

## STATEMENT OF WORK

### ASSESSMENT OF SALT SOURCES, TRANSPORT AND FATE WITHIN THE WESTSIDE REGION OF THE SAN JOAQUIN RIVER VALLEY

May 29, 2009

#### I. Introduction

A. Purpose. This Statement of Work describes tasks required to develop an assessment of salt sources, transport, and fate within the Westside Region of the San Joaquin River Valley. The Westside Region encompasses the areas that receive water from the Central Valley Project and dispose of waters to the San Joaquin River. Based on the results of the assessment, optional tasks may be funded to collect additional environmental data, conduct additional fate and transport studies, or to pilot real time salinity management projects.

B. Authorization. This investigation is authorized by the Calfed Bay-Delta Authorization Act of 2004 (Public Law 108-361) and by the Central Valley Project Improvement Act of 1992 (Public Law 102-575 section 3406 (b)(7)).

C. Background. Reclamation was directed to develop and implement a Program to Meet Standards with the passage of the CALFED Bay-Delta Authorization Act of 2004 (Act), (Public Law 108-361) and the Central Valley Project Improvement Act of 1992 (Public Law 102-575). Section 3406(g) of Public Law 102-575 specifically authorizes the development of water quality data and models in the San Joaquin watershed. This assessment is also being pursued in coordination with the larger stakeholder driven effort to develop Central Valley Salinity and Nutrient Management Plans (CVSALTS) and with Reclamation's Management Agency Agreement with the Central Valley Regional Water Quality Control Board (MAA).

#### II. Description of Work

This SOW includes tasks to develop a water and salt budget for the Westside region of the San Joaquin watershed, to document recent manipulations to this budget by the Grassland Bypass Project, and to determine the fate and transport of salt from the Central Valley Project to the San Joaquin River. Through these tasks critical data and information gaps will be identified and prioritized. Optional tasks are included in order to develop the information in a finer scale for smaller locations or to fill the most critical data and information gaps, if the tasks show such work is warranted.

The "Westside Region" of the San Joaquin watershed includes all lands served by the Central Valley Project and discharging return flows to the San Joaquin River. In the Sacramento-San Joaquin River Basin Plan, this area is a combination of the "Northwest Side" and the "Grassland" regions.

## **Task 1. Project Management and Coordination**

### ***Subtask 1.1 – Project Management Assistance***

The Contractor shall provide recommended adjustments to study scope, tasks, schedules, and related project management tools. The Contractor shall appoint a Project Manager (PM). The Contractor's PM shall communicate once a week via a conference call or meeting with the Reclamation PM on the progress of the Westside Salt Sources Assessment and contract deliverables and produce monthly Project Progress Reports over the Performance Period for submittal to the Reclamation PM. The Contractor's PM shall prepare task-specific instructions and supervise all subcontractors. The Contractor's PM shall provide quarterly accrual reports upon request of the Reclamation PM. The Contractor's PM shall prepare and transmit closeout task files for archiving with Reclamation's Project files.

### ***Subtask 1.2 – Project Coordination Support***

The Contractor shall identify key potential participants or data sources in the Westside Region. The Contractor shall convene and lead a kick-off meeting of critical and interested participants and Reclamation. The Contractor shall meet with Westside Region agencies as needed to conduct the project. The Contractor's PM shall participate in CVSALTS meetings related to their Salt Sources project or establish separate communication and/or meetings with their Salt Sources Contractor in order to ensure that this project meets the requirements of CVSALTS.

In this case, the Assessment should be viewed as serving the purpose of an additional "pilot study area" to the CVSALTS Salt Sources project. The Contractor shall periodically brief the CVSALTS Technical Advisory Committee (TAC) on the progress of the project, specifically at the completion of each of task. Reclamation will give consideration to the advice of the CVSALTS TAC in directing the work, so Contractor is expected to interact with a broad representation of stakeholders.

## **Task 2. Westside Region Water Budget**

The Contractor shall develop a water budget for the Westside Region as a basis for the development of a salt and nitrate budget. The water budget should consider CVP water deliveries, groundwater use, San Joaquin River deliveries, consumptive use patterns, hydrologic factors, and transport to surface and groundwater. The water budget must cover a range of hydrologic conditions (at a minimum wet and dry water year types, but also water management changes due to hydrologic conditions) and may consider different temporal scales, such as seasonal or annual, as appropriate.

The water budget must include details on how water is transported throughout the region, at an appropriate physical scale, and be specific on how CVP water flows through the region. The water budget must determine or estimate the fate of delivered CVP water. The Contractor may use any existing tools or models, but shall verify any modeling results with recent data. The Contractor shall also verify that the water budget satisfies any water budget requirements stated in the CVSALTS Salt Sources work plan, which is

expected to be developed by July 2009. The Contractor shall prepare documentation of the completed work.

### **Task 3. Westside Region Salt and Nitrate Budget**

#### ***Subtask 3.1 – Salt and Nitrate Source Identification***

The Contractor shall develop a list of salt and nitrate sources within the Westside Region as a first step in the development of a salt and nitrate budget. The Contractor shall evaluate whether the definitions and methodologies for salt and nitrate source identification, data collection, and data verification defined by the CVSALTS Salt Sources Work Plan are adequate for the Westside Region. If the Contractor determines they are not adequate, upon approval by Reclamation PM, the Contractor shall develop adequate definitions and methodologies. The Contractor shall use developed definitions and methodologies to develop a list of region-specific sources of salt and nitrate, prioritized by magnitude of the source.

The Contractor shall identify and obtain data currently available needed to characterize salt and nitrate sources and evaluate quality of the data. The Contractor shall identify areas where critical data is poor or missing and evaluate the significance of the missing data to the overall effort. This subtask may include collecting, confirming, or refining land use classifications within the Westside Region. The Contractor shall verify that the salt and nitrate source identification satisfies any salt and nitrate source identification protocols defined in the CVSALTS Salt Sources work plan, which is expected to be developed by July 2009. The Contractor shall prepare documentation of the completed work.

#### ***Subtask 3.2 – Salt and Nitrate Process Information***

Based on the list of salt and nitrate sources within the Westside Region established in Task 3.1, the Contractor shall collect information on transformative or transport process as a second step in the development of a salt and nitrate budget. The Contractor shall evaluate whether the definitions and methodologies for salt and nitrate process identification, data collection, and data verification defined by the CVSALTS Salt Sources Work Plan are adequate for the Westside Region. The Contractor shall identify which salt and nitrate process are likely to occur in the Westside region.

The Contractor shall obtain and review studies, published literature, and modeling assumptions used to describe salt and nitrate processes and associated rate factors to determine which best represent the Westside Region. As part of this task, the Contractor shall quantify the activities of the Westside Regional Drainage Plan as they relate to salt and nitrate processes. The Contractor shall evaluate the quality of information on salt and nitrate processes within the Westside Region. The Contractor shall prepare documentation of the completed work.

#### ***Subtask 3.3 – Salt and Nitrate Budgets***

The Contractor shall use information developed in Tasks 2 and 3 to develop salt and nitrate budgets. The Contractor shall evaluate whether the methodologies for salt and

nitrate budget development defined by the CVSALTS Salt Sources Work Plan are adequate for the Westside Region. If the methodologies are determined to be inadequate, the Contractor shall work with Reclamation, Regional agencies, and CVSALTS to develop an acceptable alternative. The salt budget must include details on how salts are transported throughout the region, at an appropriate physical scale, and be specific on the fate of salts imported into the region by the CVP. The Contractor shall prepare documentation of the completed work.

#### ***Subtask 3.4 – Data and Information Gaps***

The Contractor shall summarize data and information gaps identified in Tasks 2 and 3, based on the water, salt, and nitrate budgets developed in Tasks 1.4 and 1.7. The Contractor shall prioritize the collection of data and information collection to fill gaps based on the value added to the water, salt, and nitrate budgets. The Contractor shall prepare documentation of the completed work.

### **Task 4. Evaluation of Central Valley Project (CVP) Salt Management**

#### ***Subtask 4.1 – CVP Salt Loads***

The Contractor shall evaluate the salt load calculation methodology developed by Reclamation in the Draft Compliance Evaluation and Monitoring Plan (Plan) submitted to the Regional Water Quality Control Board in the summer of 2009. The Contractor shall compare Plan load calculation methodology to the budgets developed in Tasks 2 and 3.3 to evaluate the fate of the mass of salt imported by the CVP to the Westside Region.

If relevant, the Contractor shall develop an alternative or refined monthly load calculation methodology that better represents actual CVP loading to the San Joaquin River. Methodology may consider transport time lag if this plays a significant role in transport from CVP to the river and use of other load reductions to offset loading to the river. The Contractor shall prepare documentation of the completed work.

#### ***Subtask 4.2 – Real-Time Salinity Management Recommendations***

Reclamation is exploring opportunities for real time salt load management in the San Joaquin River. Based on the water and salt budgets developed in Task 2 and 3.3 and considering uncertainty due to data and information gaps, the Contractor shall develop a list of potential real-time management project types and estimate the physical and institutional infrastructure required to implement projects. Based on this list, the Contractor shall recommend one to five projects that could be piloted within three years without significant environmental, institutional, or financial barriers. The Contractor shall develop initial cost estimates of the recommended projects.

### **Task 5. Final Report**

The Contractor shall prepare a final report of the Westside Region evaluation for the CVSALTS effort. Report will document work results and decisions made by the CVSALTS advisory committees, Regional Agencies, and Reclamation. The report is primarily documentation of development and outcomes of water, salt, and nitrate budgets

and data and information gaps. The report will be reviewed through the CVSALTS TAC and the Consultant shall incorporate comments from CVSALTS review.

### **Task 6. Development of Additional Information (Optional)**

Task 3.4 identified and prioritized information needs for the Westside Region. Based on the TM produced under Task 3.4, the Contractor shall develop up to three small-scale studies to determine, verify, or refine existing information on the transport or transformation rates of salt or nitrate in the Westside Region. Upon Reclamation approval, the Contractor shall conduct small-scale studies. The Contractor shall prepare documentation of the completed work.

### **Task 7. Refinement of Analytical Tools (Optional)**

The goal of this task is refine existing analytical tools to either enable or improve their application in the Westside Region. The Contractor shall prepare a proposal on which analytical tools need to be refined to improve quantification of salt, nitrate, or water budgets or load calculations. Upon approval, the Contractor shall conduct necessary work. The Contractor shall calibrate and verify results. The Contractor shall prepare documentation of the completed work.

## **III. DELIVERABLES**

The Contractor shall collect data and literature and prepare a series of documents for the Westside Region Salt Source Assessment. These deliverables shall support implementation of the Management Agency Agreement and the CVSALTS effort.

### **Electronic Deliverables**

The Contractor shall submit electronic deliverables for all submittals. The electronic deliverables are to include digital copies of all developed data sets, data bases, maps, and any input and output model files. Tabular data shall be in spreadsheet (Excel) or database (Access or tab-spaced) format. Appropriate information shall also be compatible for GIS format. Text shall be submitted in Microsoft Word format. Figures and maps shall be submitted in Microstation and \*.pdf (Adobe portable document format). Digital photographs shall be delivered in \*.tif or \*.jpg format. Electronic deliverables shall be submitted on compact disk (CD).

## **IV. GOVERNMENT PROVIDED INFORMATION**

Reclamation will provide the following information on a schedule to allow use in accomplishing the above tasks:

- The Draft Compliance Evaluation and Monitoring Plan dated July 1, 2009 and all supporting data and analysis.
- Copies of relevant reports and other relevant information from related studies.
- Available data which may contribute to the conduct of the studies.

- Any other Reclamation flow or water quality data upon request.

#### IV. SCHEDULE

##### Schedule for Deliverables

The following table presents the anticipated task completion schedule in terms of time from the date of award of the contract. Project management and coordination tasks (Task 1) occur throughout the term of the contract. All technical memorandums and reports shall include a draft version for review by Reclamation and potentially other parties followed by a revised final version.

<b>Task No.</b>	<b>Deliverable</b>	<b>Months</b>
2	Memorandum on proposed approach for development of water budget	1
2	Technical Report on Water Budget	3
2	Raw data developed or collected for the Water Budget that is not yet publicly available	4
3.1	Technical Memo (TM) summarizing CVSALTS Workplan applicability to the region, list of region-specific salts and nitrates, and summary of data quality and completeness.	6
3.2	TM summarizing salt and nitrate processes occurring in the Westside Region.	8
3.3	TM summarizing salt and nitrate budgets for the Westside Region.	9
3.4	TM summarizing data and information gaps and prioritizing collection.	9
4.1	TM summarizing findings from evaluation of CVP salt load calculations.	11
4.2	TM on real-time salinity management pilot project opportunities	12
5	Report on Westside Region Salt Sources	10
6*	Proposal for small-scale studies.	15
6*	TM on small-scale study.	36
7*	TM on refinement of analytical tool(s).	24

\* Asterisked tasks are Optional tasks.

#### VI. PERFORMANCE PERIOD

The Period of Performance for this Statement of Work shall be the date of contract execution through December 31, 2011.

## **V. PROJECT MANAGEMENT**

The Contractor shall name and assign a well-qualified person as Project Manager with previous experience in the analysis of environmental data and coordinating with large stakeholder groups. The Contractor is to take no guidance from any source other than the Contracting Officer during the course of this work that deviates from the requirements stated in the Statement of Work. The Contractor shall immediately notify Reclamation of any such requests.