numerous documents over the next few years that will be reviewed by multiple reviewers. The management of comments on any draft report can be a significant effort. Currently, comments on draft documents are sent to one or two individuals, which are then tasked with manually extracting each comment from sources with varying formats (e.g., Word document, spreadsheet, email, pdf, or embedded in a formal letter) and adding them to a spreadsheet to record the comment and reviewer. During the March and April 2022 CV-SALTS Executive Committee meetings, interest was expressed in exploring the use of support tools to manage the receipt and management of comments on draft documents for the CV-SALTS P&O Study.

4.1 Use of Comments Module

This section describes the application of a previously developed tool (Comments Module) and its potential application for the P&O Study. The Comments Module is one part of a Communication and Engagement tool previously developed by GEI to support Groundwater Sustainability Agency (GSA) activities under California's Sustainable Groundwater Management Act (SGMA). This tool can streamline the handling of comments on draft documents. In particular, the module reduces the level of effort to receive, organize, manage, and document comments received on draft documents. This allows a greater amount of time be spent reviewing and considering, rather than arranging and managing, the comments.

The web-based Comments Module was developed in 2016 to support projects whose needs included the distribution of draft documents to stakeholders and receipt of comments on those documents. The Comments Module facilitates the collection and management of comments on the draft documents by multiple reviewers. Comments are entered by the reviewers online via a user-friendly web form arranged by document, chapter, section, or even by line (if desired). The comments are collected in a database and provided to the report author in an Excel format for review and response. Comments can be easily sorted by chapter and section, or by commenter.

The Comments Module can be integrated into the existing CV-SALTS webpage to provide seamless integration with other CV-SALTS activities. This tool includes a password-protected login to manage access to the documents posted and comments received. A Comments Module Administrators Guide will be provided to CV-SALTS to support implementation of the module.

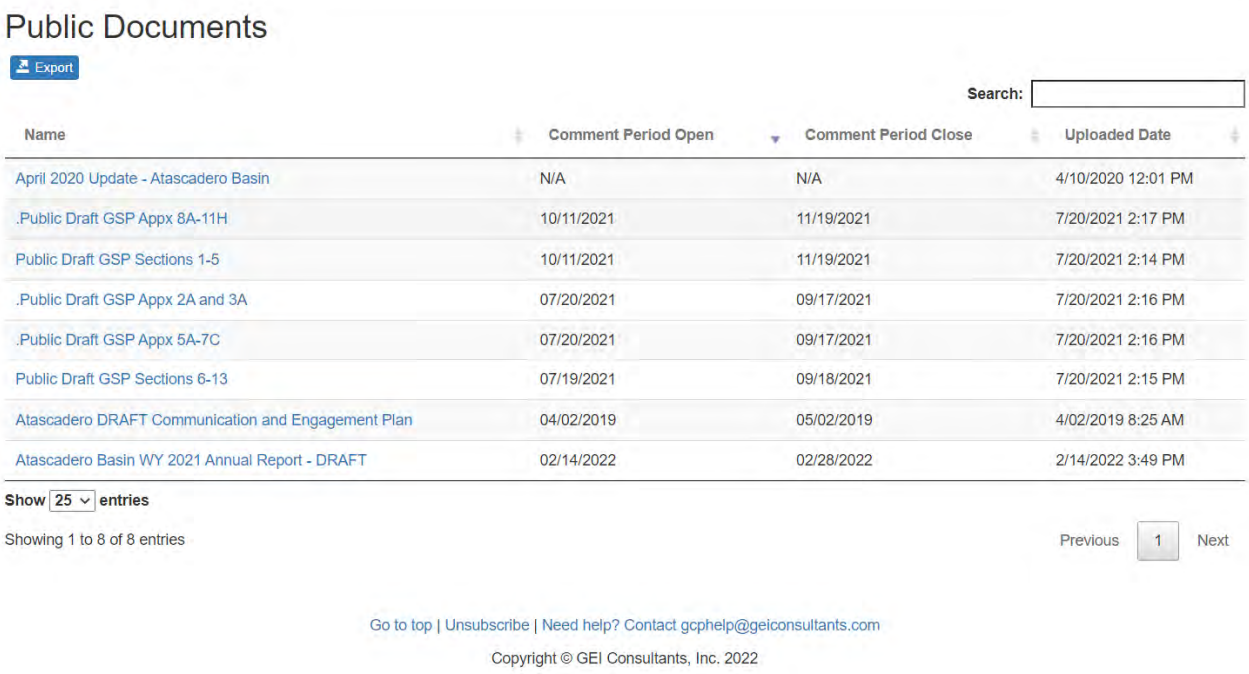
4.1.1 Comment Module Functions

Following is a summary of how the Comments Module functions on the front and back end, based on the user roles and responsibilities.

Role of Comment Module Administrator – Implementation of the Comments Module requires that a person (or people) be designated as the Administrator(s). The Comments Module Administrator(s) would be provided access to manage the tool. The functions of the Comments Module Administrator are described in the Comments Module Administrator's Guide. Web-based training will be provided to the Comments Module Administrator(s). Comments Module Administrators have the following capabilities:

- Provide usernames and passwords users for access to the Comments Module.
- Post documents (Word or PDF files) for review and comment and establish the comment period. Figure 3 shows an example page identifying documents available for review and comment start and end date.
- Send emails to stakeholders to notify them of draft documents available for review.
- Provide output from the Comments Module in an Excel table, as shown on Figure 4.

Figure 3. Administrator View of Document Comment Periods



Public Documents

Export

Search:

Name	Comment Period Open	Comment Period Close	Uploaded Date
April 2020 Update - Atascadero Basin	N/A	N/A	4/10/2020 12:01 PM
.Public Draft GSP Appx 8A-11H	10/11/2021	11/19/2021	7/20/2021 2:17 PM
Public Draft GSP Sections 1-5	10/11/2021	11/19/2021	7/20/2021 2:14 PM
.Public Draft GSP Appx 2A and 3A	07/20/2021	09/17/2021	7/20/2021 2:16 PM
.Public Draft GSP Appx 5A-7C	07/20/2021	09/17/2021	7/20/2021 2:16 PM
Public Draft GSP Sections 6-13	07/19/2021	09/18/2021	7/20/2021 2:15 PM
Atascadero DRAFT Communication and Engagement Plan	04/02/2019	05/02/2019	4/02/2019 8:25 AM
Atascadero Basin WY 2021 Annual Report - DRAFT	02/14/2022	02/28/2022	2/14/2022 3:49 PM

Show 25 entries

Showing 1 to 8 of 8 entries

Previous 1 Next

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Figure 4. Comment Module Summary Table

Name	Chapter & Section	Comment	GSA	Comment Source	Date/Time
Dana Merrill	Project and Management Actions - Concepts	My comments to this Chapter are: Page 4, paragraph 1. Exempting de minimous from water charges is fine but not necessarily from "assessments" as they are users who have a stake in the Basin health. Cumulatively they are a significant use of water. Page 6, Management Action, second paragraph "adversely affecting the local economy" is a significant point. The wine industry and resulting tourism boom has benefitted beyond the ag water users. Cutback will negatively impact the economy and a measurement of that impact should be carried out to help decide what cost of supplemental water or idling of irrigated farming really costs our community. Same paragraph: Water charging framework should prioritize water efficiency and higher water use crops should not be subsidized or favored because of historic use. Page 7: Paragraph 1, last sentence dealing with idled and to save water, should have added "...beneficial uses of the acquired land given its water use limitation." Page 8, Paragraph 2, Naci Water Project: The Naci Water Partners potentially could consider selling to a new partner: the Paso Robles Basin, whether the County entity or other. Perhaps there are willing sellers to carve out a base entitlement which could be augmented by shorter term purchases from other partners' shares. Page 9 "Important Considerations", line 2, what are "Potential water quality issues" associated with Naci lake water that would be limiting as a source?Page 10: General Assumptions: "Local groundwater deficits" require more precise determinations of boundaries, perhaps related to the same issue with "Zones" Page 10 SWP Assumptions: Need to determine definitively whether heavier pumping beyond the Red Zone impacts the Red Zone. And whether adding Supplemental Water to non Red Zone can improve Red Zone water levels. Same paragraph: Buying untreated SWP water farther east pre treatment would be cheaper and allow for more quantity to be acquired potentially. Cost of additional pipeline would have to be evaluated as part of viability review	County of San Luis Obispo GSA	pasogcp.com	3/29/2019 11:53:00 AM
Dana Merrill	Project and Management Actions - Concepts	Topics of Discussion section 1. Equity bullet point page 1; define "heavy pumper"; is that volume based upon acreage or by crop (alfalfa vs winegrapes etc)? Projects should be paid via a combination of Capital Project funding and operational charges for recurring operating expenses. 2. Equity bullet #2: monitoring wells, negotiating water charges framework, video logging wells (determining Zone Boundaries), extraction system monitoring etc. could be funded at last initially by a per acre charge, probably on irrigated lands. 3. Bullets page 2: deminimus pumpers: Yes and No to complete exemption. Lower base fee of their own is logical. 4. Pumping allowances: Set a base fixed amount, likely between 1 ac ft/acre/year and 1.25 ac ft/acre/year regardless of irrigated crop grown. Use economics as a tool to encourage water to move to most efficient use within Ag uses. 5. Standarized uses should be Paso Basin oriented. Battany study a good source for one at least. 6. Ramp downs: 10 years to complete, start in 5 at soonest. Need to see what Supplemental water is required. A given hopefully is current County Ordinance regarding new irrigated land is renewed for 5 years or GSAs choose a new approach (don't let it expire and start land development and well drilling rush to put us farther behind). 7. Ramp downs need to be equal until Zone boundaries are established with research. 8. Don't cap carryover or users will make sure to pump to avoid losing 9. County fine to be State Water Contractor IF they will take action to get it going. If not, get different entity motivated to get this going asap to know if it is a viable option supported by those who will pay for it. County record so far is too little, too late on Supplemental sources to Basin in general. 10. State Water contractor could be paid with usage charges and property tax in combination. Many examples statewide to select from	County of San Luis Obispo GSA	pasogcp.com	3/29/2019 12:10:00 PM
Dana Merrill	Project and Management Actions - Concepts	Re: changes in Pumping Allowance from Ag to M and I: most non Ag uses including Manufacturing and Industrial (M and I) which was mentioned and conversion to urban housing or ranchettes can attract a higher financial return on pumped water than Agriculture, Even tree crops, wine grapes and vegetables cannot compete with non Ag buyers of water whether groundwater or supplemental sources. Agriculture needs to be appreciated when it comes to pricing water. Ag is a key economic contributor today helping to drive the strong local economy. It is possible go the way of southern CA and other regions that can converted to non Ag uses. That could happen is Paso Robles if the combination of cutbacks and high price supplemental water makes it an obvious choice to convert to non Ag uses. Plus pressure from the state to build more housing. Those with high priced water to sell will profit in the near term but the agricultural character will change dramatically from the present. The allure of Paso Robles is not only the town but its setting, led by it becoming a world class wine destination. So be careful about moving Ag water to M and I or other uses, as mentioned as an possible strategy, as our very unique character could be lost.	County of San Luis Obispo GSA	pasogcp.com	3/30/2019 6:12:00 PM
Dan Penkauskas	Additional Comments	I really like the job you've done - good research and analysis of the current state and several proposed solutions with their costs worked out. I particularly like the proposed cost of water for growers - a nominal cost for the first 12", but sharply (10x?) higher for drafts over that. Some growers have very deep pockets indeed, and only draconian rates after the first 12" will encourage them to comply.Thank you.	County of San Luis Obispo GSA	pasogcp.com	4/5/2019 12:29:00 PM

Role of Commenter – Login credentials will be assigned to reviewers/commentors to allow comments on draft documents. The commenter may download the document for review and comments can be uploaded directly into the Comments Module database by selecting the document and section number as shown on Figure 5. Additionally, or alternatively, attachments can be uploaded.

A QuickStart guide and help buttons for are available for commentors as they use the Comments Module. A sample of an existing comments module entry form is shown on Figure 5.

Figure 5. Comment Module Input Form

1 Enter your name and organization

2 Select the document and section on which you would like to comment and enter comment.

3 If you have more than one comment, you may add another comment by clicking this button.

4 You may also attach a document with comments

5 Submit your comments by clicking this button.

4.1.2 Customization and Hosting

GEI's existing Comments Module platform could be used as the starting point for development of this module. GEI will customize the platform to meet the needs of the P&O Study. All customizations to the existing Comments Module will undergo testing prior to deployment to ensure their performance.

GEI would host the Comments Module on its servers during the customization phase. Upon completion of the customization, the module can continue to be hosted by GEI for a small hosting fee or can be moved to a cloud-based server, where the Document Management System may be stored.

4.1.3 Estimated Cost Savings

The Comments Module is intended to provide cost savings for managing comments on large documents that require documentation and review. For purposes of estimating the cost savings, the costs associated with the Comments Module are separated into three categories:

- Comments Module Customization Costs
- Comments Module Annual Costs
- CV-SALTS Staff/Consultant Time Costs

Each of these costs are briefly described below and the estimated costs associated with each element are provided in Table 5, which provides a hypothetical comparison with and without using the Comments Module. These estimates are provided for comparative purposes only and based on the generalized assumptions included in the table. The cost estimate is based on a hypothetical document that 50 commentors with 50 comments each, and an estimate of the time it takes to organize all the comments into a standard format to support the response to comments.

Comments Module Customization Costs – This cost estimate represents the one-time cost to customize GEI's existing Comments Module for use by the P&O Study. This fee will include the cost to customize the existing module to meet the needs of the P&O Study, including providing access to the Comments Module from the CV-SALTS website. The cost also includes preparation of the Administrator's Guide and a web-based training for CV-SALTS stakeholders demonstrating how to use the Comments Module to support the review of draft documents.

Comments Module Annual Costs – This cost estimate represents the estimated annual costs associated with Comments Module maintenance including the web hosting and licensing (these costs will be refined and coordinated with other costs associated with the planned CV-SALTS DMS elements considered in this DMP). Annual program maintenance would be charged on a time and materials basis. The annual costs are estimated based on experience.

CV-SALTS Staff/Consultant Time Costs - This estimate includes estimated costs associated with each document posted to the Comments Module for review. For purposes of this calculation, it is assumed that use of the Comments Module as intended will significantly reduce CV-SALTS staff time for each document utilizing the Comments Module.

Table 5 - Comparison of Comment Management Estimated Costs With and Without Comments Module

Comment Management Steps	Estimated Cost of Managing Comments With Comments Module				Estimated Cost of Comment Management Without Comments Module	
	Comments Development Module Costs	Comments Module Annual Cost	Comment Module CVSALTS Staff Time	Total Costs	Comment Module CVSALTS Staff Time	Total Costs
Customize Comments Module for CVSALTS	$20,000			$20,000		$0
Annual Web Hosting (estimated)	$0	$1,000		$1,000		$0
Annual Licensing (estimated)	$0	$1,000		$1,000		$0
Staff Training and User's Manual	$2,000			$2,000		$0
Annual Program Maintenance (estimated time and materials)	$0	$2,000		$2,000		$0
Subtotal of Comments Module Costs	**$22,000**	**$4,000**		**$26,000**		**$0**
Number of pages in Draft Report			500		500	
Add Report to Comments Module			$1,000		$0	
Commentors on the Draft Report			50		50	
Number of Comments per Commentor			50		50	
Hourly rate of comment logistics support person			$150		$150	
Number of Comments per hour placed in spreadsheet			100		10	
Subtotal of Staff Time to Manage Comments			**$4,750**	**$0**	**$37,500**	**$37,500**
Total Cost	**$22,000**	**$4,000**	**$4,750**	**$30,750**		**$37,500**

Based on the this the estimate provided in Table 5, use of the Comments Module on the initial report would be expected to save approximately $7,000 for the initial use of the Comments Module. Future uses of the Comments Module on additional documents would produce similar savings for each use, as the development and deployment costs are one-time only and would not be repeated.

5. Recommendations Summary

This DMP provided tailored solutions for data and information management needs to support the CV-SALTS P&O Study and ongoing planning activities including recommendations for development of the following tools:

- Document Management System
- Model and Data Storage System (MDSS)
- Communications Support Tool

A summary table of recommendations for each tool is provided below.

Tool	Recommendation	Alternatives
Document Management System	SharePoint	Box, Dropbox, Google Drive, Amazon WorkDocs
Model and Data Storage System (MDSS)	SharePoint	Library of Models, DropBox, Git
Communications Support Tool	Comments Module (linked to existing CV-SALTS web page)	Manual comments compilation by CV-SALTS staff or consultant

SURVEILLANCE & MONITORING PROGRAM (SAMP)

CV-SALTS Executive Committee Meeting

SAMP Conceptual Framework

June 23, 2022

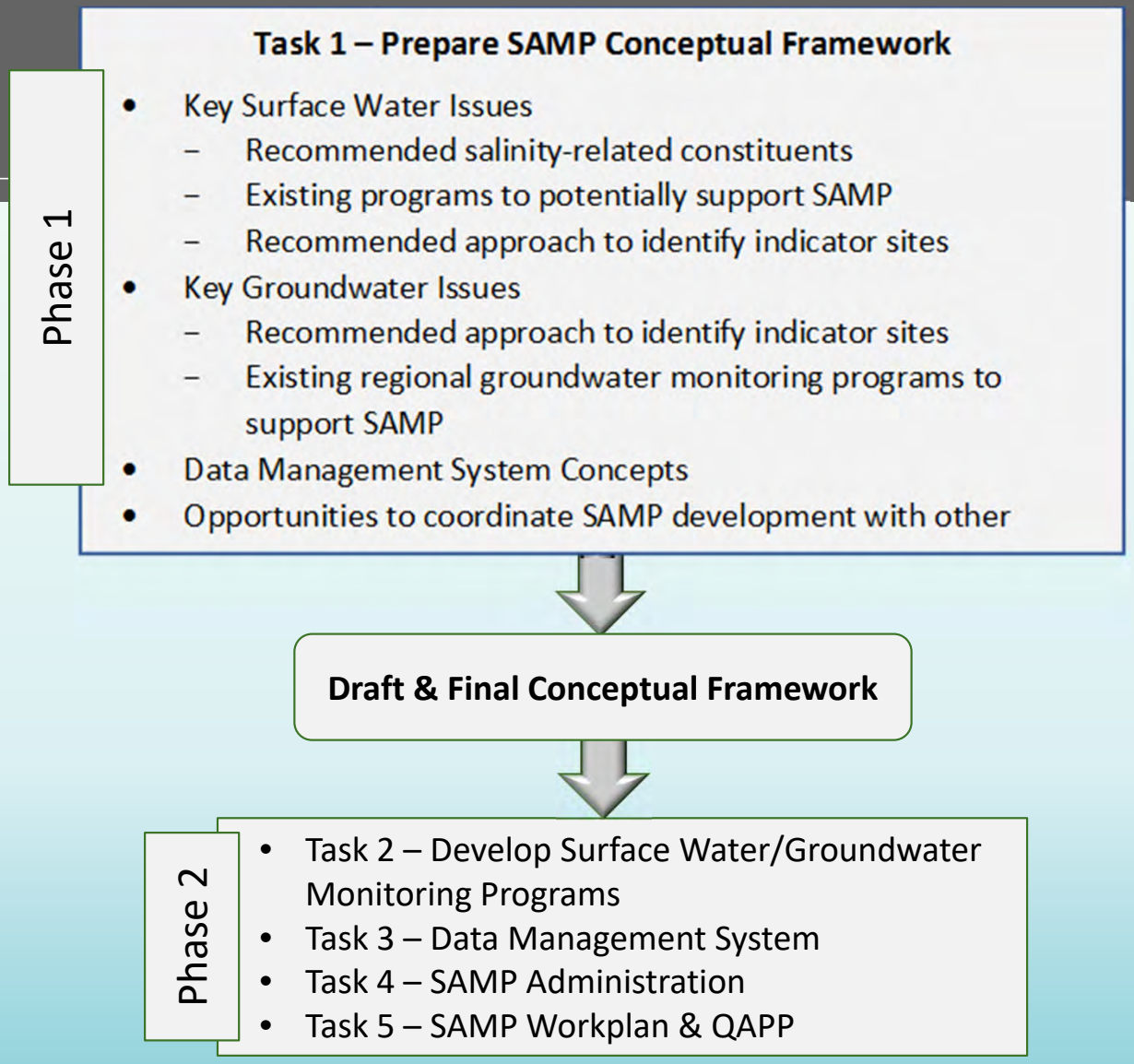
CV SALTS
Central Valley Salinity Alternatives for Long-term Sustainability

SURVEILLANCE & MONITORING PROGRAM (SAMP)

- Salt & Nitrate Program (SNCP) requires implementation of a SAMP
- SAMP Workplan with QAPP due by February 15, 2023
- SNCP Basin Plan amendment describes minimum SAMP requirements
- Assessment Report due at least once every five years after SAMP Workplan approval
  - Intent is to use data from existing surface water and groundwater monitoring programs for periodic assessment
- SAMP development began in Spring 2022
- Written Conceptual Framework to be provided next week
- Red Flag Issues identified ASAP, written comments due by July 15, 2022

SAMP DEVELOPMENT

- Phased Process
  - Phase 1 (underway) – Develop Conceptual Framework to guide SAMP Workplan development
  - Phase 2 – To be implemented upon approval of Conceptual Framework



SURFACE WATER PROGRAM – KEY ELEMENTS OF APPROACH

- Rely solely on sites where existing monitoring programs are collecting data
- Rely on existing QAPPs prepared by existing monitoring programs
- Initial site selection based on P&O Study baseline characterization sites, but supplemented (but only if needed)
- Assessment of ambient conditions/trends to be based on TDS/EC data results
- Data trend analysis methods will rely on standard parametric/non-parametric statistical analyses supported by Standard Operating Procedures.
- All data used to assess surface water salinity and associated data analyses will be stored in the SAMP Data Management System

SURFACE WATER PROGRAM – KEY ELEMENTS OF APPROACH

- Workplan development will also consider:
  - Need to accommodate the eventual development by the P&O Study of Salt Management Regions so that it will be possible to evaluate ambient conditions and trends at the appropriate scale, including smaller regional salt planning areas.
  - Potential inclusion of a land use assessment as part of the periodic surface water assessment to provide additional information regarding changes in the watershed that have occurred during the assessment period that may influence salinity levels.

GROUNDWATER MONITORING PROGRAM

- Salt and Nitrate Control Program states (emphasis added):

  To the extent practicable, the SAMP Groundwater Monitoring Program ***will utilize data collected by existing Central Valley Water Board water quality monitoring programs to be cost-effective and establish consistency*** *in how groundwater quality data are collected, managed, assessed and reported. In this regard, the Irrigated Lands Regulatory Program* ***Groundwater Quality Trend Monitoring Program implemented by the Central Valley Groundwater Monitoring Collaborative is anticipated to provide the foundation for the development of the Groundwater Monitoring Program.***

- Development of the SAMP Conceptual Framework for the groundwater program has been largely focused on how to best implement this directive

EXISTING GROUNDWATER MONITORING PROGRAMS (EXCERPT)

Program Name / Subdivision	IRLP			CVDRMP	DDW Public Water Supply Monitoring	SGMA	COGG Groundwater (GW) Program	GAMA Program		
	CVGMC	SVWQC	Other Non-CVGMC Coalitions			GSAs (344 as of 2022)		Priority Basin Project	Domestic Well Project	Special Studies Project
Number of Monitoring Wells in Central Valley (outside Central Valley)	307 as of 2021	23 as of 2022 (6)	To be determined	439 as of 2021	Approx. 6,700 as of 2022 (21,920)	Approx. 3,800 wells as of 2022	21 O&G fields have been investigated for the GW objectives of the program; Typical well counts range from a few dozen to a few hundred wells sampled for each field	699 as of 2022 (2,618)	406 (1,147)	654 as of 2022 (1,513)
Constituents Monitored	Anions, cations, TDS, field chemistry, depth to water	Anions, cations, TDS, field chemistry, depth to water	Anions, cations, TDS, field chemistry, depth to water	Anions, cations, TDS, field chemistry, depth to water	Title 22 constituents and varies by location; Can include pesticides, metals, agricultural chemicals aesthetic parameters	Varies by GSA, depending on what constituents the GSA can reasonably manage with the authority available	Typically TDS, field chemistry, depth to water	Anions, cations, field chemistry, pesticides, industrial chemicals, THMs, TDS, TOC, isotopic ratios	Anions, cations, field chemistry, pesticides, industrial chemicals, THMs, TDS, isotopic ratios	Anions, cations, field chemistry, pesticides, industrial chemicals, THMs, TDS, TOC

OPPORTUNITIES FOR COORDINATION: EXISTING MONITORING PROGRAMS

Program Elements	SNCP SAMP (Planned)	MZIP SAMP (Planned)	CVGMC (& Other 3rd Party Coal.)	GAMA	GSPs
Assess progress of SNCP	X	--	--	--	--
Ambient WQ and trend analyses TDS/EC & NO_3	X	X	X	X	--
Use existing programs; avoid duplicating efforts	X	X	X	X	X
Includes GW Subbasins within Region 5	X	X	X	X	X
Comprehensive assessment of GWQ; better understand and identify risks to GW	--	--	--	X	--
Assessment of Upper Zone of aquifer	X	X	X	X	X
Assessment of Lower Zones of aquifer	X	--	X	X	X
Regional monitoring; protect beneficial use	X	X	X	X	X
QAPP or comparable	X	--	X	X	--
Data Management System	X	--	X	X	--
Develop method to assess relationship between GW level change and change in NO_3	--	--	--	X	--

GROUNDWATER PROGRAM

- Selection of wells from other monitoring programs for inclusion in SAMP assessment would consider items in checklist

Spatial Considerations	Yes/No
Is the well located within the Central Valley Floor?	
Does the well have adequate construction information (e.g., well depth, well-screen interval)?	
Is the well completed in a particular depth zone (e.g., Upper, Lower)	
Can the well be used to represent a particular beneficial use (e.g., drinking water, irrigation water, etc.)?	
Does inclusion of the well reduce redundancy both laterally and vertically (i.e., does the well help fill in the spatial distribution of wells)?	
Other considerations, as identified	
Temporal Considerations	**Yes/No**
Does the well have historical (20+ years) TDS/EC and/or nitrate data?	
Are there any assurances that the well will be accessible and tested in the long-term (for at least the next 10 years)?	
Other considerations, as identified	
Overall Considerations	**Yes/No**
Has the well already been vetted by another entity or program (e.g., GAMA, GQTM)?	
Others, as identified	

FINDINGS TO DATE

- All existing monitoring programs have at least one common goal: groundwater quality protection
- 100s of vetted monitoring wells already accepted by existing programs
  - *Can easily be selected for use in the SAMP*
- Key water quality constituents (NO_3 and TDS) routinely tested
- Regional assessments of ambient conditions and trends
  - *Already completed and/or recurring through existing programs*
- Robust QA/QC procedures and protocols for existing programs
  - *Opportunity to cross apply for SAMP*

FINDINGS TO DATE

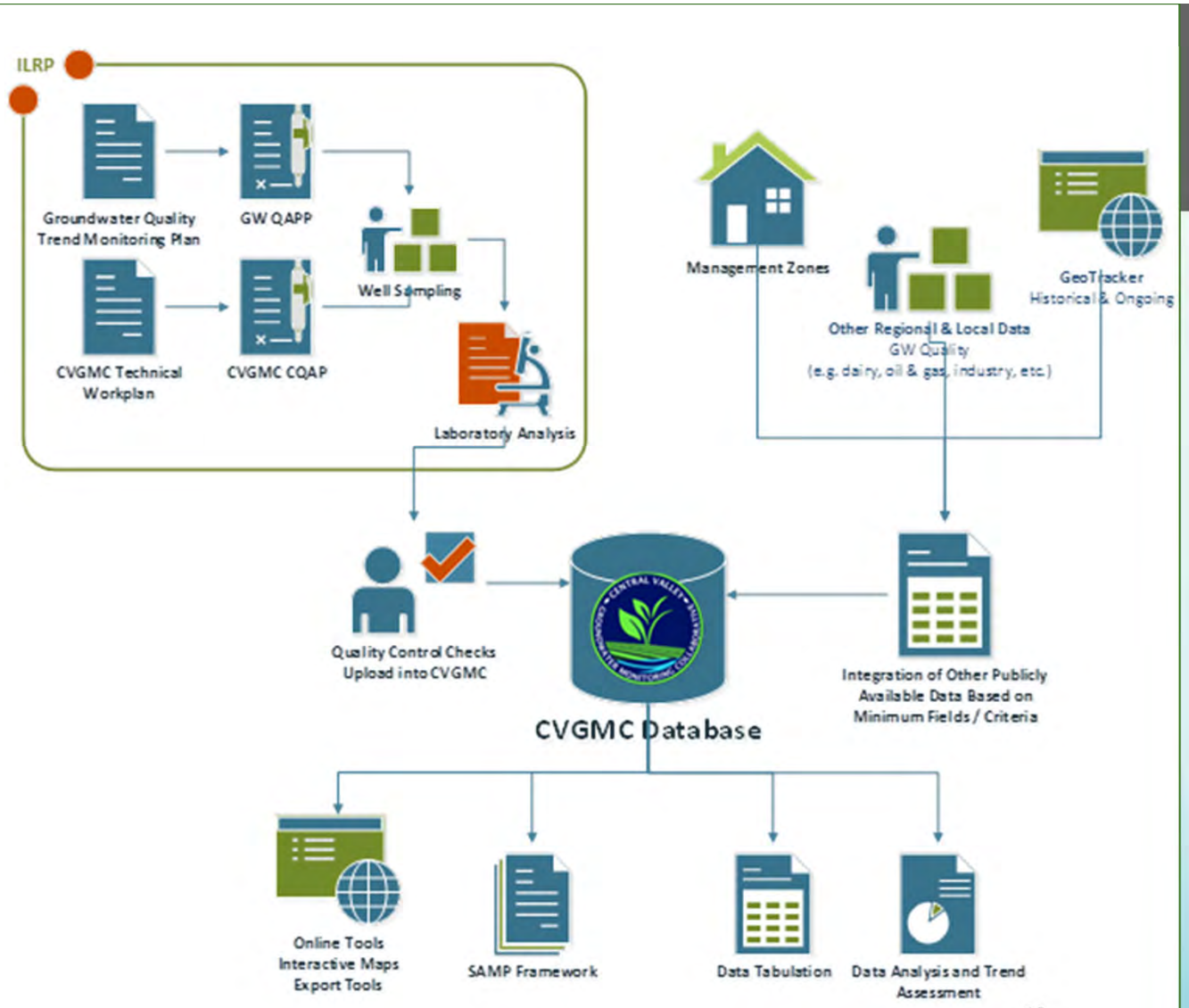
- Two existing monitoring programs have a purpose that is closely aligned with the purpose of the SAMP
  - State Water Board/USGS GAMA *and* Central Valley Groundwater Monitoring Collaborative (CVGMC) and Other ILRP Groundwater Quality Trend Monitoring (GQTM) programs.
- Desirable qualities of these existing programs include:
  - Established, scientifically-based approach to monitoring network design
  - Very robust QA/QC procedures and protocols
  - Assess ambient groundwater quality and trends on same timeline - every five years
  - Demonstrated to be efficient and cost effective

SAMP WORKPLAN CONSIDERATIONS

- Moving forward - Recommendation is to determine how to best leverage/coordinate existing monitoring programs with SAMP development
  - Use previously vetted monitoring wells from existing monitoring networks
  - Use established methods to assess ambient conditions and trends
  - Evaluate potential opportunities to leverage/coordinate with other program reporting requirements
  - Incorporate existing QAPPs and/or procedural QA/QC documents into SAMP Workplan by reference rather than preparing new document

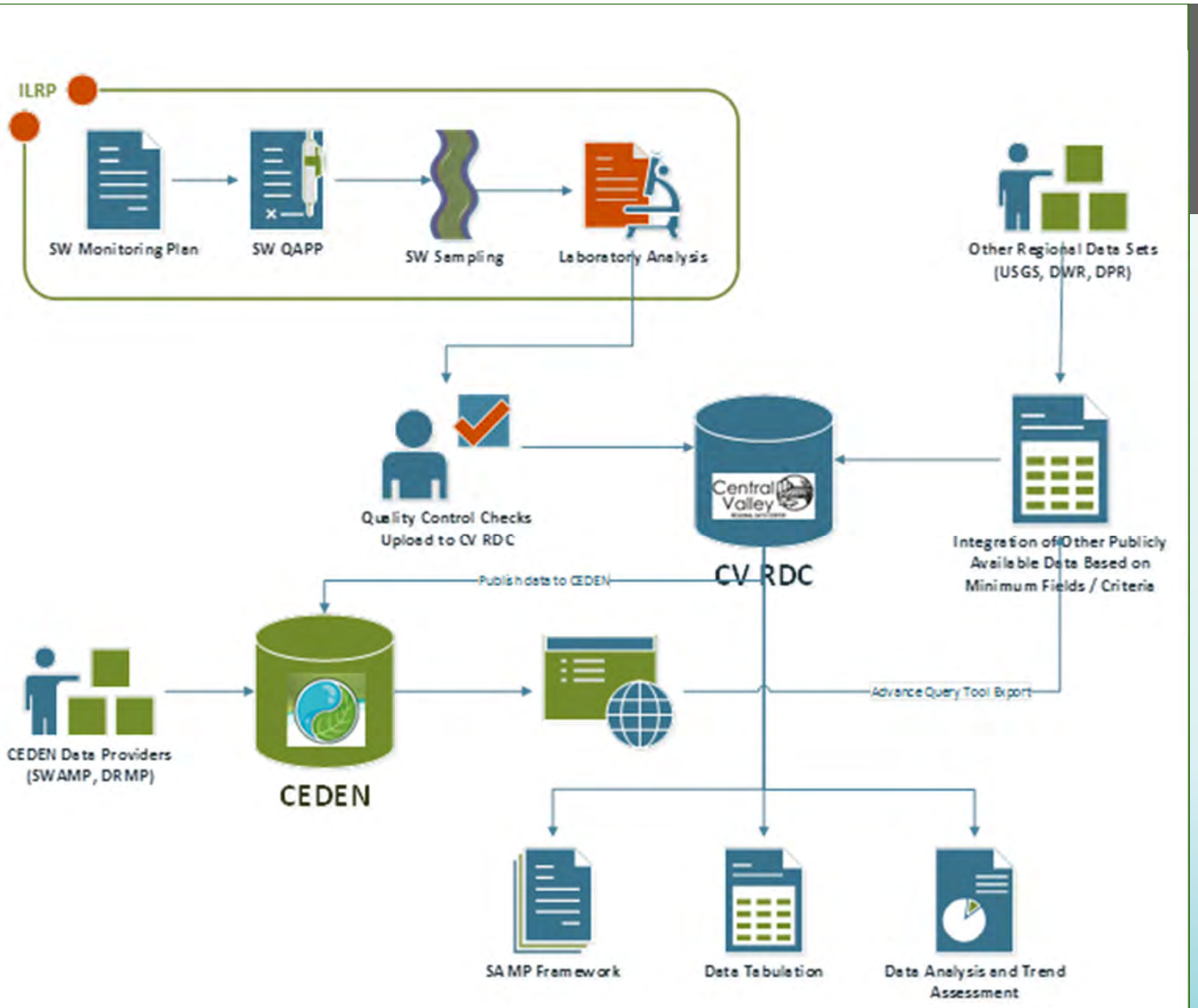
DATA MANAGEMENT SYSTEM

- Groundwater Quality Data Conceptual Work Flow



DATA MANAGEMENT SYSTEM

- Surface Water Quality Data Conceptual Work Flow



The CV-SALTS Nitrate and Salt Control Programs have made considerable progress in their first year.

The **Nitrate Program Management Zones** continue to focus on their Early Action Plans, expanding the number of community members submitting applications, getting well tests, and receiving safe drinking water. To build on this momentum, the Management Zones are ramping up and fine-tuning their messaging to residents in priority areas.

The Salt Program's **Priority and Optimization (P&O) Study** is making steady progress as it gathers and analyzes data and builds the program's capacity to address salt accumulation in the Central Valley.

The **Central Valley Regional Water Quality Control Board** staff and stakeholders reported on both programs in June 2022 to the **State Water Resources Control Board**. (Click **here** for video: CV-SALTS portion begins at 5:02).

*More details on CV-SALTS can be found at the **CV-SALTS Program website**.*

Nitrate Control Program

The **Management Zones** have been casting a wide net, using a variety of outreach methods to get the word out about their free water testing and delivery services. They continue to build relationships and test new outreach methods. To date, their collective efforts include:

- Over 120,000 mailings and door hangers distributed.
- Over a million impressions from radio, newspaper, and social media campaigns.
- Over 80 in-person and online community meetings held.

*More information on outreach efforts can be found **here**.*

This outreach has resulted in nearly 2,000 applications submitted and nearly 1,000 wells tested. Over 600 households are now receiving safe drinking water.

*More information on program results can be found **here**.*

Progress continues on the pilot program between CV-SALTS and the **SAFER (Safe and Affordable Funding for Equity and Resilience) Program** to test wells for other contaminants in addition to Nitrate, including arsenic and pesticides. The State Water Resources Control Board recently provided a $5.5 million grant to **Valley Water Collaborative**, the Management Zone administering the pilot program.

Salt Control Program

The multi-year P&O Study's goals are to update the understanding of salt conditions in the Central Valley, identify salt management areas, refine salinity targets, and develop alternatives for managing salt to achieve the future targets.

In the initial stages of this study, the **CV-SALTS Executive Committee** has been reviewing and overseeing efforts to collect and compile data to characterize regional salt concentrations and identify the tools and models to be used in the Study.

To date, 87% of the 3,150 active Salt Program permittees and coalitions have selected the Alternative Pathway and paid fees to support the P&O Study. Collectively, they have generated over $1.5 Million for the Study for 2021.

*Detailed information on the Alternative and Conservative pathways can be found **here**.*

Fees for 2022 are due by August 31st, and CV-SALTS has sent the renewal notice by email to participants from 2021. Click **here** to pay your fees.

*Learn more about the Salt Control Program requirements and permitting approaches at **www.cvsalinity.org/salt-program**.*

Version 2

CV-SALTS Meeting Calendar

2022

1 January

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
1							1
2	2	3	4	5	6	7	8
3	9	10	11	12	13	14	15
4	16	17	18	19	20	21	22
5	23	24	25	26	27	28	29
6	30	31					

2 February

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
6			1	2	3	4	5
7	6	7	8	9	10	11	12
8	13	14	15	16	17	18	19
9	20	21	22	23	24	25	26
10	27	28					

3 March

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
10			1	2	3	4	5
11	6	7	8	9	10	11	12
12	13	14	15	16	17	18	19
13	20	21	22	23	24	25	26
14	27	28	29	30	31		

4 April

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
14						1	2
15	3	4	5	6	7	8	9
16	10	11	12	13	14	15	16
17	17	18	19	20	21	22	23
18	24	25	26	27	28	29	30

5 May

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
19	1	2	3	4	5	6	7
20	8	9	10	11	12	13	14
21	15	16	17	18	19	20	21
22	22	23	24	25	26	27	28
23	29	30	31				

6 June

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
23				1	2	3	4
24	5	6	7	8	9	10	11
25	12	13	14	15	16	17	18
26	19	20	21	22	23	24	25
27	26	27	28	29	30		

7 July

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
27						1	2
28	3	4	5	6	7	8	9
29	10	11	12	13	14	15	16
30	17	18	19	20	21	22	23
31	24	25	26	27	28	29	30
32	31						

8 August

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
32		1	2	3	4	5	6
33	7	8	9	10	11	12	13
34	14	15	16	17	18	19	20
35	21	22	23	24	25	26	27
36	28	29	30	31			

9 September

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
36					1	2	3
37	4	5	6	7	8	9	10
38	11	12	13	14	15	16	17
39	18	19	20	21	22	23	24
40	25	26	27	28	29	30	

10 October

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
40							1
41	2	3	4	5	6	7	8
42	9	10	11	12	13	14	15
43	16	17	18	19	20	21	22
44	23	24	25	26	27	28	29
45	30	31					

11 November

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
45			1	2	3	4	5
46	6	7	8	9	10	11	12
47	13	14	15	16	17	18	19
48	20	21	22	23	24	25	26
49	27	28	29	30			

12 December

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
49					1	2	3
50	4	5	6	7	8	9	10
51	11	12	13	14	15	16	17
52	18	19	20	21	22	23	24
53	25	26	27	28	29	30	31

Notes/Key

Light Red conflicts

Executive Committee Meetings

Policy or Admin Calls

Yellow Salty 5

State Board Worshops/Hearings

PEOC Committees

MZ Support

Committee Meeting Conflicts