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Panel A

## II. EXECUTIVE SUMMARY

**Project Title** Adaptive real-time management of seasonal wetlands in the Grassland Water District to improve water quality in the San Joaquin River

### Name of Applicants

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### Project Description

The Grassland Water District, together with the adjacent State and Federal refuges, constitutes the largest contiguous wetland in the State of California. Increases in water supply allocations under the Central Valley Project Improvement Act (CVPIA) are helping to improve the quality of wetland habitat in the Grassland Basin while increasing the quantity of water returned to the San Joaquin River during the spring months, when seasonal wetlands are drained. Seasonal wetland drainage may negatively impact agricultural operations in the South Delta during years when peak wetland return flows coincide with pre-irrigation of cropland because of the potential for elevated salinity in these return flows. This project proposes monitoring, modeling and adaptive management of field operations, in cooperation with the currently funded CALFED San Joaquin River Real-Time Water Quality Management Project, to coordinate seasonal wetland drainage with the assimilative capacity of the San Joaquin River.

### Proposed scope of work (Tasks)

1. Design a monitoring system for measurement of wetland drainage flow and water quality parameters of concern (flow, EC, temperature).
  - (a) Survey Grassland Water District's drainage system and document drainage hydrology.
  - (b) Design flow structures and select water quality monitoring sensors at key monitoring sites.
  - (c) Coordinate monitoring with other CALFED programs and the San Joaquin River Management Program (SJRMP) Water Quality Subcommittee.
2. Develop a multi-objective habitat evaluation and salinity management program to optimize wetland values and functions while minimizing water quality impacts on the San Joaquin River.
  - (a) Establish study plots and describe wetland vegetation and traditional water requirements.
  - (b) Develop survey techniques to assess wildlife use and vegetation response to experimental drawdowns.
  - (c) Initiate experimental drawdowns and conduct field surveys of study plots.
3. Install, maintain and operate real-time EC, flow and temperature sensors in the project area.
  - (a) Construct flow structures where necessary and install flow, EC and temperature sensors.
  - (b) Implement a quality assurance/quality control and maintenance program.

- (c) Perform seasonal mass balance analysis in Basin to ensure complete accounting of the Grassland Water District hydrology.
4. Develop a spreadsheet accounting model with a graphical user interface for estimation and forecasting of seasonal wetland salt loading to the San Joaquin River.
- (a) Develop analytical tools that assist in analysis of wetland water requirements and development of best management practices.
- (b) Develop user interface to interact with existing San Joaquin River water quality forecasting model to aid scheduling of wetland releases.
5. Perform adaptive management of wetland releases during spring 2000 and spring 2001 in cooperation with the SJRMP Water Quality Subcommittee.
- (a) Demonstrate the benefits of improved coordination and scheduling of return flows with the San Joaquin River Management Program.
- (b) Conduct workshops to demonstrate system use to Grassland Water District landowners, Grassland Task Force and adjacent State and Federal wildlife refuges.

**Location**

The Grassland Water District is a 50,000 acre area located to the north and south of the City of Los Banos, on the west side of the San Joaquin Valley (Attachment 1). The District is located within Merced County. The project area includes approximately 90 miles of wetland channels and is bound by the Main Canal and Delta Mendota Canal to the west and the San Luis Drain to the east. Wetland drainage from the Grassland Water District is conveyed to the San Joaquin River through either Mud Slough (north) or Salt Slough.

**Applicant qualifications**

The team members include Grassland Water District, LBNL, DWR and CRWQCB personnel all of whom have worked in the Grasslands Basin for more than a decade. The USBR Geographic Information Support Unit has a national reputation in the development of GIS-based modeling tools for project planning and analysis. Key personnel include:

GWD	LBNL	CRWQCB	DWR	USBR (GIS)
Dean Kwasny Don Marciochi Veronica Woodruff Scott Lower	Nigel Quinn	Les Grober	Earle Cummings	Tom Heinzer

**Budget (three year duration)**

Task	Direct Labor Hours	Direct Salary and Benefits	Service Contracts	Materials and Acquisition Costs	Misc. and Other Direct Costs	Overhead and Indirect Costs	Total Cost
Task 1	1,365	20,370	32,100	6,700		4,780	63,950
Task 2	9,180	89,780	8,180	7,500		21,040	126,500
Task 3	1,380	24,210	55,040	124,080		5,670	209,000
Task 4	4,805	49,800	71,460	6,700		11,670	139,630
Task 5	1,360	19,580	49,080	6,700		4,590	79,950
Project Mngt. Task	1,110	26,980				6,320	33,300
<b>TOTAL</b>	<b>19,200</b>	<b>230,720</b>	<b>215,860</b>	<b>151,680</b>		<b>54,070</b>	<b>652,330</b>

### **Monitoring and Data Evaluation**

The monitoring and data gathering required for successful completion of this project will complement existing compliance monitoring programs including: the Grassland Bypass Project, routine monitoring performed by the CRWQCB and Grassland Water District, and the CALFED-sponsored "Real-Time San Joaquin River Water Quality Management" project, being undertaken by the SJRMP Water Quality Subcommittee.

### **Local Support/Coordination with Other Programs**

The project will involve local landowners, duck club operators and managers of State and Federal refuges in the Grassland Basin. Although this pilot project will concentrate on the 50,000 acres that comprise the Grassland Water District, the goal of the project is to disseminate the findings of the project to the entire Grassland Ecological Area; a 160,000 acres wetland complex. The proposed project has local support from the County of Merced, Grassland Resource Conservation District, San Joaquin River Exchange Contractors Water Authority, and Drainage Coordinator for Grassland Area Farmers (Attachment 2).

This proposed project is part of a comprehensive proposal to establish a real-time monitoring and water quality forecasting system in the San Joaquin Basin including all the major east-side tributaries, the west-side agricultural water districts and the main stem of the San Joaquin River. The project will coordinate and supplement existing biological and water quality monitoring programs being conducted by the Grassland Water District to capitalize on increased water supply made available through the CVPIA.

### **Compatibility with CALFED Objectives**

Salinity, selenium and temperature have been identified by the SJRMP Executive Council as water quality stressors of concern in the San Joaquin River. Management of wetland drainage discharges through scheduling of releases to coincide with periods of San Joaquin River assimilative capacity can help to improve San Joaquin River water quality. However, these actions may need to be tempered with consideration of the biological impacts of changes to traditional wetland management practices. No systematic data collection program has been undertaken to date to evaluate the short and long-term consequences of real-time wetland drainage management. Such a data collection program would create the foundation of an adaptive management strategy that could dovetail with current SJRMP and CALFED-sponsored initiatives on real-time quality management in the San Joaquin River and with the Vernalis Adaptive Management Program (VAMP), a multi-agency experiment to improve the San Joaquin River fishery through manipulation of tributary flows and flow release schedules.