Restoration Planning for Watersheds Impacting low Dissolved Oxygen Conditions in the Lower San Joaquin River Near Stockton

Project Information

1. **Proposal Title:**

   Restoration Planning for Watersheds Impacting low Dissolved Oxygen Conditions in the Lower San Joaquin River Near Stockton

2. **Proposal applicants:**

   Alice Tulloch, San Joaquin River DO TMDL Steering Committee

3. **Corresponding Contact Person:**

   Alice Tulloch
   SJR DO TMDL Steering Committee
   7202 Hites Cove Rd. Marioposa, CA 95338
   209 742-6963
   TullochEng@aol.com

4. **Project Keywords:**

   Ag/Urban Runoff
   Dissolved Oxygen
   Watershed Management

5. **Type of project:**

   Planning

6. **Does the project involve land acquisition, either in fee or through a conservation easement?**

   No

7. **Topic Area**:

   Ecosystem Water and Sediment Quality

8. **Type of applicant:**

   Private for profit

9. **Location - GIS coordinates:**

   Latitude: 37.330

   Longitude: -121.000

   Datum:

Describe project location using information such as water bodies, river miles, road intersections, landmarks, and size in acres.

Centerpoint at Livingston The San Joaquin Watershed including all lands that might provide a surface or subsurface flow that eventually reaches the San Joaquin River. It is generally expected that the furthest east is the base of the first major dam on the tributaries.

10. **Location - Ecozone:**

    12.1 Vernalis to Merced River, 12.2 Merced River to Mendota Pool, 13.1 Stanislaus River, 13.2 Tuolumne River, 13.3 Merced River, West San Joaquin Basin, 1.3 South Delta, 11.3 Calaveras River

11. **Location - County:**

    Fresno, Madera, Merced, San Joaquin, Stanislaus, Tuolumne

12. **Location - City:**

    Does your project fall within a city jurisdiction?

    No

13. **Location - Tribal Lands:**

    Does your project fall on or adjacent to tribal lands?

    No

14. **Location - Congressional District:**

    11, 18, 20

15. **Location:**

    California State Senate District Number: 12, 14, 5, 16

    California Assembly District Number: 30, 26, 25, 4, 10, 17

16. **How many years of funding are you requesting?**

    1

17. **Requested Funds:**
    a) Are your overhead rates different depending on whether funds are state or federal?

       No

       If no, list single overhead rate and total requested funds:

       Single Overhead Rate: 0%

       Total Requested Funds: $563,804

b) Do you have cost share partners already identified?

Yes

If yes, list partners and amount contributed by each:

Members of the Steering Committee $129,000

c) Do you have potential cost share partners?

Yes

If yes, list partners and amount contributed by each:

Each involved Watershed organization $10,000

d) Are you specifically seeking non-federal cost share funds through this solicitation?

No

If the total non-federal cost share funds requested above does not match the total state funds requested in 17a, please explain the difference:

18. **Is this proposal for next-phase funding of an ongoing project funded by CALFED?**

No

Have you previously received funding from CALFED for other projects not listed above?

Yes

If yes, identify project number(s), title(s) and CALFED program.

ERP-01-N61 SJR DO Depletion ERP

19. **Is this proposal for next-phase funding of an ongoing project funded by CVPIA?**

    No

    Have you previously received funding from CVPIA for other projects not listed above?

    No

20. **Is this proposal for next-phase funding of an ongoing project funded by an entity other than CALFED or CVPIA?**

    No

    Please list suggested reviewers for your proposal. (optional)

    Dan Fults SJR

    Fran Forkas City of Lodi 209-333-6869

    Rhonda Lucas CSBF

    Chris Foe CVWCB

21. **Comments:**

    Potential cost-share contributions are expected from each of the selected watershed stakeholders. These contributions will come in staff resources, money, and stakeholder time.

Environmental Compliance Checklist

Restoration Planning for Watersheds Impacting low Dissolved Oxygen Conditions in the Lower San Joaquin River Near Stockton

1. **CEQA or NEPA Compliance**
   a) Will this project require compliance with CEQA?

      No
   b) Will this project require compliance with NEPA?

      No
   c) If neither CEQA or NEPA compliance is required, please explain why compliance is not required for the actions in this proposal.

      Statuatory Exemption for feasability or Planning Studies for possible future actions Public Resource Code sections 21102 & 21150 The project will develop a plan for a future set of actions to restore dissolved oxygen in the DWSC in the lower SJR. Once the plan is developed, it is likely that a master EIR/EIS will be needed before major implementation can proceed.

2. **If the project will require CEQA and/or NEPA compliance, identify the lead agency(ies).** *If not applicable, put "None".*

   CEQA Lead Agency: none
   NEPA Lead Agency (or co-lead:) none
   NEPA Co-Lead Agency (if applicable): none

3. **Please check which type of CEQA/NEPA documentation is anticipated.**

   CEQA
   -Categorical Exemption
   -Negative Declaration or Mitigated Negative Declaration
   -EIR
   Xnone

   NEPA
   -Categorical Exclusion
   -Environmental Assessment/FONSI
   -EIS
   Xnone

   If you anticipate relying on either the Categorical Exemption or Categorical Exclusion for this project, please specifically identify the exemption and/or exclusion that you believe covers this project.

4. **CEQA/NEPA Process**
   a) Is the CEQA/NEPA process complete?

Not Applicable

b) If the CEQA/NEPA document has been completed, please list document name(s):

5. **Environmental Permitting and Approvals** (*If a permit is not required, leave both Required? and Obtained? check boxes blank.*)

LOCAL PERMITS AND APPROVALS

Conditional use permit

Variance

Subdivision Map Act

Grading Permit

General Plan Amendment

Specific Plan Approval

Rezone

Williamson Act Contract Cancellation

Other

STATE PERMITS AND APPROVALS

Scientific Collecting Permit

CESA Compliance: 2081

CESA Compliance: NCCP

1601/03

CWA 401 certification

Coastal Development Permit

Reclamation Board Approval

Notification of DPC or BCDC

Other

FEDERAL PERMITS AND APPROVALS

ESA Compliance Section 7 Consultation

ESA Compliance Section 10 Permit

Rivers and Harbors Act

CWA 404

Other

PERMISSION TO ACCESS PROPERTY

Permission to access city, county or other local agency land.
Agency Name:

Permission to access state land.
Agency Name:

Permission to access federal land.
Agency Name:

Permission to access private land.
Landowner Name:

6. **Comments.**

Land Use Checklist

Restoration Planning for Watersheds Impacting low Dissolved Oxygen Conditions in the Lower San Joaquin River Near Stockton

1. **Does the project involve land acquisition, either in fee or through a conservation easement?**

   No

2. **Will the applicant require access across public or private property that the applicant does not own to accomplish the activities in the proposal?**

   No

3. **Do the actions in the proposal involve physical changes in the land use?**

   No

   If you answered no to #3, explain what type of actions are involved in the proposal (i.e., research only, planning only).

   research and planning

4. **Comments.**

Conflict of Interest Checklist

Restoration Planning for Watersheds Impacting low Dissolved Oxygen Conditions in the Lower San Joaquin River Near Stockton

Please list below the full names and organizations of all individuals in the following categories:

- Applicants listed in the proposal who wrote the proposal, will be performing the tasks listed in the proposal or who will benefit financially if the proposal is funded.
- Subcontractors listed in the proposal who will perform some tasks listed in the proposal and will benefit financially if the proposal is funded.
- Individuals not listed in the proposal who helped with proposal development, for example by reviewing drafts, or by providing critical suggestions or ideas contained within the proposal.

The information provided on this form will be used to select appropriate and unbiased reviewers for your proposal.

Applicant(s):

Alice Tulloch, San Joaquin River DO TMDL Steering Committee

Subcontractor(s):

Are specific subcontractors identified in this proposal? Yes

If yes, please list the name(s) and organization(s):

Dave Ceppos	Jones and Stokes
Parry Klassen	
Austin McInerny	Jones and Stokes
Otis Wollan	

Helped with proposal development:

Are there persons who helped with proposal development?

Yes

If yes, please list the name(s) and organization(s):

Alice	**Tulloch**
Kevin	**Wolf**

Comments:

Budget Summary

Restoration Planning for Watersheds Impacting low Dissolved Oxygen Conditions in the Lower San Joaquin River Near Stockton

Please provide a detailed budget for each year of requested funds, indicating on the form whether the indirect costs are based on the Federal overhead rate, State overhead rate, or are independent of fund source.

Independent of Fund Source

Year 1												
Task No.	**Task Description**	**Direct Labor Hours**	**Salary *(per year)***	**Benefits *(per year)***	**Travel**	**Supplies & Expendables**	**Services or Consultants**	**Equipment**	**Other Direct Costs**	**Total Direct Costs**	**Indirect Costs**	**Total Cost**
1	Involve Stakeholders	230			1085	300	20575			21960.0		21960.00
2	Organize Subwatersheds	580			2170		51300			53470.0		53470.00
3	Write and Publish Allocation Report	160					17880			17880.0		17880.00
4	Write Reports - Implementation Options	188				2000	18960			20960.0		20960.00
5	Liaison Help	490			2232		44100			46332.0		46332.00
6	Tech Support	72					353600			353600.0		353600.00
7	Coordinator Support and Admin	64			992		29173			30165.0		30165.00
8	Contingency				647.9	230	18559.1			19437.0		19437.00
		1784	0.00	0.00	7126.90	2530.00	554147.10	0.00	0.00	563804.00	0.00	563804.00

Year 2												
Task No.	**Task Description**	**Direct Labor Hours**	**Salary *(per year)***	**Benefits *(per year)***	**Travel**	**Supplies & Expendables**	**Services or Consultants**	**Equipment**	**Other Direct Costs**	**Total Direct Costs**	**Indirect Costs**	**Total Cost**
		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Year 3												
Task No.	**Task Description**	**Direct Labor Hours**	**Salary *(per year)***	**Benefits *(per year)***	**Travel**	**Supplies & Expendables**	**Services or Consultants**	**Equipment**	**Other Direct Costs**	**Total Direct Costs**	**Indirect Costs**	**Total Cost**
		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grand Total=563804.00

Comments.

Budget Justification

Restoration Planning for Watersheds Impacting low Dissolved Oxygen Conditions in the Lower San Joaquin River Near Stockton

Direct Labor Hours. Provide estimated hours proposed for each individual.

Project Coordinator: 754hrs Facilitator: 480hrs Agricultural Liaison: 277hrs Environmental Liaison: 277hrs Webmaster: 237hrs

Salary. Provide estimated rate of compensation proposed for each individual.

All work done by independant contractors. Contracting fees reflect all overhead and benefits.

Benefits. Provide the overall benefit rate applicable to each category of employee proposed in the project.

All work done by independant contractors. Contracting fees reflect all overhead and benefits.

Travel. Provide purpose and estimate costs for all non-local travel.

Travel By Coordinator, Facilitator and Liaisons to Meetings at $.31/mi Total travel budget based on 20,900mi total travel as detailed in the budget section of the proposal document

Supplies & Expendables. Indicate separately the amounts proposed for office, laboratory, computing, and field supplies.

Publish Hard Copies of two reports $4000 (Publish Load Allocation Report $2000) (Publish Implementation Report $2000)

Services or Consultants. Identify the specific tasks for which these services would be used. Estimate amount of time required and the hourly or daily rate.

Project Coordinator: 754hrs Facilitator: 480hrs Agricultural Liaison: 277hrs Environmental Liaison: 277hrs Webmaster: 237hrs _____ Project Coordinator: $110/hr Facilitator: $90/hr Agricultural Liaison: $90/hr Environmental Liaison: $90/hr Webmaster: $50/hr Technical Subcontractor Funds $350,000 total

Equipment. Identify non-expendable personal property having a useful life of more than one (1) year and an acquisition cost of more than $5,000 per unit. If fabrication of equipment is proposed, list parts and materials required for each, and show costs separately from the other items.

none

Project Management. Describe the specific costs associated with insuring accomplishment of a specific project, such as inspection of work in progress, validation of costs, report preparation, giving presentatons, reponse to project specific questions and necessary costs directly associated with specific project oversight.

The Project Coordinator will be responsible for Attending the Steering Committee meetings and reporting monthly on the progress of the watershed project. Task 7 includes Liaison subcontract administration valued at $4633 (10% of the total expenditures on Liaison work.) Task 7 also includes funds for technical subcontract administration in the amount of $17,500 (10% of the total value of

subcontractor funds) In this capacity, the project coordinator would be responsible for cost management and for the accountability of the various subcontractors

Other Direct Costs. Provide any other direct costs not already covered.

none (telephone expenses are included in the contingency

Indirect Costs. Explain what is encompassed in the overhead rate (indirect costs). Overhead should include costs associated with general office requirements such as rent, phones, furniture, general office staff, etc., generally distributed by a predetermined percentage (or surcharge) of specific costs.

overhead rates are included in contractor wages

Executive Summary

Restoration Planning for Watersheds Impacting low Dissolved Oxygen Conditions in the Lower San Joaquin River Near Stockton

Solving the low dissolved oxygen problem in the Deep Water Ship Channel (DWSC) in the lower San Joaquin River is a high priority of the CALFED Ecosystem Restoration Plan. In this proposed project, stakeholders in the San Joaquin watersheds most closely related to the causes and sources of oxygen depletion in the DWSC will work together to develop individual watershed restoration plans and help craft the overall SJR DO Restoration Plan. With the completion of independent Peer Review of 2001 CALFED funded studies in March of 2002 on the sources and causes of the low dissolved oxygen problem, the stakeholders will know which watersheds contribute most of the load to the downstream problem. It is anticipated that between 3 and 10 watersheds will be involved in resolving the problem. This grant will provide those watershed stakeholders with facilitation, technical and financial resources so that they can understand why they have a loading problem and so that they can develop an implementation plan to meet their share of the overall solution. A key hypothesis is that local watershed-based stakeholders will more successfully implement a restoration plan that they help develop. This project has great potential to advance other CALFED ERP goals. Because many of the solutions such as Best Management Practices reduce the loading of multiple pollutants of concern, the successful implementation of local watershed restoration plans for DO will likely help improve water quality from other contaminants. Finally, this project will help create long term stakeholder-based watershed organizations with experience in helping resolve water quality problems. Most restoration plans to reduce non-point source loads will take years to successfully implement. The creation of sustainable organizations will benefit CALFED's goals in many ways.

Proposal

San Joaquin River DO TMDL Steering Committee

Restoration Planning for Watersheds Impacting low Dissolved Oxygen Conditions in the Lower San Joaquin River Near Stockton

Alice Tulloch, San Joaquin River DO TMDL Steering Committee

10/201 DRAFT v5
with suggested changes from Bill Johnston

RESTORATION PLANNING FOR WATERSHEDS IMPACTING LOW DISSOLVED OXYGEN CONDITIONS IN THE DEEP WATER SHIP CHANNEL OF THE LOWER SAN JOAQUIN RIVER NEAR STOCKTON

Applicant: San Joaquin River Dissolved Oxygen TMDL Steering Committee
Contact Person: Alice Tulloch, Vice Chair
Contact Mailing Address: 7202 Hites Cove Road, Mariposa, CA 95338
Contact Telephone: 209/742-6963
Fax: 209/742-6963 Email: TullochEng@aol.com
Date: September 20, 2001

A. Project Description: Project Goals and Scope of Work

1. Problem

Point and non-point source loading of nutrients, organic material and other oxygen demanding substances within the San Joaquin River watersheds contributes to the low dissolved oxygen problem in the lower San Joaquin River near Stockton. Because of this, the Central Valley Regional Water Quality Control Board (CVRWQCB) has given the stakeholders until December 2002 to develop a TMDL and an implementation plan to correct this problem, or the Board will do it for them. To help meet this goal, the Board supported the development of and is an active participant in the San Joaquin River Dissolved Oxygen TMDL Steering Committee and Technical Advisory Committee.

The Ecosystem Restoration Plan lists dissolved oxygen as one of the water quality impairments to be addressed by Strategic Goal 6: Sediment and Water Quality. The Ecosystem Restoration Plan describes dissolved oxygen impairments in the Deep Water Ship Channel (DWSC) and the Delta as high priorities for the Phase 1 Implementation Plan, specifically priorities MR-5 and SJ-5.

Research to date indicates that the sources and causes of the oxygen depletion extend from the DWSC upstream to the Mud and Salt Slough watersheds near Los Banos. Computer modeling shows that DWSC portion of the lower San Joaquin River is unable to meet water quality standards, even after point sources of pollution have been completely removed from the river. Upstream algal biomass dies in the much deeper DWSC near Stockton and bacterial action during the decaying process is a primary cause of the low dissolved oxygen conditions. Ammonia from lower river sources, especially late in the year can be a major factor in the low D.O. problems that occur at that time. Low flows in the San Joaquin both increase the time that the algae has to grow before reaching the DWSC and reduces the assimilative capacity of the system. On the other hand, lack of light from high sediment and turbidity levels limits algal growth. If less algal load reached the San Joaquin from its watersheds, less "seed stock" would result in less algal biomass reaching the DWSC, and thus less decay would occur there and higher DO levels would result.

Part of the problem is that it is not easy to determine what should be the load upon which a TMDL is based and toward which the stakeholders in targeted watersheds should develop implementation plans to meet. Should it be Chlorophyll a, phosphate, nitrogen, BOD or ammonia? Should it differ depending on the watershed and the impact this load has on downstream DO levels? Should it be a constituent like nitrogen that is unlikely to be lowered to a level that limits algal growth but would spread the sharing of the burden to everyone in the San

Joaquin watershed and potentially allocate some load to airborne sources of nitrogen? Could all watersheds that are allocated a load be allowed to participate in some form of a pollutant trading program so that they most cost effectively meet their load reduction requirements but invest in greater benefits to resolving the low DO problem somewhere else? For example, could the responsible parties in watersheds invest in aeration devices in the DWSC itself?

Another part of the problem is that higher San Joaquin flows result in less need to reduce upstream loads. Could recirculating water up Old River to the San Joaquin through operations of the South Delta barriers in combination with a low head pump provide enough flow to dramatically reduce the need for load reductions?

Yet another part of the problem is determining how the Port of Stockton and the US Army Corps of Engineers can help pay for part of the solution. Modeling indicates that if the DWSC had not been excavated to a depth of 35 feet, there would not be a low DO problem.

In all cases, a load must be allocated. The stakeholders' Technical Advisory Committee will be completing the review of three years of CALFED and stakeholder funded studies with an external Peer Review process in March of 2002 on the sources and causes of the low DO conditions. After that review, the Steering Committee will make a tentative load allocation proposal. It is possible that all San Joaquin River watersheds will be allocated a tentative load and load reduction target. (This project will fund the five* most important watersheds that wish to participate.)

** Note: "Five*" is the number of watersheds used in this proposal to provide a structure for the tasks and budget. It could be that three or eight watersheds or any number of them in between might end up participating as they evaluate how responsible they might be for resolving the low dissolved oxygen problem. If more or fewer watersheds participate, the overall budget will remain the same, but each watershed will have more or less technical resources to share and the coordinators, facilitators and liaisons will end up doing more or less work for each watershed collaboration.*

The Steering Committee believes that without the local stakeholders being involved in understanding why a load may be allocated to land users in their watershed and without their help in determining what load reduction alternatives may work best for them, an effective clean up plan will take much longer to enact. In addition, the Central Valley Regional Water Quality Control Board (CVRWQCB) may assign loads of oxygen demand control to individual tributary watersheds of the San Joaquin River and require that the local watershed stakeholders determine how they will implement a plan to meet their share of the TMDL reduction. If the local stakeholders do not develop a reasonable plan, the Regional Board says it will pursue its own alternatives to reduce the pollutant loads.

2. Justification (including conceptual model, hypotheses, and selection of project type)

This section describes both the scientific basis for selecting a regional watershed restoration planning process, and the justification for selecting a stakeholder-based decision process.

<u>Scientific Justification for Regional Watershed Planning Process</u>

The computer model for the behavior of dissolved oxygen and oxygen depleting substances in the lower San Joaquin River evaluates the interaction of flow, nutrient and algal loading, temperature, sunlight, and river morphology. The SJR DO research cited in Section G of this proposal has come to the following conclusions. The research indicates that the low DO is caused by a combination of increased river depth in the dredged DWSC, low flow in the river,

high levels of algae, nutrients that feed the algae, and oxygen demanding substances such as ammonia present in the river water. Sources of nutrient load and algal load appear to originate from areas where urban and agricultural runoff water enters the river. Present modeling indicates that the further away from the DWSC that this loading occurs, the more time algae has to grow before dying in the deeper waters of the river near Stockton. Ammonia sources closer to the DWSC are more problematic to low DO than sources further away.

Even if the CVRWQCB was not going to allocate a load to contributing watersheds and require that the watershed stakeholders develop an implementation plan, pursuing a watershed approach to resolving this problem is appropriate. The main reason is because it will be more effective over the long run if the local stakeholders help determine the long term monitoring plan to better identify the sources of load in their areas, evaluate and choose from among a variety of implementation options. (The funding this project would provide for both an environmental and agricultural liaison will help ensure that they use good science throughout.)

This past spring, CALFED provided $1.5 million in Directed Action funds for studies in 2001 to better determine the relative importance of different sources and causes of the low DO problem. The Steering Committee will not determine which five* tributary watersheds will receive the resources from this grant until the final studies on sources and causes have undergone a Peer Review process in March of 2002. For this reason, this proposal can only list the potential watersheds that might end up being part of this proposal.

The geographic scope of potential solutions extends from Disappointment Slough in the DWSC to the Mud and Salt Slough watersheds on the south, from Coast Range streams on the west to the rivers leaving the Sierra Nevada foothill dams on the east. The possible watersheds moving from north to south include: Calaveras River, French Camp Slough, land along the mainstem from Stockton to Vernalis, Stanislaus River, Tuolumne, Merced, Orestimba Creek, Del Puerto Creek, the mainstem between Stanislaus and Merced, the mainstem from Merced to Mud and Salt Slough, Bear Creek, Grasslands, Mud and Salt Slough.

Justification for a Stakeholder-Based Decision Process

The current regulatory control of point source loading from wastewater treatment plants has not been sufficient to restore the dissolved oxygen in the DWSC, and computer modeling shows that a complete removal of all point sources of load would not solve the problem either. In fact, a 2000 CALFED external peer review panel concluded that reductions in point and non-point nutrient loading alone are unlikely to resolve the problem. The Steering Committee has concluded that a watershed-wide approach involving stakeholders from the Port of Stockton, municipalities, agriculture, industry, irrigation districts, wetland, refuges, duck clubs, Delta water exporters (e.g. DWR and USBR) and the Corps of Engineers will be required.

This proposal will fund the development of watershed implementation plans by the local stakeholders in the areas with the most problematic loads. These local stakeholders will determine if they want to utilize the resources from this grant after the Steering Committee uses the results of the external Peer Review process to identify individual watershed loads.

There are many examples whereby locally developed restoration plans are much more successful than externally imposed plans. This project will invest resources in helping bring all the stakeholders in those watersheds to the table and provide them with key financial and technical resources that they will need to craft their plans.

There is the potential to address environmental justice in this project. If point and non-point sources were required to bear the burden of remediating a problem that is attributable in part to flow diversions and the deepening of the DWSC, this could unfairly end up shifting the costs of an environmental problem to stakeholders who would end up paying more than their just

share. There are countervailing environmental justice issues if these parties (e.g. the Port of Stockton) who provide widespread benefits were required to bear the burden for certain localized causes of the oxygen depletion. The complexity of the public policy and economic issues is best represented in a forum where those directly effected can weigh the issues and options together. The stakeholders of the SJR DO Steering Committee are seeking to develop an adaptive management plan for the restoration of dissolved oxygen that takes into account what is feasible and fair, while moving effectively towards improving DO. And by investing in effort to ensure all stakeholders are involved in the process, the first step towards avoiding environmental injustice will be taken.

3. Approach

The major, near-term objective of the proposed project is to help watershed stakeholders define the measures or actions that could be implemented to meet each watersheds share of responsibility for dissolved oxygen depletion in the DWSC. The long-term objective is to create or enhance self-sustaining watershed collaborations or organizations that take the lead on implementing restoration plans for their watershed. These watershed collaborations will be comprised of the agencies and stakeholders who need to respond to other water issues in their area such as pesticides, selenium, salt, boron, and sediment. The Steering Committee is supporting both BMP Inventory and Evaluation projects being proposed for the Steering Committee by Bill Power because of the important information these compilations of existing research will provide to stakeholders wishing to create integrated plans to advance multiple goals without exacerbating other problems

The project is comprised of three steps to develop the DO Restoration Plan through a stakeholder process: Convening Phase, Responsibility Phase, and Solutions Phase. The result will be that the stakeholders in the responsible watersheds will understand the science of dissolved oxygen behavior in the San Joaquin River and how their land management and point discharges practices affect the low DO problem. They will determine the institutional framework for the allocating the load reduction responsibility within their watershed. And they will develop 5-year adaptive management and monitoring plans for implementing the agreed-upon restoration actions.

A primary strategy of the project is to provide resources to the local watershed-based stakeholders so that they can act expeditiously. Facilitation, coordination, technical assistance and money for tools, monitoring and other actions will be allocated to five* watersheds within the greater San Joaquin watershed. The resources will only go to the watershed if the representatives commit to helping advance the allocation and implementation goals.

A second primary strategy is to help local stakeholders agree on what existing or new organization should be the institution through which the collaborative implementation program is run. Irrigation districts, Resource Conservation Districts and local cities and governments are existing entities that could fill this need. It is also possible for the stakeholders to determine that a Joint Powers Authority or other new organization is needed. The money, staffing, monitoring, research, pilot projects, educational efforts and other projects that will begin with this program will need an institutional framework to succeed over the long term. This institution will be guided by the decisions made from a broad-based, stakeholder committee. Given that the solutions will take years, even decades to fully implement, the organizational effort needs to be focused on sustainability over the long-term.

The institutional frameworks and watershed groups that result from this project will likely take on other related water quality problems that affect their watershed because they are so

related. BMPs such as tailwater recovery systems can reduce nutrient applications, decrease pesticide, sediment and nutrient runoff, add to groundwater recharge, provide habitat, and decrease evaporation losses. Given the overlap in the issues affecting land managers and the value of having institutions and a working watershed process, this project holds great promise for building the foundation for an integrated watershed restoration actions.

Project Phases and Outcomes

Phase 1: Convening the Subwatershed Groups

Outreach on the Causes and Sources of Oxygen Depletion in the San Joaquin River

In March of 2002 an outside Peer Review panel will evaluate the existing data and analysis on sources and causes of the low DO problem. The Steering Committee will take this information and determine which watersheds will tentatively be responsible for what percentage of the load reduction needed to solve the low DO problem. This project will provide funds for the five* supportive watersheds that are allocated the largest load reduction target. Given the opportunity this grant offers in terms of resources, facilitation and technical help, and given the existing support by representatives of important organizations from most of the watersheds, it is anticipated that most of the targeted watersheds will participate.

A key objective of the Convening Task is to provide the local watershed stakeholders with easy-to-understand information on why they are being targeted with a load reduction to help resolve the low DO problem downstream and how their land use practices may be part of the problem. Two papers will be written and distributed that summarize the load allocation and the implementation options. These papers will go through three drafts with review by the Steering Committee because these papers will provide the best summation of information and policy on these subjects available to the Committee.

A second objective is to ensure that all stakeholders are informed and invited to participate in the process. An agricultural liaison and an environmental liaison will be hired to assist in this process. Both these interest groups have had financial constraints that have made it difficult to fully participate. Hiring liaisons will ensure that communication to these stakeholder interest groups occurs and that they know of and have the opportunity to participate in the process. The liaisons will provide important feedback on all written documents and reports and help prevent misunderstanding and lawsuits later.

A third objective of the Convening Task is to provide the local watershed stakeholders with the resources they need to hire a coordinator/facilitator for their organizational efforts. Many evaluations of successful and unsuccessful watershed and stakeholder processes report the importance of a paid, professional facilitator/coordinator. This project will have a list of facilitators from which a watershed group can choose. This allows the first meetings to occur without having to go out to competitive bidding.

The watershed groups that chose to proceed with the project will develop their own scope of work and workplan, within the objectives and schedule of the SJR DO Steering Committee's overall goals. The watershed group members will be encouraged to attend the Steering Committee as well. The Project Coordinator will provide basic reporting and liaison help between the watershed collaborations and the Steering and Technical Advisory Committees.

A fourth objective will create the foundation for information sharing among the watershed efforts and all the other stakeholders throughout the valley. At the beginning of the process each watershed will have a nested page on the www.sjrtmdl.org website where meeting notes and other documents important to their own collaboration will be available to the public. The documents and links that are important to the overall process will continue to be placed on

this website easily available for the watershed groups. For example, the BMP Inventorying and Evaluation database and reports will be hosted here. In addition, each watershed group will have its own email listserv that are available to all other stakeholders to join and thus keep up with which ever discussions they think are important to them.

Phase 2: Responsibility Phase

Per direction of the Regional Board, the Steering Committee will attempt to recommend responsibility for a load reduction to individual watersheds. The local watershed stakeholders have to determine how to divide up this load reduction to the upstream interests. It is critical to bring these stakeholders into an evaluation and decision-making process that integrates the benefits of aeration, point and non-points source reduction of different pollutants of concern, and increased flows. The load responsibility recommendation is tentative until there is an integration of the preferred solutions because this might change the amount a responsible party has to do, and change their restoration plans.

A key objective in the Responsibility Phase is to produce a discussion paper that clarifies the alternatives for allocation of responsibility for DO depletion. The Steering Committee and stakeholders from the watersheds, as well as the agriculture and environmental liaisons will participate in the editing of each draft and agreement on the final paper. One of the key topics to be addressed will be how to include other important parameters in the determination of responsibility and the pollutant load allocation. Low dissolved oxygen is an impairment of water quality, not a pollutant. So the environmental parameter on which to allocate responsibility could be loading of oxygen demanding substances or precursors (BOD, nitrogen or phosphorus) and/or impact on assimilative capacity due to changes in the SJR DWSC flow and channel morphology. The Regional Board can only allocate a TMDL on a pollutant of concern, but the stakeholders are allowed to incorporate these other parameters into an integrated solution. The responsibility paper will explain these options, analyze the impacts of the most likely implementation and allocation scenarios, and provide a framework and step-by-step options plan for each scenario. The environmental and agricultural liaisons will be important toward helping craft this paper so that it is acceptable to their interest groups.

Phase 3: Solution Phase

The first objective of this phase is for stakeholders to develop a five-year adaptive management plan as part of a long term plan that will restore dissolved oxygen levels in the DWSC. The allocation and implementation policy and planning decisions will take place on two levels. With this grant, the watershed groups will be provided resources to help them develop alternatives that are workable with their local conditions. At the same time, the Steering Committee expects to be using up to four million dollars in additional Prop. 13 dissolved oxygen funds to evaluate the overall implementation options and produce tools that can help the local groups in their decision making. Together, the watershed collaborations and the Steering Committee will create an integrated five-year plan to present to the Regional Board. The five-year plan is expected to contain provisions for continuing research, monitoring and adaptive management strategies at a local watershed and regional level.

Whether the solution to the oxygen depletion in the DWSC involves aeration in the DWSC, increased circulation of flow through the DWSC, decreased point source loads, Best Management Practices for non-point sources, wetlands management, ag-urban partnerships for nutrient management, pollutant exchange programs, or a combination of all these strategies, stakeholders in key watersheds will need to participate in solving the problem. Elements of this year's research will characterize the watersheds in more detail and help the Steering Committee to set priorities. In the event that a watershed group does not form on one of the key tributaries,

the Steering Committee would incorporate planning for that area into their overall analysis of alternatives.

A second objective of the Solution Phase is for the watershed groups to gain the information they need to decide on a plan that works for them and meets their load allocation responsibility. The Steering Committee anticipates providing a great deal of supporting tools, data and analysis that will be of use to these local groups (and will be presented in the Solution paper). Watershed collaborations will bring their own in-kind staffing, tools, data and funds to help. For example, the stakeholders will likely pay for logistical and meeting support. The BMP Inventorying and Evaluation projects that the Steering Committee hopes are funded will provide the definitive base of information that the watershed groups can evaluate and incorporate into their options.

In addition, the five* watershed groups will receive $60,000 each to help them with the technical expertise they will need to both determine how their load responsibility may be shared within their watershed and for the development of their implementation plan. The watershed groups will use the CALFED approved competitive bid process to select sub-contractors for their projects. They may end up choosing experts who presently sit on the Technical Advisory Committee or from their own watershed. Examples of projects for which they may use these funds include:

- Using land use maps and coefficients of nutrient transport to identify likely problem loading areas and then evaluate how different levels of BMP implementation on different types of crops and soils might reduce runoff and loading.
- Participating in a regional GIS based computer modeling effort on pollutant transport and the effectiveness of BMPs and land use changes.
- Increasing the monitoring in the watershed to identify problem areas.
- Surveying of landowners to determine how many might incorporate different BMPs (based on the results of the BMP Inventorying and Evaluation project) and what outside resources would they need to accomplish this.
- Evaluating water recycling and holding options to change when pollutant loads are released and enter the San Joaquin at a less harmful time.
- Estimating the existing coverage, quality and future increase in riparian filter strips and wetlands in the watershed and how pending changes might most effectively help reduce pollutant loads.

The range of implementation measures to be considered is wide. The Steering Committee already has funds from CALFED to evaluate the effectiveness of different aeration options in the Deep Water Ship Channel and the recirculation of flows in the South Delta to reduce the residence time in the DWSC. Most cities are already evaluating their options for reducing or eliminating their point source contribution to the river. This grant will be critically important toward helping local responsible parties evaluate their own options including point and non-point source reduction as well as toward possible payments for downstream aeration or flow improvements.

In the Solution Phase, the watershed groups will be required to document their proceedings, data, and analysis and prepare a final report for submittal to the Steering Committee, and ultimately to CALFED. This information will be valuable towards efficiently writing the EIR/EIS that will need to be done once the Regional Board and USEPA have reviewed and decided upon the TMDL and Implementation Plan.

4. Feasibility

This section discusses the organizational, technical and practical feasibility of completing the SJR DO Restoration Plan.

Organizational Feasibility

The success of the CVRWQCB supported stakeholder process depends on involvement of the stakeholder organizations that may have to take responsibility for the problem. With almost three years of successful collaboration so far, the Steering Committee has a great deal of experience in working through problems to reach consensus and is committed to finding solutions that work for the stakeholders in the watersheds. This commitment and experience is a significant reason to believe that the Steering Committee and participants will make this project succeed.

Almost every potential watershed group facing a TMDL allocation has at least one major stakeholder representative on the Steering Committee. These leaders helped draft this proposal and support it. They believe that if their watersheds are allocated a load that support from this project will be critically important to their ability to successfully craft a restoration plan for D.O.

Most successful watershed restoration plans are developed and implemented by the local stakeholders and institutions that already have responsibilities in the watershed. This project includes the key elements of those successful efforts: professional facilitation, support for coordination, availability of technical resources, and funding for the agricultural and environmental interest groups to become organized and involved before it is time to file lawsuits on an outcome they don't like.

Technical Feasibility

Given the relatively short timeline (6-12 months) that the watershed collaborations will have to develop the outline of a five-year implementation plan, the technical tools and data that they will use will be readily available or relatively easy to collect. The BMP Inventorying and Evaluation projects will provide the watershed groups and Steering Committee with a review and summation of the best available technologies and programs to reduce non-point loading of nutrients and oxygen demanding substances.

One example for a simple method to estimate internal watershed load distribution and target the most important land uses and geographic areas for BMP implementation is the use of soil and crop maps with coefficients for contaminant runoff and seepage rates. These methods have been used in other parts of the country, which lack detailed monitoring information but need to prioritize actions in a watershed. The NRCS, universities and other organizational research have developed coefficients that are reasonably credible in their accuracy. Maps including GIS layers of soils, crops, fertilizer use rates, wetlands, riparian strips, urban stormwater discharge points and other factors have already been developed by counties, cities, state or federal agencies or others. Funding from CALFED will provide the watershed collaborations with funds to hire their own experts to take the maps and coefficients and provide analysis on how widespread changes in land use management on the different soils and crops over 10-20 years could meet the TMDL allocation target.

It is possible that these watersheds could join together to use a computer model to evaluate these interactions in more complexity, especially the secondary impacts such as possible salt build up, decrease water application rates, groundwater levels, and other factors.

Surveys of farmers on what they would be willing to change in the land management plans based on different incentives and disincentives are entirely feasible, and much more likely to succeed in gaining widespread support if sponsored by local organizations with representatives in the watershed collaboration.

Increased monitoring at key spots within the watershed is entirely feasible with today's technology. Monitoring will be much easier to implement if supported by local landowner based organizations.

The Steering Committee's TAC is comprised of scientists and engineers from both the public and private sectors including DWR, RWQCB, USFW, USGS, the University of California, the University of the Pacific, Lawrence Berkeley Laboratory and several engineering firms. Many of these experts have been principal investigators under previous grant funding and will be able to contribute some in-kind participation in the technical issues. For the most part they will be available to either directly help the watershed groups if asked, or will provide feedback on their proposals as part of the TAC review process.

Because the technical aspects of this proposal will begin after the Peer Review of the sources and causes of the low Dissolved Oxygen from within the San Joaquin watershed, all the future technical work will have the benefits of a peer reviewed analysis on what might work to help solve the problem. Watershed collaborations will need to create restoration scenarios that meet the parameters of the peer-reviewed studies.

Most of the watershed collaborations will provide member organizations with technical expertise on staff or as consultants. These local experts are expected to bid on proposed projects for which they may be eligible. The watershed collaborations and Steering Committee will have a strongly qualified field of experts to choose from.

Practical Feasibility

The most compelling component making this project feasible on a very practical level is that the land managers in the watersheds may be facing a strong "stick" to stop contamination from leaving their lands at the same time they may be offered significant resources to help them achieve that goal. The land managers' willingness to participate in the process and implement the end results is directly related to the amount of incentive they have (or threat they face). With the TMDL for D.O. needing to be decided by the stakeholders by December 2002 or face Regional Board action, there is a growing realization that the threat and possible rewards to inspire change may become sufficient for even the most recalcitrant of land managers to participate.

All parts of the project are feasible on a practical scale. There is a large network of watershed leaders who are members of the Steering Committee who will help make the project successful. This project is a top priority for the Steering Committee. As soon as the grant recipients are announced in Spring of 2002, the Steering Committee and watershed leaders will begin the process of organizing. They have the in-kind resources to help start the competitive bidding process to find candidates for different possible jobs before the first meeting is held. Every type of task encompassed in this project has been done successfully by other watershed organizations and collaborations. The sophisticated organizations with representatives on the Steering Committee can make this project happen, especially with the help of Project Coordinator Alice Tulloch who has played important roles with the TAC and Steering Committee for two years.

The organizational infrastructure of the Steering Committee makes this project practical and feasible. For example, over the last three months, it has organized four additional subcommittees assigned to certain policy and planning issues: Oxygen Demanding Substance Reduction, DWSC Aeration, Recirculation and CEQA/Basin Plan Amendment Planning. These are the core topics that must be addressed to successfully complete an implementation plan for restoring DO in the DWSC. These subcommittees will provide recommendations to the Steering

Committee on region-wide implementation measures and provide valuable information to the watershed collaborations.

The level of experience of the Steering Committee members in regulatory affairs and stakeholder decision processes will be invaluable to completion of the project. The Steering Committee has adopted parliamentary procedures for both consensus decisions and voting as needed to come to final decisions in as fair a way as possible. Many of the Steering Committee members will be active with the watershed collaborations and will bring their positive experience in how to reach consensus with them.

5. Performance Measures

The ultimate performance measure of the DWSC Dissolved Oxygen Steering Committee's efforts will be whether dissolved oxygen has improved relative to the Water Quality Objective in the Basin Plan. Each five-year plan that is developed will have a target level of load reduction and dissolved oxygen improvements. The five watersheds in conjunction with other actions in the basin are required to eliminate low D.O. events and accommodate future expected population and agricultural growth. Because they will be adaptive management plans, new information from monitoring and research will likely change the direction or scope of the next adopted plan.

For this specific project, the following results will be used to measure the project's performance:

Phase	Performance Measures	Completion Schedule
Convening	• Five* watershed groups are convened.	September 2002
Responsibility Phase	• Load Allocation Alternatives paper is completed. • Steering Committee recommends a preferred load allocation method.	December 2002
Solution Phase	• SJR DO Restoration Plan is completed.	December 2002 (though realistically this may go six months longer)

B. Applicability to CALFED ERP and Science Program Goals and Implementation Plan and CVPIA Priorities

1. ERP, Science Program and CVPIA Priorities

The Ecosystem Restoration Plan lists dissolved oxygen as one of the water quality impairments to be addressed by Strategic Goal 6: Sediment and Water Quality. The Ecosystem Restoration Plan describes dissolved oxygen impairments in the San Joaquin River and the Delta as high priorities for the Phase 1 Implementation Plan, specifically priorities MR-5 and SJ-5. In addition, decreasing non-point pollutant loading through the implementation of Best Management Practices on urban and agricultural lands may benefit all water quality priorities and goals within the San Joaquin watershed and Delta.

2. Relationship to Other Ecosystem Restoration Projects

Restoration of dissolved oxygen levels in the Delta have a significant relationship with many of the Ecosystem Restoration Program objectives, including those related to at-risk species recovery, aquatic habitat restoration, wild-life friendly agriculture and long term sustainability of restoration measures. These relationships cross over the San Joaquin and Delta Ecologic Management Zones.

Most future options for delta restoration actions or changes in pumping or water flow will impact the dissolved oxygen levels in the DWSC or will be affected by the ultimate implementation actions taken to meet the Clean Water Act requirement for D.O. For example, how load reduction, aeration and South Delta Barrier operations for increased DWSC flows occur can all affect ecosystem restoration programs in the Delta environment. Upstream, operations of refuges, wetlands and duck clubs can impact the amount of load entering the San Joaquin and ultimately impacting dissolved oxygen downstream. Shallow water habitat, riparian forests, water temperature and flow releases from dams can all positively or negatively change algal growth, organic carbon and oxygen-demanding precursors. Without an integration of local watershed plans with a comprehensive analysis of the whole system, it may be impossible to gain consensus-based solutions to many San Joaquin and Delta ecosystem problems.

3. Requests for Next Phase Funding Not Applicable

4. Previous Recipients of CALFED Program or CVPIA Funding

The SJR DO Steering Committee has benefited from two previous grants from the CALFED Program.

Title: Determination of the Causes of Dissolved Oxygen Depletion in the San Joaquin River Deep Water Ship Channel

FY: 2000 Amount: $866,000

Status: Field research has been completed. Preliminary project reports are available on the web site, www.sjrtmdl.org. External peer review will be conducted in late 2001.

Title: Developing Technical Information Needed to Implement Control Programs for Dissolved Oxygen Depletion Below Water Quality Objectives in the San Joaquin River Deep Water Ship Channel

(Directed Action grant)

FY: 2001 Amount: $1.645 million Proj. No. ERP-01-N61

Status: Contracts are being executed. Field work has started and is scheduled to be completed by November 30, 2001, so that external peer review of the projects can be conducted in March 2002.

5. System-Wide Ecosystem Benefits

This section discusses benefits of the project in addition to those listed in Section B2 above.

Restoration of dissolved oxygen in the lower San Joaquin River may likely have benefits for other water quality objectives. Other Section 303(d) water quality impairments on the San Joaquin River include pesticides, selenium, boron, electrical conductivity, and unknown toxicity. To the extent that the SJR DO Restoration Plan includes non-point source controls, source of

these pollutants may also be reduced. At a minimum the watershed collaborations will evaluate how BMPs for non-point source control positively and negatively affect these other pollutants of concern. It is expected that the watershed stakeholders will choose those actions which would provide them with multiple benefits at the least cost. In the process these land managers are likely to tap into funds available for these other problems and more cost-effectively implement integrated solutions to the dissolve oxygen and other pollutant loading problems.

Increased river flows decrease the time both for algal growth to occur in the watershed and for it to die in the DWSC. The Steering Committee supports an evaluation of recirculation of water through Old River using South Delta tidal barriers supplemented with low head pumping at the Head of Old River as a means to increase flow. Increases in flows through any section of the San Joaquin may provide a benefit to the aquatic life in that section.

There will also be information sharing benefits as a result of the project. All reports, data, model runs and GIS layers or their metadata and other information will be published on line at the www.sjrtmdl.org or IEP websites. Much of this information will be valuable to land managers in the Kings, Kern, Sacramento, Salinas, and other watersheds throughout the state.

6. Additional Information for Proposals Containing Land Acquisition

The proposed project does not include land acquisition.

C. Qualifications

This section describes the qualifications and readiness of the SJR DO Steering Committee and the Project Coordinator.

a. SJR DO TMDL Steering Committee

The Steering Committee is comprised of representatives of the many interested parties, listed in Attachment A. The Steering Committee has been hosted since 1999 by the City of Stockton. Since the Steering Committee has no corporate identity, various members have provided their corporate and administrative abilities on a number of previous projects. For example, the City of Stockton sponsored much of the 1999 research. The Department of Water Resources has been the project manager for the 2000 CALFED research grant. The Cities of Turlock, Tracy, Stockton, and Modesto have provided contract administration on several public outreach and research projects. The 2001 CALFED Directed Action grant is being administered by the National Fish and Wildlife Foundation. The San Joaquin River Group is providing administrative support for the development of the Steering Committee's Plan of Action. The Steering Committee has asked Tulloch Engineering to be the Project Coordinator for the proposed project.

b. Project Coordinator

The contracting entity for this proposed project, SJR DO Restoration Plan, is Tulloch Engineering. Tulloch Engineering is an environmental engineering firm, specializing in community-based decision-making processes. The Project Coordinator, Alice Tulloch, is a registered civil engineer and has 24 years experience in public works, including substantial experience with grants and public contracting at the federal, state and local level. Representative grant projects include a $30 million Clean Water Grant, a $3 million Economic Development Grant, a $200,000 California Energy Commission grant and several Dept of Transportation grants. Tulloch Engineering is currently contracted for a $100,000 research project under the 2001 CALFED DO Directed Action grant.

Ms. Tulloch has substantial training and experience in environmental planning and community-based decision-making processes. Some specific project examples include the Modesto Irrigation District-Modesto-Del Este Water Project, City of Modesto Wastewater Master Plan, Stanislaus County Biosolids Task Force, the City of Modesto's Sewer Rate Advisory Group, the GCSD Clearwell Tracer Study and the GCSD Wastewater Master Plan. Ms. Tulloch is a member of the Society of Professionals in Dispute Resolution, as well as several engineering and community organizations.

c. Facilitators

1. Otis Wollan
2. Parry Klassen
3. David Ceppos
4. Austin McIrney

d. Website Developer

Kevin Wolf is the facilitator and coordinator for the SJR DO TMDL stakeholder process. In that position he created and manages the detailed website www.sjrtmdl.org that is continually updated to provide the latest documents and information.

e. Agricultural and Environmental Liaisons

These liaisons will be chosen in an open bid process administered by the Steering Committee. The Environmental Water Caucus and California Farm Bureau will be approached to encourage applicants to apply who are acceptable to them.

D. Cost

1. Budget

The budget was developed based on detailed cost estimating of the work effort under each task, rather than by comparison with other similar projects. Salary rates include benefits, insurance, rent, computers and utilities. Travel expenses reflect the need to hold meetings in the various subwatersheds of the San Joaquin River. Supplies are for document production, mailing costs, and meeting room arrangements.

2. Cost-Sharing

This project includes between 20 to 100% of in-kind services from the participants. The range depends on how CALFED values stakeholder time spent participating in the watershed processes. With five watershed groups at six meetings each, an estimated 15 stakeholder per meeting will spend a collective minimum of 2000 hours in preparation for and participation in local meetings. At $50 per hour, this is $100,000. Local institutions are expected to help with a minimum of $5,000 in administrative and logistical support in each watershed. In addition, stakeholder group experts will spend hundreds of hours each to be fully involved in the evaluation of the options in each watershed. This collectively could exceed 4000 hours of professional time. At the Steering Committee and TAC level, more time will be spent preparing the background documents, integrating these local plans and analysis into the overall TMDL and Implementation Plan, helping with public education, and more. This will total thousands of collective hours. The cost to build the website, write the reports, provide background material and brochures will all be less because the stakeholders such as the cities of Stockton, Modesto, Turlock and others have paid for these materials.

E. Local Involvement

This project is defined by local involvement at the watershed level. The proposal developed from over a year of discussion on how to allocate a load and gain the implementation of watershed-based restoration plans as well as an integrated plan for the entire basin. The Steering Committee comprised of representatives from most major watershed and regional interest groups is committed to having the load allocation and watershed restoration plans develop with the involvement of the local stakeholders, the land managers and others who will be affected by the outcome. The Steering Committee believes that implementation actions will happen sooner and be more effective if they have the support of the local responsible parties.

Over the last three years, the SJR DO Steering Committee has relied on its network of representatives and participants to dialog with the broader community on this problem. Local funds have helped produce an urban and agricultural-targeted brochure on the situation. Additional funds have been made available for local forums and editorial board meetings. This project will build off of this educational effort to significantly improve local stakeholder understanding and commitment to solutions.

Another important aspect of local support is the strong involvement of the CVRWQCB. In 1999, the Regional Board provided the stakeholders the opportunity to develop a TMDL and Implementation Plan for restoring dissolved oxygen in the lower San Joaquin River. The RWQCB has held off on developing their own TMDL until December 2002, provided the stakeholders continue to make significant progress on developing their own recommendation regarding how to restore DO. The SJR DO TMDL Steering Committee has been making semi-annual reports to the RWQCB, which has continued to support the stakeholder's initiative on DO.

In Attachment C are letters of support for the project from the SJR DO Steering Committee and several of its members individually.

F. Compliance with Standard Terms and Conditions

The proposed project, SJR Dissolved Oxygen Restoration Planning, and the Project Coordinator, Tulloch Engineering, are prepared to comply with the Standard Terms and Conditions contained in the 2002 Ecosystem Restoration Program PSP.

G. Literature Cited (add website locations for all these documents)

Brown, Russ
2001 "City of Stockton Year 2000 Field Sampling Program, Data Summary Report for San Joaquin River Dissolved Oxygen," Jones & Stokes Assoc, Sacramento
Dissolved oxygen levels in the DWSC experienced a variety of depressions below the water quality objectives during summer of 2001. Data is provided, and a number of correlations tested.

Chen, Carl
2001 "Improvements and Calibrations of Lower San Joaquin River Dissolved Oxygen Model, Draft Final Report," June '01, Systech Engineering, San Ramon, CA
Data collected by others during summer 2001 was used to validate a computer model of the behavior of dissolved oxygen in the San Joaquin River below Vernalis.

Jorgensen, Brant

2001 "Summary report on Literature Review Project for CALFED 2000 Grant," Jones & Stokes Assoc, Sacramento
The results of a literature review on dissolved oxygen depletion is available on CD, using Access software.

Kratzer, Charles
2001 "Evaluation of Nutrients and Oxygen Demanding Substances in the San Joaquin River Basin, CA, Upstream of Vernalis," USGS, Sacramento
Significant sources of oxygen demanding substances are contributing to the San Joaquin River's load at Vernalis.

G. Fred Lee, PhD, PE, DEE
and Anne Jones-Lee, PhD
2000 "Issues In Developing the San Joaquin River, CA, DO TMLD: Balancing Point and Non-Point Oxygen Demand / Nutrient Control "

Lehman, P.W et al
2001 "The Contribution of Algal Biomass to Oxygen Demand in the San Joaquin River Deep Water Channel," Fall 2000; DWR Environmental Services Offices, Sacramento, CA
The range of daily in-situ algal load from growth was similar to the net influx of load upstream of Channel Point. The daily algal biomass load measured at Vernalis is a poor predictor of net loads at Channel Point. Phytoplankton growth in the DWSC is light limited.

Litton, Gary
2001 "Sediment Deposition Rates and Associated Oxygen Demands in the Deep Water Ship Channel of the San Joaquin River," University of the Pacific, Stockton
Resuspension of DWSC sediments is significant, mixing sediment oxygen demand in the water column near the sediment surface. Sediment oxygen demand ranges 2-4 gm/m²-day, without much seasonal variation.

Louma, Sam
2001 "CALFED Peer Review of San Joaquin River DO Depletion Directed Action Funding Request for 2001," CALFED, Sacramento
External peer reviewers provided comments on the scientific hypotheses and project methods proposed for a Directed Action project. Project investigators incorporated the comments into the revised projects as appropriate.

Attachment A
San Joaquin River Dissolved Oxygen - Steering Committee - Active Stakeholders

California Department of Water Resources
California Farm Bureau Federation
Central Valley Regional Water Quality Control Board
City of Atwater
City of Lathrop
City of Lodi
City of Manteca
City of Merced
City of Modesto
City of Stockton
City of Tracy
City of Turlock
Delta Keeper
DJH Engineering
Eco:logic
E & J Gallo Winery
Grasslands Farmers
G. Fred Lee
Hilmar Cheese Co.
Jones & Stokes
Kevin Wolf & Associates
Lawrence Berkeley Laboratory
Manufacturer's Council of the Central Valley
Merced Irrigation District
Modesto Irrigation District
Mountain House CSD
Oakdale Irrigation District
Port of Stockton
San Joaquin County Farm Bureau
San Joaquin River Exchange Contractors
San Luis Canal Company
South Delta Water Agency
Stanislaus County Farm Bureau
Stockton Wet Industry Dischargers Association
Systech Engineering
Tulloch Engineering
Turlock Irrigation District
University of California Cooperative Extension
University of the Pacific
US Bureau of Reclamation
US Fish & Wildlife Service
US Geologic Survey
Western United Dairymen
Wet Industry Dischargers
And numerous farmers, dairymen, and citizens.

Participation is open to all interested parties
www.sjrtmdl.org

Attachment C
Letters of Support

SOUTH DELTA WATER AGENCY

4255 PACIFIC AVENUE, SUITE 2
POST OFFICE BOX 70392
STOCKTON, CALIFORNIA 95267
TELEPHONE (209) 956-0150
FAX (209) 956-0154
EMAIL Jherrlaw@aol.com

September 14, 2001

Ms. Alice Tulloch
Tulloch Engineering
7202 Hites Cove Rd
Mariposa, CA 95338

Dear Ms. Tulloch:

This letter is written in support of the "Restoration Planning for Watersheds Impacting Low Dissolved Oxygen Conditions in the Lower San Joaquin River near Stockton" proposal which you are coordinating and proposing on behalf of the San Joaquin River Dissolved Oxygen TMDL Steering Committee.

As a stakeholder in the dissolved oxygen problem and a participant in the Dissolved Oxygen TMDL Steering Committee, our organization also believes that local, watershed-based solutions will be important toward crafting load reduction plans that actually become implemented and work. This proposal will provide stakeholders in the watersheds of the San Joaquin River with important resources if they end up being allocated a load as part of the TMDL. Without this type of support, it will be unlikely that watershed groups will be able to effectively organize an implementation plan to meet a load target in a timely manner.

Our organization has reviewed this proposal and believes it is well designed given the uncertainty at this time of which San Joaquin River watersheds will be allocated a load. Funding for an environmental and agricultural liaison will help ensure that the process involves the parties that will be needed to ensure future funding and resources are available to help solve the problem.

We hope you will support this project. If you have any questions about our support, please give us a call.

Very truly yours,

JOHN HERRICK

SUMMERS ENGINEERING, INC.
CONSULTING ENGINEERS
887 N. IRWIN ST. - P. O. BOX 1122
HANFORD, CALIFORNIA 93232

JOSEPH B. SUMMERS
JOSEPH C. McGAHAN
ROGER L. REYNOLDS
BRIAN J. SKAGGS
SCOTT L. JACOBSON

JAMES C. LINNEMAN

TELEPHONE
(559) 582-9237
TELECOPIER
(559) 582-7632

October 2, 2001

CalFed Bay-Delta Program
Ecosystem Restoration Program
1416 9th Street
Sacramento, CA 95814

RE: San Joaquin River Dissolved Oxygen Restoration Planning

The restoration of dissolved oxygen levels in the San Joaquin River below Stockton is a high priority of the CalFed Bay-Delta Program. The scientific information on the causes and sources of oxygen depletion indicate that the problem is complex and regional in scope.

The San Joaquin River Dissolved Oxygen Restoration Planning project is designed to provide support for local groups to work together to create a regional Implementation Plan for DO restoration. The SJR DO Steering Committee is comprised of local parties, both private and public, who have been working on this problem since 1999. I am Drainage Coordinator for the Grassland Farmers and a participant in the Dissolved Oxygen Steering Committee. The portion of the westside of the San Joaquin Valley that I represent has been identified as a possible source of nutrient loading to the San Joaquin River.

The 2001 research program, funded by CalFed, will help identify those locations in the San Joaquin River watershed where dissolved oxygen restoration measures will be most effective. The research so far has shown that site-specific nutrient loading reductions will be inadequate to restore DO. A regional approach is needed. Specific responsible parties have not yet been identified. When they are identified, they will need resources to work together to develop an effective regional Implementation Plan.

Thank you for your consideration of the San Joaquin River Dissolved Oxygen Restoration Planning project.

Very Truly Yours,

Joseph C. McGahan

RESTORATION PLANNING FOR WATERSHEDS IMPACTING LOW DISSOLVED OXYGEN					
CONDITIONS IN THE DEEP WATER SHIP CHANNEL OF THE LOWER SAN JOAQUIN RIVER					
NEAR STOCKTON					
Sept. 16, 2001 DRAFT					
Task 1. Organize First Meeting of 5 Watershed groups					
1.1 Help recruit Stakeholders to First Meeting	Hrs	# meetings	$/hr	Total $	
Coordinator	2	5	$110	$1,100	
Ag/Env. (included in Task 5)					$1,100
1.2 Coordinator find lead organization					
Coordinator *Set up Ad Hoc Steering Committee*	2	5	$110	$1,100	
Coordinator *Calls*	2	5	$110	$1,100	
Coordinator *Meetings*	5	5	$110	$2,750	$4,950
1.3 Prepare Agenda					
Coordinator	1	5	$110	$550	
Ag/Env Liaison (inlcuded in Task 5)					
Facilitator	4	5	$90	$1,800	$2,350
1.4 Attend First Meeting					
Coordinator	8	5	$110	$4,400	
Travel (Coordinator) 400mi/meeting @ $.31/mi		5		$620	
Facilitator	8	5	$90	$3,600	
Travel (Facilitator) 300mi/meeting @ $.31/mi		5		$465	
Ag/Env. Liaison (included in Task 5)					$9,085
1.5 Write Notes					
Facilitator	4	5	$90	$1,800	$1,800
1.6 Publish Notes on Web					
Web Designer *Initial Setup*	2.5	5	$50	$625	
Web Designer *Publish Meeting Notes and Agendas*	1	5	$50	$250	
ListServ hosting for one year	1	5	$60	$300	
ListServ *Setup and administration (.5 hr/mo/watershed)*	6	5	$50	$1,500	$2,675
Task 2. Organize Next 5 meetings for 5 watersheds					
2.1 Prepare Agenda					
Coordinator *(1hr X 5 meetings per watershed)*	5	5	$110	$2,750	
Facilitator *(4hrs X 5 meetings per watershed)*	20	5	$90	$9,000	$11,750
2.2 Attend Meetings					
Coordinator *(8hrs X 2 meetings per watershed)*	16	5	$110	$8,800	
Travel (Coordinator) 400mi @$.31/mi		10		$1,240	
Ag/Env liaison (included in Task 5)					
Facilitator *(8 hrsX 5 meetings per watershed)*	40	5	$90	$18,000	
Travel (Facilitator) 300mi @$.31/mi		10		$930	$28,970
2.3 Write and Publish Notes					
Facilitator *(4 hrs X 5 meetings per watershed)*	20	5	$90	$9,000	
Copy and mail hardcopy notes				in-kind	
Place notes, agendas and background docs on website	3	25	$50	$3,750	$12,750
Task 3. Write and Publish Load Allocation Report					
3.1 Draft Report					
Coordinator	60	1	$110	$6,600	
Ag liaison	10	1	$90	$900	
Env liaison	10	1	$90	$900	
3.2 2nd Draft Report					
Coordinator	32	1	$110	$3,520	

Ag liaison	6	1	$90	$540	
Env liaison	6	1	$90	$540	
3.3 Final Report					
Coordinator	18	1	$110	$1,980	
3.4 Publish Reports					
Hard copy and mail draft and final reports to 200 people		200	$10	$2,000	
Publish 2 draft and final on web	3	6	$50	$900	$17,880
Task 4. Write Reports - Implementation Option Report					
4.1 Draft Report					
Coordinator	80	1	$110	$8,800	
Ag liaison	10	1	$90	$900	
Env liaison	10	1	$90	$900	
4.2 2nd Draft Report					
Coordinator	40	1	$110	$4,400	
Ag liaison	6	1	$90	$540	
Env liaison	6	1	$90	$540	
4.3 Final Report					
Coordinator	18	1	$110	$1,980	
4.4 Publish Reports					
Hard copy and mail draft and final reports to 200 people		200	$10	$2,000	
Publish 2 drafts and final reports on web	3	6	$50	$900	$20,960
Task 5. Liaison Help					
5.1 Prepare for and attend Steering Committee meetings					
Ag liaison (12 meetings)	10	12	$90	$10,800	
Travel (Ag. Liason) 300mi @$.31/mi		12		$1,116	
Env liaison (12 meetings)	10	12	$90	$10,800	
Travel (Env. Liason) 300mi @$.31/mi		12		$1,116	
5.2 Recruit and liaison with watershed stakeholders (Tasks 1-2)					
Ag liaison	25	5	$90	$11,250	
Env liaison	25	5	$90	$11,250	$46,332
Task 6. Provide Technical Support					
6.1 Technical funds for sub-contractors		5	$70,000	$350,000	
6.2 Publish technical information on web (100 documents)	0.6	120	$50	$3,600	$353,600
Task 7. Coordinator Support and Administration					
7.1 Liaison sub-contract administraion (10%)				$4,633	
7.2 Technical sub-contract administration (5%)				$17,500	
7.3 Attendance at Steering Committee meetings and reports	8	8	$110	$7,040	
Travel (coordinator) 400mi @$.31/mi		8		$992	$30,165
(Task 8) Contingency					$19,437
for all parts except Technical funds (6.1) 10%					
Total (Grand)					**$563,804**
Total Coordinator (includes hardcopy mailings)					$83,003
Total Facilitators					$43,200
Total Ag. Liaison					$24,930
Total Env. Liaison					$24,930
Total Web Design and ListServ Admin.					$11,825
Total Travel					$6,479
Total Technical Sub-contract funds					$350,000
					$544,367