

Inventorying and Evaluating Best Management Practices for the Reduction of Nutrient and Oxygen Demanding Substances in the San Joaquin Valley

Project Information

1. Proposal Title:

Inventorying and Evaluating Best Management Practices for the Reduction of Nutrient and Oxygen Demanding Substances in the San Joaquin Valley

2. Proposal applicants:

Bill Power, Power Hydrodynamics

3. Corresponding Contact Person:

Bill Power
Power Hydrodynamics
6301 Bearden Ln Modesto, CA 95357
209 606-6832
Power_Hydrodynamics@email.msn.com

4. Project Keywords:

**Ag/Urban Runoff
Dissolved Oxygen
Water Pollution, Non-point Source**

5. Type of project:

Research

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.

Livingston (centerpoint of area) The entire San Joaquin River Watershed below the last major dams on all tributaries

10. Location - Ecozone:

12.1 Vernalis to Merced River, 12.2 Merced River to Mendota Pool, 12.3 Mendota Pool to Gravelly Ford, 13.1 Stanislaus River, 13.2 Tuolumne River, 13.3 Merced River, West San Joaquin Basin, 1.3 South Delta, 1.4 Central and West 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: 5, 12, 14, 16

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

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: \$127,914

b) Do you have cost share partners already identified?

No

c) Do you have potential cost share partners?

No

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?

No

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)

Mike McElhrey NRCS 209-581-2100

Joe McGahan Summers Engineering 559-582-9237

Bob Bugg SAREP-UCD 530-754-8549

21. Comments:

Environmental Compliance Checklist

Inventorizing and Evaluating Best Management Practices for the Reduction of Nutrient and Oxygen Demanding Substances in the San Joaquin Valley

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.

Statutory Exemption for feasibility 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:

NEPA Lead Agency (or co-lead:)

NEPA Co-Lead Agency (if applicable):

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

Inventorizing and Evaluating Best Management Practices for the Reduction of Nutrient and Oxygen Demanding Substances in the San Joaquin Valley

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 only

4. **Comments.**

Conflict of Interest Checklist

Inventorizing and Evaluating Best Management Practices for the Reduction of Nutrient and Oxygen Demanding Substances in the San Joaquin Valley

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):

Bill Power, Power Hydrodynamics

Subcontractor(s):

Are specific subcontractors identified in this proposal? Yes

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

Jane Rundquist BizLine

Helped with proposal development:

Are there persons who helped with proposal development?

Yes

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

Kevin Wolf Kevin Wolf and Associates

Comments:

Budget Summary

Inventorizing and Evaluating Best Management Practices for the Reduction of Nutrient and Oxygen Demanding Substances in the San Joaquin Valley

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	84	7875		775		2650			11300.0		11300.00
2	Inventory and Build Database	110	10311		3100	120	28500			42031.0		42031.00
3	Analysis of BMPs	200	18750							18750.0		18750.00
4	Write Reports	360	33750							33750.0		33750.00
5	Distribute Products	24	2250				7750			10000.0		10000.00
6	Contingency		7293.6		387.5	12	3890		500	12083.1		12083.10
		778	80229.60	0.00	4262.50	132.00	42790.00	0.00	500.00	127914.10	0.00	127914.10

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=127914.10

Comments.

Budget Justification

Inventorizing and Evaluating Best Management Practices for the Reduction of Nutrient and Oxygen Demanding Substances in the San Joaquin Valley

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

Principal Investigator: 778hrs MetaPartner Consultant: 64hrs Research Assistants: 450hrs Web Programmer 48hrs

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

Principal Investigator: \$93.75/hr MetaPartner Consultant: \$93.75/hr Research Assistants: \$50/hr Web Programmer \$50/hr

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

Benefits included in Salary

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

Travel is inclusive in Contingency

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

Copy & Mail 2 draft reports to 30 people w/out e-mail @\$25ea \$1500 Appendices to 100 libraries and individuals \$3500

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.

Consulting Fees include overhead rate and benefits

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 presentations, response to project specific questions and necessary costs directly associated with specific project oversight.

The Principal Investigator would be responsible for project management as well as making monthly reports to the Steering Committee. Task 2 details supervision time by the PI to ensure that the research assistants are making the necessary progress.

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

800 photocopies @\$.15 ea \$120

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.

none, any indirect costs that arise will be covered by the Contingency

Executive Summary

Inventorizing and Evaluating Best Management Practices for the Reduction of Nutrient and Oxygen Demanding Substances in the San Joaquin Valley

This project will inventory and evaluate existing research on Best Management Practices (BMPs) that may benefit land managers in the San Joaquin watershed who want to meet load reduction requirements for their contributions of nutrients and oxygen demanding substances. Existing CALFED funded research indicates that non-point source loading of these substances within the watershed contributes to the low dissolved oxygen problem in the Deep Water Ship Channel in the lower San Joaquin River. This project qualifies as a CALFED restoration project because BMPs are designated by state law as the Tier 1 implementation method for reducing non-point source loads. To improve ecosystem water and sediment quality in the San Joaquin River, its tributaries and the Delta by reducing non-point contaminant loads will require the implementation of comprehensive land management plans based on BMPs. This project developed with the assistance of the San Joaquin River Dissolved Oxygen TMDL Steering Committee and will involve stakeholders from start to finish. Research will be conducted on existing publications and will result in the most comprehensive inventory and evaluation of BMPs pertinent to the San Joaquin Valley. An inventory and evaluation of BMPs relevant to the soils and land uses of the San Joaquin Valley will help local stakeholders craft implementation plans to reduce the non-point loads of nutrients and other oxygen demanding precursors that come from five categories of land uses: urban landscaping/city streets; orchard/vineyards; row crops; pasture/forage/rangelands; and riparian habitat/wetlands. In addition, this project will evaluate secondary impacts BMPs may have on such important resources as salt build up in soils, surface and groundwater water supply, and fish and wildlife habitat. Some BMPs may help resolve other pollutant loading problems. Knowledge about multiple benefits and costs will help determine which BMPs can advance multiple CALFED ERP priorities.

Proposal

Power Hydrodynamics

**Inventorying and Evaluating Best Management Practices for the Reduction of
Nutrient and Oxygen Demanding Substances in the San Joaquin Valley**

Bill Power, Power Hydrodynamics

Title: Inventorizing and Evaluating Best Management Practices for the Reduction of Nutrient and Oxygen Demanding Substances in the San Joaquin Valley

Applicant: Power Hydrodynamics
Investigator: William Thomas Power III, Power Hydrodynamics
Power_Hydrodynamics@email.msn.com (209) 606-6832
Contributors: Jane Rundquist jane@bizline.com (530) 758-5866
Collaborators: San Joaquin River Dissolved Oxygen TMDL Steering Committee, NRCS, UC Coop Extension, crop and industry associations, farmers
Location: San Joaquin River watershed
Proposed Budget: \$123,844.60
Potential Funding: CALFED October 5 PSP - Dissolved Oxygen Funds
Date: September 20, 2001

A. Project Description: Project Goals and Scope of Work

1. Problem

Non-point source loading of nutrient and organic material within the San Joaquin River watershed contributes to the low dissolved oxygen problem in the Deep Water Ship Channel in the lower San Joaquin River. Nutrients and organic material enter the tributaries of the San Joaquin from surface and subsurface sources and contribute to algal growth and oxygen demand in these waters and in the San Joaquin River itself. Both urban and rural lands and land use practices are suspected sources of this load.

Best Management Practices (BMPs) are designated by state law as the Tier 1 implementation method for reducing non-point source loads. Presently the stakeholders in the San Joaquin watershed do not have an estimate on how effective different BMPs might be in reducing loads. Over the years, UC Coop Extension, the Natural Resource Conservation Service and other entities have conducted studies on the effectiveness of different BMPs to nutrient and BOD loading issues. There is no known inventory of these studies nor any comprehensive evaluation of the direction they might provide landowners who may have to reduce their nutrient and oxygen demanding substances loading rates.

Without understanding what the literature says can be expected in load reduction with the implementation of different BMPs, neither stakeholders nor the Central Valley Regional Water Quality Control Board may be satisfied with an analysis of non-point source load reduction strategies. In addition, different BMPs may have secondary impacts on such important resources as salt build up in soils, surface and groundwater water supply, and fish and wildlife habitat. Some BMPs may also help resolve other pollutant loading problems. Knowledge about multiple benefits will be helpful in determining which BMPs should be prioritized.

For this reason, the SJR DO TMDL Steering Committee is also supporting the Bill Power proposal for inventorying and evaluating *non-nutrient* TMDLs. Both projects will provide the stakeholders with a comprehensive evaluation of BMPs with multiple benefits and integration of costs and secondary impacts.

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

Without understanding what the literature says can be expected in load reduction with the implementation of different BMPs, neither stakeholders nor the Regional Board may be satisfied with an analysis of non-point source load reduction strategies. In addition, different BMPs may have secondary impacts on such important resources as water supply, groundwater levels, salt build-up and fish and wildlife habitat. Some BMPs may also help resolve other pollutant loading problems and knowledge about multiple benefits will be helpful in determining which BMPs should be prioritized. An evaluation of which BMPs do the most good and least harm for multiple constituents on different land uses and on different soils will be valuable in many ways.

Main Hypothesis:

An inventory and evaluation of Best Management Practices relevant to the soils and land uses of the San Joaquin Valley will provide local stakeholders with the information they need to craft implementation plans, which will help them reduce the non-point loads of nutrients and other oxygen demanding precursors that come from five categories of land uses: urban landscaping/city streets; orchard/vineyards; row crops; pasture/forage/rangelands; and riparian habitat/wetlands.

Conceptual Model:

Land use practices affect the amount of nutrients and Biological Oxygen Demanding substances that enter the ground and surface water supplies and contribute to algal growth and oxygen demand in the San Joaquin River. Best Management Practices can reduce pollutant loads, though possibly not to the level needed to sufficiently reduce downstream oxygen demand. The effectiveness of BMPs will depend on the land use and soil type along with other factors. Some BMPs may have other impacts that cause harm (e.g. salt loading of soils), which may make them more costly to implement in the long run. Other BMPs may reduce or increase water application rates, which could affect groundwater and surface water supplies. Both urban and rural non-point source load reduction BMPs may have positive impacts on other pollutants of concern (e.g. stormwater runoff and sediment runoff). In order to thoroughly evaluate the viability and cost-effectiveness of implementing different BMPs within different geographic regions in the San Joaquin watershed, the literature about BMPs and their secondary impacts needs to be reviewed and evaluated as best as possible.

The SJR DO TMDL Steering Committee prefers that local stakeholders whose watersheds are allocated a load reduction target be the ones who develop an implementation plan to meet their new requirements. An evaluation of BMPs for different land uses and different soils will provide these stakeholders with a critically important resource for evaluating the effectiveness of non-point source load reduction strategies. The estimates on the costs and effectiveness of BMPs will be important to determine how and if non-point source load reduction strategies can be effective in resolving the low dissolved oxygen problem in the Deep Water Ship Channel. For this reason, another Steering Committee's PSP proposal "Restoration Planning for Watersheds Impacting Low Dissolved Oxygen Conditions in the Deep Water Ship Channel of the Lower San Joaquin River Near Stockton" strongly supports the BMP Inventorying and Evaluation proposals.

Experience shows that when local stakeholders are involved with the development of a project, they more strongly support its implementation. This inventory and evaluation of BMPs for different land uses and different soils will involve local land managers from its beginning and will encourage their involvement and review through to the publishing of the final reports. In the end, watershed land managers throughout the San Joaquin Valley will have an important resource for evaluating the effectiveness of integrated non-point source load reduction strategies.

Project Type: Restoration Planning

This project falls under the category of Restoration Planning because it is critically important to implementing changes in land management that could reduce the level of nutrients and other oxygen demanding substances that negatively impact the oxygen levels in the Deep Water Ship Channel in the lower San Joaquin River. Improving water quality by reducing non-point source loads is likely to be part of any long term, effective plan to improve the aquatic environment and drinking water quality throughout the San Joaquin watershed and Delta.

3. Approach

Task 1. Involve the Stakeholders in Advising the Inventory and Evaluation Project

The principal investigator will hold an initial open meeting of all stakeholders interested in this project in three major regions of the San Joaquin watershed – Mud and Salt Slough south, Merced, and Manteca/Stockton. At these meetings, land managers and other stakeholders will be able to provide direction on how the inventorying and evaluation should occur, what additional fields should be entered into the database besides the state and federal standard metadata details, and what research should be pursued and included in the project. The standard metadata includes information such as author, title, publisher, abstract and keywords. Likely secondary metadata fields will include secondary impacts, soil types on which the research was done, any economic

costs and benefit information, whether the research underwent peer review, effects on wildlife and more. The stakeholder advisory committees will also help provide access to BMP research and reference material located at the NRCS, USDA, CDFA, USBR, Farm Bureau, UC Cooperative Extension, Resource Conservation Districts, SAREP, FREP, the web, university libraries and other locations.

These same stakeholders will have opportunities to evaluate the research as the gathered metadata is put on line on a biweekly basis. Before the papers are drafted, the Principal Investigator will organize the research into a matrix that summarizes the information on each BMP to land use and soil type. The stakeholders will be able to check the on-line metadata database to verify what the references conclude and if the matrix properly summarizes the research. When the stakeholders review the draft papers, they will have access to a well-linked and easy-to-use base of information to evaluate the conclusions. Since the stakeholders will be the end users of the information, this level of involvement will provide significant long-term benefits on how trusted the information is.

As part of Task 1, the SJR DO TMDL Steering Committee wants the PI to participate in its Oxygen Demanding Substances Committee. The committee members include representatives from most major stakeholder groups and watersheds. This committee will provide ongoing feedback to the PI and will gain from the PI's increased knowledge as they craft plans to determine options for point and non-point source load reduction.

Task 1 also includes funding for all the customized reports that the Principal Investigator and stakeholders will need from the database. This includes the use of the database to organize information in the matrixes and link it back to the database.

Task 2. Inventory Existing Research

Using the leads provided by the stakeholders and other expected sources of information, the research team will locate and review each document to determine whether the material is worth referencing in the metadata database, and whether a copy should be made for more detailed analysis when the BMP evaluation report is written. The team will utilize the MetaPartner software that was used in the dissolved oxygen and aeration literature review completed under a CALFED grant in 2000

(see www.sjrtmdl.org/technical/literature_review/index.html). MetaPartner will be customized to include the fields that the stakeholders have requested so that the researchers have a checklist of key issues to look for as they review each document. Each customized field will provide an opportunity to include comments on that issue. For example, the soil field will allow the researcher to include comments on the soils upon which the BMP was studied. With the economic field comment section, the researcher would add quotes from the paper on specific cost/benefit details that the authors included in their paper. By adding this level of information into the database, the research inventorying team will

provide enough detail so that the researchers and stakeholders do not have to locate and read the original document to learn the answers to these important questions.

Every two weeks, new database entries will be updated into the CERES San Joaquin Metadata Catalog and made available on-line as a downloadable file similar to the dissolved oxygen literature review is done now (see above URL). Stakeholders and BMP experts will be encouraged to review the database, suggest additions and provide feedback via an on-line comment process to the research team.

This project expects to inventory 500 BMP-related research papers with an emphasis on the San Joaquin Valley. This database will provide value to stakeholders and researchers across the state and country. The CERES catalog is designed so that future researchers can add additional items to this database and thus help keep the information current.

Task 3. Evaluate and Analyze BMP Research.

Once the inventory is completed, the PI will use the information to develop a matrix of land use categories with corresponding BMPs to soil types, economic costs and benefits, environmental impacts, effects on other pollutants, impacts to surface and groundwater supplies, and other issues. This matrix will summarize all the information gathered by the inventorying team. Because it will link back to the database, it will be easy for readers to check the original metadata to see if the matrix properly reflects the research.

The matrix will also make it easy to identify areas in which research information is lacking. Identifying critically important missing information will be valuable as the stakeholders in each watershed determine which BMPs should be implemented on a pilot/research project basis versus which BMPs should be planned for immediate widespread implementation. If, for example, the research concludes that tailwater recovery systems in certain soil types provide excellent multiple benefits, but there is little or no research on that BMP for other soil types and crops, then it is logical to implement that tailwater recovery BMP as a pilot project on the soils upon which it hasn't been tested. To create an adaptive management plan for their watershed, the stakeholders will need to have a base of knowledge on what the existing research concludes and doesn't conclude in order to craft the implementation actions and monitoring/evaluation programs that foster improvements in their adaptive management plan over time.

Task 4. Write Reports.

The PI will use the matrix developed in Task 3 to draft a report on each of the five major land use categories and the BMPs that may provide the best benefit in each. Each section will include a discussion and conclusion on its effectiveness of the BMPs in different types of soil, secondary impacts on other chemicals of concern including whether it may increase salt loading in soils, the

economic impacts and other issues as identified by the stakeholders. Each report will have an executive summary, which condenses the issues in the report.

In addition, the PI will draft a synthesis report that summarizes the five land use category reports and makes recommendations on BMPs that may most effectively cross over land use types and other areas of integration that may not be identified in each individual report.

Each of these six draft reports will be sent to the stakeholders for review. Because these reports will be critically important to the SJR DO TMDL Steering Committee, their Oxygen Demanding Substances Committee will also provide an in-depth review. The PI will use this stakeholder feedback to write a second draft. Based on the review of the second draft, the PI will publish a final report.

Task 5. Disseminate Reports and Database.

The metadata database, the matrixes, the draft and final reports will all be available on line via the www.sjrtmdl.org website. CD-Roms and hard copies will be sent to all those requesting them. The database will also be entered into the CERES San Joaquin Valley Metadata Catalog where it will be available for future updating. Written copies of the report and/or CDs will be sent to an estimated 100 different libraries, agencies and individuals.

4. Feasibility

All aspects of this proposal are imminently feasible. MetaPartner software for data inventorying was successfully used by the CALFED funded Dissolved Oxygen and Aeration Inventorying project. Stakeholders are very interested in this proposal and will participate in the advisory committee and evaluation process. Libraries and collections of BMP research are accessible to the public. Bill Power has a great deal of experience in evaluating BMPs and will be able to effectively and fairly evaluate the research as well as help direct the inventorying team. The CERES website has a San Joaquin Metadata Catalog and it will not be that difficult to batch update a BMP category with the new metadata on a regular basis. Compiling the existing research in an easy to use database, evaluating the information on different specific issues, and writing reports through an interactive stakeholder process are all highly practical and feasible.

5. Performance Measures

The ultimate performance measure will be in how many of the BMPs prioritized from this project are implemented by land users over the next five years. Measuring that accomplishment is beyond the scope of this project.

Phase	Performance Measures	Completion Schedule
Stakeholder	Stakeholder organizations have representatives on advisory	August 2002

involvement	committee. Leading agency experts participate. Database fields finalized. Software customized.	
Inventory and build database	500 references entered. Regular updating of the CERES metadata catalog.	October 2002
Analysis	Creation of a matrix with links back to database. Matrix reviewed and improved with stakeholder feedback.	November 2002
Write Reports	Write first draft. Edit to second draft. Write six final reports.	January 2003
Distribute products	Create email list and website for regular updates on all aspects of project. Produce and mail 100 cds and/or hard copy reports and databases to libraries and stakeholders.	March 2003

6. Data Handling

Inventoring information will be entered into an Access 97 and 2000 database using the Metapartner software. Database updates will be provided to the public via the CERES San Joaquin Metadata Catalog and the www.sjrtdl.org website. Draft and final reports and products will be distributed to libraries and stakeholders via the web, cd-rom and hardcopy.

7. Expected Products

- a. A metadata database of approximately 500 applicable BMPs will be created. The database can be expanded for ongoing data entry and can provide the stakeholders with long-term, on-line access to this information.
- b. A set of reports including a summary matrix on each will provide the stakeholders with information to evaluate the effectiveness of different BMPs for their specific situations.

8. Work Schedule

This project will begin as soon as possible. The Advisory Committee can meet within weeks of contract confirmation. Inventoring will start immediately after the meeting and continue intensively for 6-8 weeks. The matrix will be organized as the inventoring is being conducted. The first draft report is expected about 12-15 weeks after the project begins. The final reports can be completed within 4-8 weeks after. Distribution of material will be ongoing.

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. By evaluating wetlands, riparian filter strips and tail water recovery ponds as potential BMPs to improve downstream DO conditions, the reports will also evaluate these BMPs for their secondary environmental benefits for wildlife. This advances priority MR-2.

2. Relationship to Other Ecosystem Restoration Projects.

This project can work together with the proposed Inventorying and Evaluation of BMPs for Non-Nutrient Loads, or it can stand alone. Together, all BMPs will be inventoried and evaluated with a synergy created that lowers the overall costs of the project. The same researchers could pursue the non-nutrient BMP work after completing this project thus building from this one and reducing duplication of effort.

This project will provide important information to local stakeholders throughout the San Joaquin if the SJR DO TMDL Steering Committee's proposal entitled "Restoration Planning for Watersheds Impacting Low Dissolved Oxygen Conditions in the DWSC in the lower San Joaquin River." Without this level of inventorying and evaluation, it will be difficult to gain widespread support for any set of non-point source reduction BMPs in the watershed.

In addition, 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 apply multi-regionally in the San Joaquin and Delta Ecologic Management Zones.

3. Requests for Next-Phase Funding.

Not applicable

4. Previous Recipients of CALFED Program or CVPIA funding.

Not applicable

5. System-Wide Ecosystem Benefits.

Reduction in the non-point source loading of nutrients and oxygen demanding substances will likely have benefits for other water quality objectives beyond meeting the dissolved oxygen standard in the Deep Water Ship Channel. 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 BMPs that are implemented because of this project help reduce the loading of other pollutants, system wide ecosystem benefits will result.

Any increase in wetlands, riparian habitat or on farm habitat as a result of the implementation of these BMPs will advance system wide ecosystem goals.

5. Additional Information for Proposals Containing Land Acquisition.

The proposed project does not include land acquisition.

A. Qualifications

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

a. Principal Investigator - Bill Power is the owner and lead consultant for Power Hydrodynamics, an agricultural based consulting firm specializing in water and energy conservation. For the last eight years Mr. Power has helped develop and evaluate BMPs on all aspects of agricultural irrigation. In this work he has evaluated existing research documents. He knows how to supervise a team of assistants in this type of technical work. Bill Power has completed all course work in Cal Poly's School of Irrigation Management. He specializes in agricultural consulting in the San Joaquin Valley

b. Metadata Database developer - Jane Rundquist has been working in the area of metadata and databases for four years. Two years ago, she began developing the MetaPartner software using Microsoft Access as the platform. She knows a great deal about the state and federal metadata standards and has taught classes in it for different clients. She customized the MetaPartner software for the Dissolved Oxygen and Aeration Literature Review as part of a CALFED PSP grant provided to the SJR TMDL DO Steering Committee in 2000.

c. Web site developer - Kevin Wolf
Kevin Wolf and Associates built and have been maintaining the www.sjrtmdl.org website for the dissolved oxygen TMDL stakeholders since 1999. This website adds new material on an almost daily basis. Mr. Wolf has been helping develop websites for stakeholder groups since 1995. Mr. Wolf is also the facilitator of the dissolved oxygen stakeholder process.

B. Cost

1. Budget

DRAFT Budget for Inventorying and Evaluating Best Management Practices for Nutrient Load Reduction

Task 1. Involve the Stakeholders in Advising the Inventory and Evaluation Project

1.1 Organize three regional meetings to allow interested stakeholders to provide input into the project and finalize the metadata fields that will be completed with the review of each reference document.

a. PI to organize, facilitate and write notes - 1.5 days @ \$750/day x 3	\$ 3375
b. Jane Rundquist, MetaPartner consultant - 1 day @ \$750 x 3	\$ 2250
c. Setup and run email list - 8 months at \$50/month	\$ 400
d. Travel 500mi @ \$.31/mi	\$ 155

1.2 Participate in Oxygen Demanding Substances Committee

a. PI attend 8 meetings @.75 day/meeting	\$4500
b. PI participate on-line and in other Committee discussions	pro-bono
c. Travel 8 X 250 mi @ \$.31/mi	\$ 620
<i>Subtotal for Task 1 -</i>	
	\$11,300

Task 2: Inventory Research

1. Customize the metadata database using MetaPartner software.	
a. Database and report/matrix customization and production, Software training and phone help - 8 days @\$750	\$ 6000
b. Software License	in kind
2. Locate documents. Evaluate and enter data in database. Copy selected material.	
a. 500 documents at 60 min per reference (500 hours total)	
PI supervision – 60 hours @ \$93.75/hr	\$ 5625
PI research – 50 hours @ \$93.75/hr	\$ 4686
Research assistants - 450 hours at \$50/hr	\$22500
b. 800 photo copies x \$.15 each	\$ 120
c. Travel (40 trips at 250mi/trip) X \$.31/mi	\$3100
<i>Subtotal for Task 2</i>	
	\$42031

Task 3. Evaluate and Analyze BMP Research

1. Principal Investigator	
5 days per report x 5 land use category reports @ \$750/day	\$18750

Task 4. Write reports

1. P.I. - First draft of six reports - 4 days per report @\$750/day	\$18000
2. P.I. - Circulate reports, review comments, write second draft 1.5 day/report x six reports	\$ 6750
3. P.I. – Circulate second draft, review comments, write final reports and appendixes – 2 days/report x six	\$ 9000
<i>Subtotal for Task 4</i>	
	\$33,750

Task 5. Disseminate Reports and Database

1. Publish database on the CERES metadata catalog	
a. Software programming - 3 days at \$750/day -	\$ 2250
b. 10 bi-weekly updates at \$75 each	\$ 750
2. Place matrixes, draft and final reports, appendices on website	
a. Use of sjrtmdl website - additional memory - 24 months	in kind
b. Programming - 40 hours @ \$50/hour	\$ 2000
3. Distribution of hardcopy and CD reports	
a. Copy and mail 2 draft reports to 30 people without email @\$25 each	\$ 1500
b. Copy and mail hard copy and CD-ROM final reports, database and Appendices to 100 libraries and individuals @ \$35 each	\$ 3500
<i>Subtotal for Task 5</i>	
	\$10,000

Contingency	
10% of total which also covers all phone	\$12,083.10

TOTAL

\$127,914.10

2. Cost-Sharing

This project includes approximately 5% of in-kind services the team that will work on the project. More importantly, it is anticipated that hundreds of hours will be contributed by the Advisory Committee in meetings and review of draft documents and the database.

E. Local Involvement

This project has developed from the needs expressed by the SJR Dissolved Oxygen TMDL Steering Committee. It will continue to have stakeholder involvement in the design of the inventorying and evaluation process. Stakeholders will be involved in reviewing all draft documents and in providing information to be evaluated as part of the project.

F. Compliance with Standard Terms and Conditions

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

G. Literature Cited

1. Jones and Stokes Dissolved Oxygen and Aeration Database, 2000.
http://www.sjrtmdl.org/technical/literature_review/index.html



CITY of MODESTO

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209/576-1985 Fax

***Capital
Improvement
Services***

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Public Transit

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209/571-5521 Fax

***Solid Waste
Management***

209/577-5494
209/521-4801 Fax

***Traffic and
Development
Services***

209/571-5557
209/521-4801 Fax

***Traffic Signals
Street Lighting***

209/342-2296
209/491-5993 Fax

September 10, 2001

Bill Power
Power Hydrodynamics
Power_Hydrodynamics@email.msn.com
6301 Bearden Lane
Modesto, CA 95357

Dear Mr. Power:

Subject: Inventorying and Evaluating Best Management Practices for the Reduction of Nutrient and Oxygen Demanding Substances in the San Joaquin Valley and Inventorying and Evaluating Best Management Practices for the Reduction of Non-Nutrient Pollutant Loads.

Our organization supports your proposals "Inventorying and Evaluating Best Management Practices for the Reduction of Nutrient and Oxygen Demanding Substances in the San Joaquin Valley" and "Inventorying and Evaluating Best Management Practices for the Reduction of Non-Nutrient Pollutant Loads." These projects will be important to our constituents as they seek to understand what the existing research says about how different BMPs may help them solve the growing restrictions they face in contaminate load reduction.

Both of these projects will be important because many BMPs will cross over and help with different load reduction needs. Land managers know that depending on their land use and the soil type, different practices may or may not be relevant to their situation. Having a comprehensive, easy-to-review inventory and evaluation of the all-relevant BMPs for different land uses and soils will give the stakeholders the information they need to learn for themselves what is possible and applicable to their particular situation.

We appreciate the opportunity the project offers to participate at the very beginning in the development of the research parameters and at the end in the review of the draft documents. By having each document linked with a matrix of land uses to BMPs and secondary impacts, and then having the matrix linked directly to the reference database, we will gain confidence in the conclusions that are drawn from the available literature. Ultimately, the end user, the land

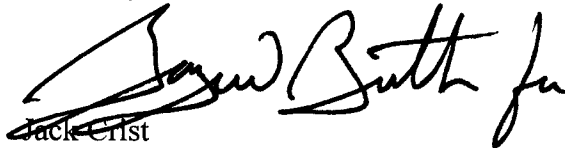
manager will need to have confidence in the report and providing easy access to the underlying references will be helpful in accomplishing this.

BMP research will continue for years to come. By placing the database in the CERES San Joaquin Valley Metadata Catalog, future BMP researchers can add additional information about their studies and provide stakeholders with an updated database.

We hope that your proposals are funded. The inventory and evaluations you complete will be useful in many ways.

If you have any questions, please give Robert Meleg a call at (209) 571-5149.

Sincerely,

A handwritten signature in black ink, appearing to read "Jack Crist". The signature is fluid and cursive, with a large initial "J" and "C".

Jack Crist
City Manager

SOUTH DELTA WATER AGENCY

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Alex Hildebrand, Secretary
Natalino Bacchetti
Mark Bacchetti

Counsel:

John Herrick
Engineer:
Gerald T. Orlob

September 14, 2001

Mr. Bill Power
Power Hydrodynamics
6301 Bearden Lane
Modesto, CA 95357

Dear Mr. Power:

Our organization supports your proposals "Inventorying and Evaluating Best Management Practices for the Reduction of Nutrient and Oxygen Demanding Substances in the San Joaquin Valley" and "Inventorying and Evaluating Best Management Practices for the Reduction of Non-Nutrient Pollutant Loads." These projects will be important to our constituents as they seek to understand what the existing research says about how different BMPs may help them solve the growing restrictions they face in contaminate load reduction.

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Mr. Bill Power
September 14, 2001
Page Two

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Very truly yours,



JOHN HERRICK