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**CALFED BAY-DELTA PROGRAM
Sediment Management Proposal**

Proposal Cover Page

West Stanislaus Resource Conservation District
Bridget Lara, Chairperson
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Telephone: 209-892-3026 FAX: 209-892-5136
WSRCD Federal Tax ID #: 94-2915034

Project Title: Irrigation Water Conservation and Sediment Reduction Study

Project Location: Within the Boundaries of the West Stanislaus HUA

Project Leader:

Bridget Lara, Chairperson
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**Budget Itemization
Fiscal Year 1997/98**

	<u>CALFED</u>	<u>Other Funding</u>	<u>Total Funding</u>
A. Personnel Services	\$5,000.00	\$4,000.00	\$9,000.00
B. Operating Expenses			
Travel	0	0	0
Equipment	0	0	0
Materials & Supplies	0	\$2,000.00	\$2,000.00
C. Professional Services	\$20,000.00	\$19,000.00	\$39,000.00
Total	\$25,000.00	\$25,000.00	\$50,000.00

Other Funding Sources:

<u>Source</u>	<u>Amount</u>	<u>Duration</u>	<u>Type</u>
Philip Osterli U.C. Cooperative Extension 733 County Center II Ct. Modesto, CA 95355 209-525-6654 Telephone 209-525-4969 FAX	\$4,000.00	12 month	Inkind Employee
Pat Havens Dow AgroSciences LLC 9330 Zionsville Rd., Building 306/2A Indianapolis, IN 46268-1054 317-337-3465 Telephone 317-337-3235 FAX phavens@dowagro.com	\$6,000.00	12 month	Funds to support tests
Reed Smith Reed D. Smith Assoc. , Inc. 11507 Silver Oak Rd. Oakdale CA, 95361 209-848-0142 Telephone 209-848-0143 FAX	\$700.00	12 month	Material Donation
Lori A. Berger, Ph.D. American Cyanamid Co. PO Box 1305 Visalia, CA 93292 209-635-4425 Telephone 209-635-2875 FAX	\$500.00	12 month	Material Donation
Randall Yerby Shurcrop 285 Keene Ct Turlock, CA 95382 209-667-5914 Telephone 209-667-2143 FAX ryerbyent@aol.com	\$200.00	12 month	Material Donation

Other Funding Sources:

<u>Source</u>	<u>Amount</u>	<u>Duration</u>	<u>Type</u>
Doug Hardie Soil Solutions Corp. 8000 West Doe Ave., Suite E Visalia, CA 93291 800-974-4645 Telephone	\$600.00	12 month	Material Donation & Equipment Use
West Stanislaus RCD 220 North El Circulo Dr. Patterson, CA 95363 Telephone: 209-892-3026 FAX: 209-892-5136	\$13,000.00	12 month	Labor & Professional Services
Total of other funding sources	\$25,000.00		
Total requested from CALFED	\$25,000.00		
Total Budget	\$50,000.00		

Implementation Schedule

Fiscal Year 1998/99

Project Title: Irrigation Water Conservation and Sediment Reduction Study

Project Term: September 1, 1998 to December 1, 1999

<u>Task</u>	<u>Implementation/Completion Date</u>
Set up dates and locations for tests.	9/1/98 through 9/15/98
Conduct irrigation tests on growers fields	10/15/98 through 10/15/99
Compile data and write final report	10/16/99 through 11/15/99
Write summary of report for "West Side Water," WSRCD's monthly news letter	11/16/99 through 11/25/99
Distribute Final Reports	12/1/99

Irrigation Water Conservation and Sediment Reduction Study

Executive Summary:

Two long term goals for the **West Stanislaus Resource Conservation District (WSRCD)** are to increase irrigation water efficiency and to reduce nonpoint source water pollution (total suspended sediment and organochlorine Pesticide Residues, primarily DDT isomers) from irrigated agricultural soils in the WSRCD's boundaries that are reaching the impaired San Joaquin River. The **USDA Natural Resources Conservation Service (NRCS)** Water Resources Planning Staff estimated that potentially over one million tons of sediment can erode annually from irrigation-induced erosion processes, as documented in the "West Stanislaus Sediment Reduction Plan" February, 1992.

The WSRCD is proposing that our Mobile Irrigation Lab complete 60 irrigation system evaluations in the side by side (non-treated control verses treatment/management change) format. We will apply PAM, Gypsum, and other soil and water amendments such as natural corn based polymers, Super Symbex, Shurcrop Supra and humates, to test the impact on infiltration rates, distribution uniformity's and Total Suspended Solids (TSS) in the runoff for furrow irrigation's. Study results will be shared with the growers and the BMP's will be refined for improved water conservation and water quality.

The goal of this study will be to provide the local growers with a an incentive to reduce offsite movement of sediment through the use of soil and water amendments and Best Management Practices (BMP's) while irrigating. This incentive will come through a proven reduction in the amount of irrigation water needed and a possible increase in crop yields. The use of these amendments and BMP's can result in less tail water leaving the farm and tail water that meets or exceeds the locally established WSRCD goal of 300 mg/l TSS. This reduction will mean less water needed to grow crops and less sediment and nonpoint source pollution entering the San Joaquin River, the Sacramento-San Joaquin Delta and San Francisco Bay Estuary.

Irrigation Water Conservation and Sediment Reduction Study

Project Justification:

The West Stanislaus Resource Conservation District (WSRCD) is located approximately 70 miles southeast of San Francisco. The project boundaries are those of the approximately 209 square miles that make up the West Stanislaus Hydrologic Unit Area (HUA). There are eight creeks which cross the HUA draining from the eastern slopes of the Coast Range to the San Joaquin River. During the summer months, the flow in the creeks consists entirely of irrigation runoff. This sediment-laden runoff is conveyed through eighteen main agricultural drains, in addition to creeks, and discharged into the San Joaquin River.

Stanislaus County contributes tremendously to California's agricultural output. This area ranks in the top two most productive counties for crops such as dry beans, almonds, apricots, as well as casaba, crenshaw, and honeydew melons. Six of the top ten commodities from Stanislaus County are almost exclusively grown in California, a fact which emphasizes the importance of this county's agricultural production to the rest of the nation. Gross agricultural income for Stanislaus County in 1997 will again exceeded one billion dollars. Other crops include: peas, tomatoes, broccoli, cauliflower, spinach, sugar beets, corn, walnuts, cherries, apples, and peaches.

Currently one hundred miles of the San Joaquin River are included in the list of impaired water bodies in the 1990 California State Water Resources Control Board Quality Assessment. Previous studies pinpointed the West Stanislaus area as the highest contributor of sediment-borne contaminants affecting beneficial uses of the San Joaquin River.

The physical and chemical characteristics of the sediment reaching the river are the principal factors involved in the sediment pollution concerns of this area. Sediment can physically damage the aquatic habitat by decreasing sunlight penetration, disrupting fish behavior, and interrupting normal spawning and development. Three-fold increases in suspended sediment concentrations have been measured in the San Joaquin River during the irrigation season.

West Stanislaus has been recognized as a consistent Nonpoint Source Pollution area due to the combined effects of: (1) The area's physical geography and location immediately adjacent to the river; (2) the extensively altered system of surface and subsurface hydrology; (3) soils that are derived from coastal range parent material which yields erosive soils; and (4) more diversified land use patterns adjacent to the river relative to other areas in the basin.

The area is also important because of the inflow of the San Joaquin River to the Sacramento-San Joaquin Delta, which transfers large amounts of water for urban uses to the southern part of the state. Sediment and other contaminants from the West Stanislaus area reach the Sacramento-San Joaquin Delta through the San Joaquin River.

The WSRCD's Mobile Irrigation Lab conducted a study during the 1997 growing season to evaluate the effects different soil and water amendments would have on the irrigation water infiltration rates for the first irrigation after the field was tilled. The study also set out to document the increased water infiltration and reduction of TSS (Total Suspended Solids) and pesticide residues that may be attached to the soil particles in the tail water when different forms of PAM (polyacrylamides) were used and applied in different ways.

The goal of the 1997 study was to provide the local growers with an incentive (through a reduction in the amount of irrigation water used) to use PAM and gypsum while irrigating. The use of PAM and gypsum results in less tail water leaving the farm and tail water that meets or exceeds the locally established WSRCD goal of 300 mg/l TSS.

The 1997 study was a great success with 31 side by side tests (control verses treatment) conducted with the cooperation of seven different growers. This study provided the WSRCD, the Natural Resources Conservation Service, and the University of California Cooperative Extension with some very valuable data which was passed on to the local growers through the WSRCD's monthly news letter, "West Side Water". Initial results indicate a potential increase in infiltration of between 16 and 40 percent and a reduction in sediment of 5300 TSS to as low as 27 TSS when PAM was used. The amount of water that could have been saved on the fields tested was around 33%. The study also raised a number of yet to be answered questions such as 1) Why PAM didn't work on all soil types? & 2) Can you use Super Symbex (an enzyme based soil conditioner) to eliminate a scheduled irrigation? Answering these questions and reproducing similar results are some of the goals of our 1998-99 study.

For the proposed study, we plan on completing 60 irrigation system evaluations in the side by side (non-treated control verses treatment/management change) format. We will be applying PAM, Gypsum, Super Symbex, and any other soil and water amendments such as natural corn based polymers, Shurcrop Supra and humates, that are supplied by the cooperators to test the impact on infiltration rates, distribution uniformity's and TSS in the runoff for furrow irrigation's. The study area will be in the 122,000 acres of irrigated cropland that fall within the WSRCD's boundaries. This study will be conducted in the 1998-99 growing seasons with the final report to be written after harvest in the fall of 1999.

We have many cooperators for the 1998-99 study such as the U. C. Cooperative Extension Service of Stanislaus County, Dow AgroSciences, Reed Smith Co., American Cyanamid Co., Shurcrop (an organic soil conditioner) and Soil Solutions. These cooperators will be providing monetary or inkind support.

We also have a number of supporters from the following agencies. They are the USDA's Natural Resources Conservation Service, the Patterson Water District, the West Stanislaus Irrigation District, the Central California Irrigation District, the Del Puerto Water District, Paul Caruso of the Stanislaus County Board of Supervisors, Congressman Gary Condit, and the USDA's Agriculture Research Service.

We feel that this is a valuable study that will help to save substantial amounts of water and energy, reduce tailwater, and reduce the amount of soil and pesticides that leave the field as a result of irrigation induced erosion. At the same time we hope that an increase in yields will help the growers off set the increased costs of material and labor that these BMP's may have. Study results will be shared with the growers and the BMP's will be refined for improved water conservation and water quality.

Stanislaus County is the only place in California were this type of testing is being done. We hope to share our findings with any and all who are interested. If we are not able to secure these funds, the study will be delayed until funds are found. The proposed project and accomplishments outlined are based on the budget provided. Output will be proportioned to grant received.