SOMACH SIMMONS & DUNN
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW

500 CAPITOL MALL, SUITE 1000, SACRAMENTO, CA 95814
OFFICE: 916-446-7979 FAX: 916-446-8199
SOMACHLAW.COM

M E M O R A N D U M

TO: CVSALTS Executive Committee

FROM: Roberta L. Larson

SUBJECT: Prioritization and Optimization Study Discussion Document

DATE: October 19, 2020

The Prioritization and Optimization Study (P & O Study) will facilitate the development of a long-term Salinity Control Program (SCP) to achieve the goals of the Salt and Nutrient Management Plan's salinity management strategy. The P&O Study will provide the technical, policy and financial information needed to support key decisions and direction for the long-term SCP. A Phase 1 workplan for the study must be submitted to the Central Valley Regional Water Quality Control Board within six months of the issuance of salinity notices to comply to permitted entities.

As set forth in the Basin Plans, key elements of the estimated 10-year P&O Study effort include:

- Develop groundwater and surface water-related salinity data and information for sensitive and non-sensitive hydrologic regions within the entire Central Valley Region, including guidelines to protect salt-sensitive crops;
- Identify permitted and unpermitted sources of salinity and actions that impact salinity in surface water, vadose zone and groundwater;
- Evaluate impacts of existing state and federal policies and programs on salinity management;
- Identify and prioritize alternative physical projects for long-term salt management (e.g. regulated brine line(s), salt sinks, regional/sub-regional de-salters, recharge areas, deep well injection, etc.);
- Develop the conceptual design of preferred physical projects and assess the environmental permitting requirements and costs associated with each of these projects;

- Identify non-physical projects and plans for implementation;
- Develop a governance structure and funding plan;
- Identify funding programs, including federal and state funds, and opportunities for future phased implementation of the SCP; and
- Identify recommendations for Phase II of the Salt Control Program.

Our immediate focus is on Task 3, the Central Valley Salinity Evaluation, and in particular Tasks 3.2 and 3.3. (Pages 4-20 to 4-49) The majority of the activities under this task will occur during years 1 through 4 of the P & O Study. Outcomes and findings from the deliverables of this task will support the development of long-term salt management strategies under Task 4.

The P & O study will develop a salt management plan for sustainability of the entire Central Valley. However, the workplan provides/allows for identification of planning areas and salt management strategies tailored to specific subareas.

Our October 22 discussion will focus on these Tasks (3.2 and 3.3). These tasks will proceed in concert with one another, not sequentially:

- Task 3.2: Establishment of Appropriate Numeric Salt Management Targets
- Task 3.3: Numerical Salt Management Tool Development

A. Summary of Task 3.2: Numeric Salt Management Targets

Appropriate salinity targets are needed to protect beneficial uses of groundwaters and surface waters. The approach to setting targets will strive to balance the protection of salt sensitive crops and other sensitive beneficial uses with the need to obtain agricultural water supplies, manage surface and groundwater supplies, and other considerations.

A proposed methodology has been developed previously by CV-SALTS and has been used in developing the adopted surface water quality objectives for salinity in Reach 83 of the Lower San Joaquin River (LSJR).

As presented by Tom Grovhoug of Larry Walker Associates at the September 17, 2020 meeting, the approach in the LSJR started with an evaluation of the most sensitive beneficial use(s) in the project area with regards to salinity. Baseline information regarding (a) existing cropping patterns in the study area and (b) agricultural water supply information was developed and used to identify important salt sensitive crops and to assign a range of numeric salinity targets to those water bodies used as irrigation supply to those crops. The

salinity targets were developed with available modeling tools that took into account the crop, cropping pattern, root-zone hydrology (i.e. balance among rainfall, irrigation, crop consumptive use, and leaching fraction), and salinity of irrigation supply, which produced soil salinity and crop yield outputs. Historic water quality conditions were considered to establish baseline conditions, from which alternative management scenarios were evaluated using a numeric water quality modeling tool. That information was combined with stakeholder input, in particular from agricultural and municipal stakeholders, to select appropriate AGR numeric targets, which were then adopted as water quality objectives. The process for adoption of water quality objectives was consistent with California Water Code requirement described in Section 13241 and 13242.

The subtasks are:

- Task 3.2.1 Protection of Salt Sensitive Beneficial Uses
- Task 3.2.2 Identify Archetype Study Areas (in coordination with Executive Committee and stakeholder)
- Task 3.2.3 Identify Salt Sensitive Crops in Selected Study Areas (in coordination with stakeholders)
- Task 3.2.4 Identify Irrigation Supply Sources
- Task 3.2.5 Determine Relationship Between Salinity and Crop Yields
- Task 3.2.6 Evaluate Salt Management Scenarios (in coordination with GSAs and other stakeholders)
- Task 3.2.7 Develop Range of Potential Target EC Values for Archetype Areas
- Task 3.2.8 Develop Recommended Target Salinity Values for Other Areas of the Central Valley Region
- Task 3.2.9 Develop Process for Site-Specific and Regional Salinity Targets
- Task 3.2.10 Support Adoption of Salinity Targets to Protect AGR in Basin Plans (optional)

B. Summary of Task 3.3: Numerical Salt Management Tool Development

This task involves the development of a combined numerical surface water and groundwater model (or models) that tracks water supply and water demand, identifies sources of salinity, and models the movement of water and salts within the Central Valley Region and within the production zone of each hydrologic region at the level needed for both the archetype studies and the study of the Central Valley. To the degree possible, this model (or suite of models) will rely on available tools, including available modeling tools in the archetype areas used by Groundwater Sustainability Agencies (GSAs) in Groundwater

Sustainability Plan (GSP) development under SGMA. From a water balance perspective, the model(s) will address subsurface inflows and outflows, groundwater extraction, surface water interdependencies, stream discharge, groundwater recharge (stormwater/dry weather capture and recharge, imported water recharge, recycled water recharge, and streambed recharge), POTW and industrial discharges, deep percolation of precipitation, deep percolation of applied water (urban and agriculture), and consumptive use by crops.

The selected modeling tools will be used to perform a salinity balance at the appropriate scale, e.g., aquifer, groundwater basin, hydrologic region, watershed, or other scales as appropriate. A key subtask is the development of a numerical Salt Management Tool (SMT) that will be able to demonstrate the effect of implementation of various salt management alternatives in achieving salinity balance. The SMT may be a by-product (or capability) of the overall modeling tools developed under this task. The SMT (or equivalent) will be used to assess and rank various non-physical and physical projects that will be developed by stakeholders to develop and evaluate salt management alternatives.

The subtasks are:

- 3.3.1 Coordinate with the GSAs to obtain information and tools in the archetype areas.
- 3.3.2 Refine or develop a hydrogeologic conceptual model (HCM) for each hydrologic region. (The study will rely on the considerable data, analysis, and interpretation completed through the Initial Analysis Zone model developed by CV-SALTS (2013), and HCMs developed for GSPs established under SGMA.)
- 3.3.3 Selection of modeling platforms for groundwater and surface water that:
  - Have publicly available supporting documentation;
  - Are based on field or laboratory measurements; and
  - Have public domain open-source software.
- 3.3.4 Technical Review Panel selection of the model platform (minimum of three recognized experts selected by the Executive Committee).
- 3.3.5 Model calibration.
- 3.3.6 Model technical memorandum and documentation.
- 3.3.7 Technical Review Panel—Review of the Salt Management Tool.

C. Questions for Discussion

During the last several meetings, a number of questions have been posed. Many of these can best be addressed in task specific workplans and/or as part of the tasks set forth above. The workplan builds in extensive Executive Committee, expert and additional stakeholder input in key decisions and milestones. Examples of these questions include:

- What combination of models and numeric tools will be used?
- What are the specific criteria for selecting archetypes? How large an area will each cover? How will they be extrapolated to other areas?
- Water for irrigation use changes from year to year. What time scale is important for the P&O Study for surface water and groundwater? Are there examples of how can this be captured in the models?
- What is the right balance between precision and "a good enough" understanding to move forward with balancing salinity, setting targets and evaluating management options?
- How will high quality waters be addressed?
- How will we address drought targets, especially with regard to impacts to groundwater quality?
- What is the compliance point for numeric targets for discharges to groundwater? How will compliance be assessed?

D. Questions for Today:

Overarching question:

What additional information do you need to understand/be comfortable moving forward with submitting the P & O Study Workplan to the Regional Water Board?

E. Some questions for discussion include:

- How will the study use the targets, how will we use them in a regulatory context? Applied to discharges? Applied to receiving water (surface or groundwater)?

- What are some of the factors that should be considered in selecting archetypes to ensure they are sufficiently representative? Will provide important information?

- How much flexibility do we have to make changes/adapt once the workplan is submitted to the Regional Board? Should we simplify/modify the workplan or selected tasks to preserve flexibility? (Intent is to adaptively manage—each year an annual P & O Study status report will be developed—Task 2.2.1.2.)