CV-SALTS Executive Committee Meeting
Friday, January 16, 2015 – 1:00 PM to 2:15 PM

TELECONFERENCE ONLY
Teleconference (712) 432-0360 Code: 927571#

Meeting Objectives:
1. Program Development to mirror the policy development meetings
2. Execute business actions for CV-SALTS

AGENDA

1) Welcome/Introductions - Consent Calendar – Chair – 5 min
   - Committee Roll Call
   - Review/Approve November 7th Notes

2) CV-SALTS Policy Meeting – April Date Change & Proposed 2-day Schedule – Daniel Cozad – 10 minutes
   – Meeting date changed from 4/16 to 4/9
   – Discuss & Approve Additional Executive Committee Policy Sessions for following dates:
     • 5/20, 6/17, 7/15, 10/21, 11/18, and 12/16

3) CV-SALTS Budget Update I – Daniel Cozad and Pam Buford – 5 minutes
   – Receive update on CV-SALTS Budget, review and approval now planned for February

4) Data Request by UC Davis, Dr. Thomas Harter – Daniel Cozad – 10 minutes
   – Review and consider providing requested data for Nitrate studies

5) Annual State Board Presentation – 1/20/15 – Daniel Cozad and Pam Buford – 10 minutes
   – Link to Report

6) Other CV-SALTS Project/Contract Updates - 30 min
   - Phase II Conceptual Model – Roger Reynolds
   - SSALTS – Roger Reynolds
   - MUN POTW – Jeanne Chilcott
   - LSJRC – Mike Johnson
   - Procurement Update – Daniel Cozad
   - Permit Review Procedure – Glenn Meeks

7) Set next meeting objectives/date – February 19th Policy Meeting & February 20th Admin Call

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 www.cvsalinity.org

One or more Central Valley Regional Water Quality Control Board members may attend.
## CV-SALTS Committee Rosters

### Executive Committee Membership

<table>
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<tr>
<th>Voters</th>
<th>Category/Stakeholder Group</th>
<th>Name</th>
<th>13-Jun</th>
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### CV Salinity Coalition

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### Executive Committee Meetings During 2014-2015

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### CV-SALTS Committee Rosters

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Attendees are listed on the Membership Roster

AGENDA

1) Welcome/Introductions – Consent Calendar
   - The meeting was brought to order by committee Chair Parry Klassen.
     a) Roll call was completed.
     b) Nigel Quinn moved to approve, and Roger Reynolds seconded, and by general acclamation the September 12th meeting action notes were approved.

2) Request for Qualifications for 2015 CV-SALTS Technical Work
   - Daniel Cozad presented a summary for the committee of the RFQ, scope of work and budget.
   - After discussion, David Cory moved, and Bruce Houdesheldt seconded, and the committee voted to approve the RFQ, SOW and budget, and additionally authorized San Joaquin Valley Drainage Authority to release the RFQ.

3) Annual Report to the State Board
   - Pam Buford covered the timeline for preparations of the report:
     o Report is scheduled for presentation to the Board on 1/20/15.
     o Staff Report must be completed no later than 12/10 for Pamela Creedon’s review.
     o A basic draft of the presentation should be to Jeanne Chilcott by the first week of January.
   - The committee agreed to have Daniel Cozad coordinate the small group of committee members to prepare the report, and make the 1/20 presentation to the Board.
     o Committee members interested in participating should contact Daniel directly.

4) Tulare Lake Bed Archetype
   - Richard Meyerhoff provided the committee with an update on the technical elements of the Tulare archetype. Once the final technical materials are received from TLDD, a CEQA scoping meeting will be held in the Fresno area. Target date for that meeting is the month of February. Per Mike Nordstrom the final materials from TLDD are expected within the next week or two.
   - Pam Buford reminded the committee that the CV-SALTS annual update to the Regional Board will take place in the Fresno area in April, and it would be positive demonstration for the project to be able to report that CEQA scoping had occurred.

5) MOA Extension to 2018
   - Per Daniel Cozad the Central Valley Salinity Coalition has authorized a request to extend the Memorandum of Agreement to 2018. Pam Buford has prepared an Addendum to the MOA, which is currently with legal for review. Once approved by legal, it will be signed by Daniel Cozad and Pamela Creedon, and forwarded to the State Board.
     o After discussion, David Cory moved and Bruce Houdesheldt seconded, and the committee approved moving forward with the extension of the MOA.

6) Technical Advisory Committee Review and Recommendation Process for NPDES and WDR Permits or Renewals
   - Glenn Meeks summarized the Proposed CV-SALTS Permit Review Procedure for the committee. After discussion David Cory moved, and Roger Reynolds seconded, and the committee agreed to accept the draft as presented. Committee members will work with Glenn and Pam Buford to address some of the concerns raised, and bring a revised version of the document back before the committee.

7) Other CV-SALTS Project/Contract Updates
   - Phase II Conceptual Model – Richard Meyerhoff
     o Task 4 – Management Zone Archetype (Alta Irrigation District area)
Task 4.3 delayed by efforts to obtain CDPH data (locational coordinates for public water system wells; well depths along with top/bottom depths of screened intervals and annual depths, where available). SJVDA has initiated a request for the data from CDPH, hope to get in next 2 weeks. Will work with LWA to revise overall schedule once data is received.

- Task 5 – SNMP development, ongoing based on preliminary TOC presented in the summer.

- **SSALTS – Roger Reynolds**
  Phase 2 was approved by Executive Committee at September Administrative Meeting. A Webinar was held in October. Goal is to have Phase 3 Report finished sometime in January, and will go to the TAC for review.

- **MUN POTW – Pam Buford**
  POTW Case Study
  - Scheduled for Board hearing in February (Rancho office) and adoption in April (Fresno office)
  - Met with State Board and USEPA—all on board at this point
  - CEQA/Economics review to be completed by end of month
  - No peer review required since no new scientific data developed
  - Public Notice & Staff report out in mid-December
  - Stakeholder meeting in early January (decided to skip the holiday crush)

  Broader Framework for MUN evaluation in all ag dominated water bodies
  - USEPA/State Board still agree appropriate approach
  - Details for limited MUN definition and objectives still under negotiation
  - San Luis Canal Company should have finished district review by end of November
  - Further discussion on limited MUN; implementation; monitoring/surveillance at January stakeholder mtg
  - Scheduled workshop on effort at April Board meeting in Fresno

- **LSJR Committee – Mike Johnson**
  LSJR Committee is making significant progress. LWA technical team recently provided a Tech Memo which covered the update of water quality and salt loading data on Reach 83. Next steps are to work through the 3 Implementation Bundles and perform a set of WARMF simulations. The target date for completion of this task is early to mid-January.

- **Contracts Time Extension – Pam Buford**
  The revised contract and budget are complete, and along with all other required documents, are being routed through the division of administrative services.

8) Set next meeting objectives and date – November 13th & January 8th Policy Meetings & December 12th & January 16th Administrative Meetings
UC Davis, Dr. Thomas Harter Data Request

Background

The Initial Data Request was received in early December (attached). Because CV-SALTS Meeting Calendar was dark in December, we communicated that the data request would be considered at the Executive Committee in January. We apologized to Dr. Harter noting that this timing is not ideal for his project.

Technical Project Manager Richard Meyerhoff and Daniel Cozad CVSC ED review the request and determined it was complete and requested substantial data. In follow-up email with Dr. Harter, they indicated they have significant data and were using the CV-SALTS data for corroboration of their modeling and to identify which IAZ their areas may be associated with.

Based on the review by Richard Meyerhoff, all requested data were available online from state databases, with the exception of the Initial Analysis Zones (IAZ) GIS data developed for the Phase I conceptual model.

Recommendation

We recommend the Executive Committee considered the request and provide the GIS coverage/Shape file containing the IAZ boundaries because this information is not on other online water quality databases. We recommend the transmittal of the IAZ data clearly indicating that the IAZ boundaries were selected for modeling convenience and intended to be for Initial Analysis, and not to be considered management areas or to have any other use or meaning. The other water quality data is available online and data related to well information that is not available on line is likely considered confidential and subject to restrictions. We recommend the Executive Committee authorize the CV-SALTS Technical Project Manager, Richard Meyerhoff to provide the data and assist the UC Davis team as appropriate. Should other data needs be identified, such requests will be brought back to the Executive Committee for consideration.
November 30, 2014

Daniel Cozad
Central Valley Salinity Coalition.
(888) 826-3635 FAX (860) 736-8498
dcozad@cvsalinity.org www.cvsalinity.org

Re: CV-SALTS Data Access Request

Dear Daniel,

My research group is currently working under a research grant sponsored by the California Department of Food and Agriculture’s Fertilizer Research and Education Program. The project title is “Nitrogen Fertilizer Loading to Groundwater in the Central Valley”. The anticipated project completion date is December 2015. The project is led by myself with Drs. Stuart Pettygrove, Minghua Zhang, and Tom Tomich as co-investigators.

This project will provide the first long-term assessment of past and current nitrate loading to groundwater on irrigated lands across the entire Central Valley of California; assess the long-term implications for groundwater quality in the Central Valley (Sacramento Valley, San Joaquin Valley, and Tulare Lake Basin); and provide a planning tool to better understand local and regional groundwater quality response to specific best management practices and policy/regulatory actions. The project outcome will provide critical information about the link between management practices, policy, and future groundwater nitrate conditions to growers, agricultural organizations, agricultural consultants and extension groups, to policy makers, and to regulatory agencies. In particular, we envision that this assessment will provide an important and critically needed scientific framework for the implementation of the salt and nutrient basin plan amendment and of the ”irrigated lands regulatory program”. These are regulatory programs under California’s Porter-Cologne Act that will increasingly focus on the regulation, assessment, protection, and monitoring not only of surface water but also of groundwater quality below irrigated lands and elsewhere.

The target audience for the project outcome include growers, agricultural commodity groups, researchers in irrigation and crop nutrient management and in water quality (including universities, U.S. Geological Survey), agricultural consultants, Natural Resource Conservation Service, UC Cooperative Extension, Resource Conservation Districts, regulatory agencies including local planning agencies, Central Valley Regional Water Quality Control Board, State Water Resources Control Board, and U.S. Environmental Protection Agency Region 9.
As part of this project, we are modeling nitrate loading to agricultural crops, including nitrate in irrigation water. We also model groundwater transport to domestic, irrigation, and municipal wells in the Central Valley, based on the USGS Central Valley Hydrologic Model, utilizing computer methods that we have developed as part of this and other recent projects. Our methods are specifically geared to accommodate a large number (10s to 100s of thousands) of individual contaminant (nonpoint) sources as well as large number of wells (10s of thousands) to simulate the long-term spatial and temporal variability in groundwater nitrate contamination in production wells resulting from various sources of nitrate loading.

We would like to use the following data to a) develop IAZ specific deep groundwater nitrate statistics as proxy of irrigation water quality, b) to verify our groundwater modeling results against actual data, and c) to provide some statistical analysis of the data. Our region of interests the area overlying the Central Valley groundwater system (the area of concern to CV SALTS):

- well ID (ideally a well ID that allows us to link to construction records, if we obtain them from DWR under a confidentiality agreement)
- IAZ (initial analysis zone) within which the well is located
- Zip code of the well location, if available
- Township-range-section-subsection identifier for the well if available (we have a signed agreement with CDPH to keep public water supply well data confidential)
- well location (lat / long) to specified spatial accuracy, where known
- well location accuracy
- well type (e.g., domestic, public, irrigation, monitoring, dairy domestic, or dairy monitoring)
- depth to top of screen (if known)
- depth to bottom of screen (if known)
- data source (e.g., USGS NWIS)
- nitrate detection limit
- salinity detection limit
- nitrate measurement date
- nitrate concentration
- salinity measurement date
- salinity concentration/level (TDS or EC)
- concentration units
- any other useful data to properly interpret the nitrate and salinity data

Ideally, we would like to receive the requested data in MS Excel Format (one row for each record, with complete attribute set in columns).

We would be interested in the most recent REVISED dataset based on the dataset that has been described in the recent Memorandum from Luhdorff & Scalmanini on "Phase II Conceptual Model - Task 3: Groundwater Data Refinement and Updates, May 15, 2014" (or any more recent updates).

Most of our data analysis will be statistically processed results and not allow for the identification of individual well locations in the context of nitrate data. We may produce maps similar to those already published by CV-SALTS showing maps with dots that will not allow identification of wells to accuracies better than 0.5 miles (or 1 mile, if required). We will provide CV-SALTS with our final project report as well as any data/programs that will become publically available as part of this project.
We have read and agree with the following disclaimers:

1. General CV-SALTS Electronic Data Disclaimer
The information contained on the CV-SALTS website and electronic geodatabases has been drawn from many sources for use by CV-SALTS in development of the Central Valley Salt and Nitrate Management Plan and will be subject of future work. The original sources were considered reliable, but have not been validated. The CV-SALTS Program, and the San Joaquin Valley Drainage Authority (SJVDA) as contracting agent and its consultants offer no warranty, express or implied, with respect to the interpretation, advice, or opinion made by individuals or organizations associated with the data on this website; likewise for the accuracy, completeness, or timeliness of the information for any particular purpose.

Users should contact Central Valley Salinity Coalition or Regional Water Quality Control Board to verify the appropriateness of using the information before taking action in reliance on it, because information may have changed since the last update of geodatabase or it may not be appropriate for a specific regulatory use. All contents of data provided or posted on the website may not be resold or otherwise used for trade or any commercial purposes without the expressed written consent of the Central Valley Salinity Coalition. Documents linked to this site may also be protected under U.S. or foreign copyright laws, and permission to reproduce may be required. CVSC does not relinquish any copyrights for use ad derivative work, no derivative works shall impede the use of data developed or provided by CV-SALTS and CVSC for any purpose. For more information, to request assistance or use permission contact the Central Valley Salinity Coalition info@cvsalinity.org

2. BUOS ACCESS DISCLAIMER
For the GIS Files of the 2006 303(d) List of Water Quality Limited Segments

The GIS files for the 2006 303(d) List of Water Quality Limited Segments (requiring TMDLs, being addressed by USEPA approved TMDLs and being addressed by actions other than TMDLs) were created for reporting purposes by the SWRCB and RWQCBs. These GIS representations of the areal extent of impaired waters are estimated and should not be considered authoritative for the development of TMDLs or other regulatory actions. The TMDL (Total Maximum Daily Load) effort may ultimately address more or less area. Mapping the 303(d) listed waters is a work in progress and may be updated during listing cycles to better define the impacted areas.

Kind Regards,

Thomas Harter, Ph.D.
Robert M. Hagan Endowed Chair in Water Management and Policy
CV-SALTS Annual Report

Presentation Outline

• Background
• Resolution Reporting Requirements
• Implementation Strategy
  – Addressing Nitrate Drinking Water Issues
  – Sustainable Salt Management
• Moving Forward

Central Valley Salt Issues

More salt enters the region than leaves

• Impacts (current/legacy)
  – Agricultural Production
  – Drinking Water Supplies
• Economic Cost
  – Direct Annual: $1.5 Billion
  – Statewide annual income impact: $3.0 Billion
• Diverse Sources

State Board Meeting
20 January 2015
CV-SALTS Annual Report

3

State Board Meeting
20 January 2015
CV-SALTS Annual Report

4
Central Valley Nitrate Issues

- Legacy Conditions
- Direct Impacts
  - Drinking Water Supplies
- Economic Costs
  - Treatment
  - Alternate Supply
- Diverse Sources

CV-SALTS Goals

Safe Drinking Water in Areas with Nitrate Impacted Groundwater

Environmental and Economic Sustainability

Cleanup and Abatement (CAA) Funds

$5-million Seed Money

- $1.2-million (Res. #2009-0023)
- $3.8-million (Res. #2010-0042)

Res. #2010-0042 Requirements:

- Annual Report at Public Hearing
  - Expenditures to Date
  - Services Provided
  - Contribution from Stakeholders
  - Accomplishments
  - Timeline to Complete Work
Expenditures for Services and Stakeholder Contributions

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAA Resolution #2009-0023</td>
<td>$1,113,024</td>
</tr>
<tr>
<td>CAA Resolution #2010-0042</td>
<td>$1,788,850</td>
</tr>
<tr>
<td>Central Valley Salinity Coalition (CVSC) expenditures and direct match through September 2014*</td>
<td>$1,593,145</td>
</tr>
<tr>
<td>Additional Stakeholder Contributions --Treatment/Feasibility studies; basin planning support, water quality data</td>
<td>$12,875,291</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>$17,363,120</strong>*</td>
</tr>
</tbody>
</table>

*Does not include in-kind service participating on committee(s)

---

Services Provided/Accomplishments

- Data Compilation and Modeling
  - Conceptual Model
  - GIS Beneficial Use/ AGR Zone Efforts

- Beneficial Use
  - Tulare Lake Groundwater
  - MUN in Ag Dominated Water bodies

- Water Quality Objectives
  - Aquatic Life
  - Stock Watering
  - Salt Effects on Irrigated Ag
  - Salt Effects on MUN
  - Lower San Joaquin River

- Implementation
  - SSALTS (Accumulation/Transport)
  - Alternate Compliance Strategy (Legacy Nitrate)

---

Services in Progress

**CAA Co-Funded Projects**

- Administrative, Technical & Facilitation Support
- Phase II Conceptual Model
- SSALTS Phase 3
- Case studies to ground truth policy and implementation options
  - MUN Surface Water
  - MUN/AGR Groundwater
  - Lower San Joaquin River (Objectives/Implementation)
  - Early Implementation (safe drinking water)
Figure 1 Cumulative Funding and Expenditures by Source

Stakeholders Have Contributed 83% of Total Costs to Date

Figure 2 - Summarized CV-SALTS Workplan Schedule

State Board Meeting 20 January 2015

CV-SALTS Annual Report

Implementation Strategy

- Addressing Nitrate Drinking Water Issues
- Sustainable Salt Management
Nitrate Impacts

Addressing Nitrate in Drinking Water

- Addressing legacy nitrate will take years (i.e., decades)
- Beneficial use protection needs to occur much sooner
- Current regulatory scheme could result in prohibited discharges without addressing drinking water

Key State Board Orders that control WDRs

- Order No. 73-4 – Rancho Caballero
  - (WDRs must implement Basin Plan)
- Order No. 81-5 – City of Lompoc
  - (Sets principles for establishing limits depending on if constituent is in receiving water above or below the water quality objective)
- Order No. 88-12 – San Diego Co. Milk Producers
  - (May need to prohibit the discharge)

Order No. 88-12 – San Diego Co. Milk Producers

- Water exceeds objectives, thus limits are required
- Limits could be applied beneath root zone of irrigated field or at point of discharge
- But, in this case, dairy unable to meet potential limits
- Unless new data and information is provided showing assimilative capacity, discharges should be prohibited
**Need Alternative Compliance Strategy**

- Would give Regional Board authority to permit discharges that cannot meet objective
- In exchange, permittee(s) must provide immediate beneficial use protection (i.e., ensure safe drinking water)
- Compliance with objective part of long-term management strategy

**Benefits of Alternative Compliance Strategy**

- Addresses nitrate drinking water issues sooner – becomes an enforceable provision in WDR
- Prohibiting discharges provides no benefit and harms the Central Valley’s economy
- Allows for implementation of long-term compliance strategies

**SSALTS – Identify Sustainable Salt Management Alternatives**

- SSALTS investigating:
  - Magnitude of the problem
  - Requirements to achieve sustainability
  - Available salt management tools - now vs. future
  - Implementation measures for inclusion in the SNMP

**Key Salt Management Alternatives**

<table>
<thead>
<tr>
<th>Treatment &amp; Salt Recovery Technology</th>
<th>Brine Disposal and Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Mature Technologies</td>
<td>• Brine Supply for Hydraulic Fracturing</td>
</tr>
<tr>
<td>• Reverse Osmosis</td>
<td>• Deep Well Injection</td>
</tr>
<tr>
<td>• Ion Exchange</td>
<td>• Salt Management Disposal Areas</td>
</tr>
<tr>
<td>• Lime Softening</td>
<td>• Landfills</td>
</tr>
<tr>
<td>• Evaporation Ponds</td>
<td>• Dedicated Disposal Sites</td>
</tr>
<tr>
<td>• Emerging Technologies</td>
<td>• San Joaquin River Improvement Project</td>
</tr>
<tr>
<td>• Smart Integrated Membrane System (SIMS)</td>
<td>• San Joaquin River Real Time Management</td>
</tr>
<tr>
<td>• WaterFX Aqua4 System – Multi-effect Distillation</td>
<td>• Transport Brine Out of Valley</td>
</tr>
<tr>
<td>• Zero Discharge Distillation by Veolia – Electrodialysis Metathesis</td>
<td>• Truck/Rail Brine</td>
</tr>
<tr>
<td>• New Sky Energy – Temperature Control and Electrodialysis</td>
<td>• Regulated Brine Line</td>
</tr>
<tr>
<td>• Element Renewal – addition of polymers to remove trace elements</td>
<td>• Bay Area WWTP</td>
</tr>
<tr>
<td>• Brine Supply for Hydraulic Fracturing</td>
<td>• New, permitted Bay Area Outfall</td>
</tr>
</tbody>
</table>
Achieving Salt Sustainability – Example Scenario from Southern Part of Central Valley

Even with use of existing tools, the volume and mass of unmanaged salt is significant.

Achieving Sustainability Requires Having the Means to Move Salt Out of the Central Valley

- Central to all evaluated salt management alternatives is a regulated Central Valley brine line
- Concept level analysis completed
  - Alternative Central Valley routes
  - Preliminary Brine Discharge Alternatives
    - Via existing East Bay Municipal Utility District outfall
    - Via an alternative outfall to San Francisco Bay
  - Concept-level cost estimate – Capital and O&M

Conceptual Level Costs for Regulated Brine Line Alternative – Outfall to San Francisco Bay

Implementation of this alternative would yield product water with an estimated value of $909M/year

Regulated Brine Line Concept vs. No Action

- No Action (Howitt et al. 2009)
- Regulated Brine Line Concept (SSALTS)
**Moving Forward**

- Continued Plan Development
- Extensive Outreach
  - Nitrate in Drinking Water
  - Sustainable Salt Management

**Outreach Target Audiences**

- Federal, State & Local Policy Makers
- Agricultural Interest
- POTWs & Stormwater Agencies
- Industrial / Manufacturing Interest
- Environmental Justice Interest
- Environmental Advocacy Interest
- Water Supply and Delivery Interest

**Moving Forward**

- Continued Plan Development
- Extensive Outreach
  - Nitrate in Drinking Water
  - Sustainable Salt Management
- Short/Long-term Funding
  - Local Partnerships
  - State
  - Federal

**Anticipated Outcomes**

- Compliance with Recycled Water Policy
- Updated Central Valley Basin Plans
- Implemented Strategies that:
  - Address Nitrate Drinking Water Issues
  - Achieve Salt Sustainability
Questions?
CV-SALTS Meeting Calendar

2015

January

2

3rd Thursdays

February

March

April

May

June

July

August

September

October

November

December