

2004 Water Use Efficiency Proposal Solicitation Package

APPENDIX A: Project Information Form

Applying for:

Urban

Agricultural

1. (Section A) **Urban or Agricultural Water Use Efficiency Implementation Project**

(a) implementation of Urban Best Management Practice, # _____

(b) implementation of Agricultural Efficient Water Management Practice, # 5.B.5 Construct District Operational Spill Reuse Systems

(c) implementation of other projects to meet California Bay-Delta Program objectives, Targeted Benefit # or Quantifiable Objective #, if applicable TB# 52 & 53

2. (Section B) **Urban or Agricultural Research and Development; Feasibility Studies, Pilot, or Demonstration Projects; Training, Education or Public Information; Technical Assistance**

(d) Specify other: ROD WUE pg. 5 of PSP reduce existing irrecoverable losses, achieve multiple benefits

(e) research and development, feasibility studies, pilot, or demonstration projects

(f) training, education or public information programs with statewide application

(g) technical assistance

(h) other

3. Principal applicant (Organization or affiliation):

Solano Irrigation District

4. Project Title:

Spill Measurement SCADA System

5. Person authorized to sign and submit proposal and contract:

Name, title

Suzanne Butterfield,
Secretary/Manager

Mailing address

508 Elmira Road

Vacaville, CA 95687

Telephone

(707) 448-6847

Fax.

(707) 448-7347

E-mail

plum@sidwater.org

6. Contact person (if different):	Name, title.	Paul Lum, Agricultural Water Conservation Coordinator
	Mailing address.	508 Elmira Road Vacaville, CA 95687
	Telephone	(707) 455-4024
	Fax.	(707) 448-7347
	E-mail	plum@sidwater.org
<hr/>		
7. Grant funds requested (dollar amount):		\$97,628.00
<i>(from Table C-1, column VI)</i>		
8. Applicant funds pledged (dollar amount):		\$49,684.00
<hr/>		
9. Total project costs (dollar amount):		\$147,312.00
<i>(from Table C-1, column IV, row n)</i>		
<hr/>		
10. Percent of State share requested (%)		66%
<i>(from Table C-1)</i>		
11. Percent of local share as match (%)		34%
<i>(from Table C-1)</i>		

12. Is your project locally cost effective?

Locally cost effective means that the benefits to an entity (in dollar terms) of implementing a program exceed the costs of that program within the boundaries of that entity.

(If yes, provide information that the project in addition to Bay-Delta benefit meets one of the following conditions: broad transferable benefits, overcome implementation barriers, or accelerate implementation.)

(a) yes

(b) no

The District proposes to apply new technology towards operational spill management. The District will share the results and performance of the project with other irrigation districts, water agencies, and interested parties, and is willing to contribute articles to be published in water conservation newsletters. The proposed project accelerates implementation of the District's existing spill measurement program by adding new technology to more accurately measure spill flows.

11. Is your project required by regulation, law or contract?
If no, your project is eligible.

(a) yes

(b) no

If yes, your project may be eligible only if there will be accelerated implementation to fulfill a future requirement and is not currently required.

Provide a description of the regulation, law or contract and an explanation of why the project is not currently required.

12. Duration of project (month/year to month/year):

12/01/05 – 12/01/07

13. State Assembly District where the project is to be conducted:

#8 Wolk; #7 Evans

14. State Senate District where the project is to be conducted:

#5 Machado; #2 Chesbro,

15. Congressional district(s) where the project is to be conducted:

#7 Miller; #10 Taucher

16. County where the project is to be conducted:

Solano

17. Location of project (longitude and latitude)

Long. 121, Lat 38

18. How many service connections in your service area (urban)?

19. How many acre-feet of water per year does your agency serve?

151,000

20. Type of applicant (select one):

(a) City

- (b) County
- (c) City and County
- (d) Joint Powers Authority
- (e) Public Water District
- (f) Tribe
- (g) Non Profit Organization
- (h) University, College
- (i) State Agency
- (j) Federal Agency
- (k) Other
 - (i) Investor-Owned Utility
 - (ii) Incorporated Mutual Water Co.
 - (iii) Specify Special District

21. Is applicant a disadvantaged community? If 'yes' include annual median household income.
(Provide supporting documentation.)

- (a) yes, _____ median household income
- (b) no

2004 Water Use Efficiency Proposal Solicitation Package
APPENDIX B: Signature Page

By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

The individual signing the form has the legal authority to submit the proposal on behalf of the applicant;

There is no pending litigation that may impact the financial condition of the applicant or its ability to complete the proposed project;

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant;

The applicant will comply with all terms and conditions identified in this PSP if selected for funding; and

The applicant has legal authority to enter into a contract with the State.

Suzanne Butterfield SID Secretary/Manager

Signature

Name and title

1-10-05
Date

Relevance and Importance

The proposed Spill Measurement SCADA system would add real-time data acquisition and radio telemetry to the District's existing spill measurement program. The project would enable remote monitoring of operational spill flow rates at (8) major canal sites where spills leave District conveyance facilities, enter regional drainage canals, and eventually discharge into the Sacramento River. This project would provide District managers with real-time spill rate information, allowing for timely management of flows and deliveries, and the reduction of irrecoverable spill losses. Multiple benefits include water conservation, a greater reliability of supply, and reduced environmental impacts from canal chemical treatments. The installation of a SCADA system would facilitate plans for the expansion of improvements to conveyance facilities, such as automatic control gates and additional remote water measurement equipment.

The conserved water provided by the project would increase water supplies and allow SID to consider entering into agreements with cities in Solano County, which have expressed serious interest in additional water supplies. A greater water supply improves the District's flexibility with local and regional water use management, and decreases the dependence on the Bay-Delta system as a water source for cities.

This project will contribute towards compliance with NPDES regulations and towards maintaining higher water quality in the regional drainage system, as the District will be able to better contain treated canal water within its distribution system.

The project is consistent with CALFED Water Use Efficiency goals and meets Targeted Benefit (TB) # 52, "Improved Water Quality", and TB #53, "Generate additional water through the reduction in application through improved irrigation systems." The project will increase the District's flexibility towards supplying water for irrigation or for the growing demands of cities in Solano County. High water quality can be maintained in the drainage system, as canal water treated with aquatic pesticides can be better contained within SID's distribution system.

This project meets CALFED Record of Decision (ROD) objectives as listed on page 5 of the Final 2004 Water Use Deficiency PSP. The project also contributes towards Agricultural Best Management Practice (BMP) #5.B.5, "Construct District Operational Spill Reuse Systems."

SID's 5-Year Water Management Plan and the Solano County Water Agency's Integrated Regional Water Management Plan (IRWMP) lists water conservation and water quality actions to be addressed. The proposed project, which will not proceed without financial assistance, will assist SID with meeting those objectives.

Background Information

The Solano Irrigation District is located in Solano County, California, approximately 30 miles west of Sacramento. Formed in 1948, SID is a Special District with an elected Board of Directors, formed under the Water Code of the State of California. The District provides irrigation water for over 60,000 acres of irrigable soils and manages the key water source for a population of 200,000 and thousands of businesses. Annual water diversions reach 151,000 acre-feet.

The official representative of the District is Ms. Suzanne Butterfield, the Secretary/Manager.

SID is a diverse organization performing a variety of water resource related functions, not typical of most irrigation districts. A review of the major functions are as follows:

The District operates and maintains the Solano Project under a contract with the Solano County Water Agency (SCWA). SCWA is the umbrella water agency for the County, of which SID is one of eleven participants. The Solano Project is comprised of the Monticello Dam, the Putah Diversion Dam, and the Putah South Canal, all owned by the federal government. SID employees deliver water from the Project when ordered by its customers, which include SID, Maine Prairie Water District, U.C. Davis, and the California Medical Facility. SID is represented on SCWA's Board of Directors, along with seven cities, the County Board of Supervisors, and two other agricultural water purveyors (Maine Prairie Water District and Reclamation District 2068).

The District owns and operates the Monticello Power Plant at the base of the Monticello Dam. The Plant was the first hydro-project owned by a local agency at the base of a federal dam. Energy produced at the Plant is sold to Pacific Gas & Electric.

SID owns and operates an agricultural water delivery system of about 200 miles of pipe, canals, and ditches. In addition to surface water deliveries from Project facilities, the District owns about 33 wells used to supplement surface water supplies. Approximately 140,000 acre feet of water is delivered annually to farmers, covering 60,000 acres.

Domestic water customers include agreements with the cities of Fairfield and Vacaville, businesses, about 1000 rural customers, and SID partnerships with the Suisun-Solano Water Authority (SSWA), and the Dixon-Solano Municipal Water Service (DSMWS). Domestic water sales from SID's allocation of Solano Project supplies average 14,000 acre feet annually.

The District has 94 full time employees and a general fund budget of 5-6 million dollars annually. The District charges farmers \$16.49/acre-ft of gravity delivered water and \$19.47/acre-ft for lifted water. The District charges landowners \$0.2495 per \$100 of assessed land value, and charges a standby charge for lands 5 acres or larger. SID's sources of revenue include water sales (33%), assessment (25%), and standby charge (15-20%). Other revenue sources are payments from Fairfield and Vacaville for water supplies, and interest income. SID's contractual agreements include reimbursements from PG&E, SCWA, DSMWS, and SSWA.

Need For the Project

Like much of California, increasing water demands, dry year shortages and water quality challenges face Solano agencies. The Solano County Water Agency and its member cities and irrigation districts, such as SID, have identified and prioritized water resource needs in its Integrated Regional Water Management Plan (IRWMP), and in SCWA's Strategic Plan, which lists actions required of SCWA to best allocate its financial and staffing resources to meet its needs.

Primary concerns addressed in the IRWMP are calls for cooperative means to improve water supply, water supply reliability, and water quality to meet the increasing water demands that face Solano agencies.

SID's proposed project will conserve water which can be applied to the demands of Solano's cities, and reduce the dependence on the Bay-Delta as a water source. The project contributes a benefit towards water quality in the region, as more efficient operational management of SID's canal distribution system, provided by the availability of real-time flow rate monitoring, will help the District minimize impacts from chemical treatments required to maintain the delivery system.

Technical/Scientific Merit, Feasibility

For the proposed project the District would purchase Druck transducers/sensors to monitor, log, and transmit spill flow data. Components to be purchased for each spill site are Allen Bradley Programmable Logic Controllers (PLC's), Ethernet radios, Yagi antennas, and Siemens solar panels. The District's electronics technician and electrician would install the transducers, PLC and radio equipment, and solar panels at each site. Calibration and monitoring would be performed by the District Assistant Engineer and Engineering Technician as part of the existing spill measurement program. The District estimates an equipment cost of \$7940.00 for each of (8) sites.

The District intends to contract with Meyer Control Corporation to install the SCADA master computer and software, perform programming, install the master radio, PLC unit, and antennas at District offices. Radio path surveys, planning and design will be performed. The cost estimate is \$26,250.00.

Construction and installation would commence within one month when funding is made available. SID anticipates a one year period for installation and a minimum of ten years for data analysis and application of the data towards operations management. The District is requesting funding to assist with the two year implementation period of the project, to include the first year for installation and calibration. Initial data acquisition and application towards operational management may occur late in the first year. During the second year, SID anticipates full implementation of the system and the derived benefits.

Required tasks include construction of security enclosures and modification of existing spill recorder housings. Regular maintenance of field equipment will be required. The District estimates two year costs of \$13,440.00 for construction and equipment maintenance.

The District's existing spill measurement program and on-going SCADA projects will serve as the foundation for the proposed project. SID maintains water level sensors at (31) canal spill sites. Plans are to replace float-type sensors with pressure transducer sensors compatible with SCADA systems at (8) major sites. Maintenance, equipment upgrades, programming, and monitoring of the existing spill recorder equipment is necessary to support the proposed project and evaluate outcomes. In addition, SCADA installations on the Solano Project distribution system and at water treatment plants are considered the backbone of a District wide SCADA system to include spill recorders. The cost projection for ongoing existing programs that are necessary to implement the proposed project is \$49,684.

The District will remain in regulatory compliance with the proposed project. Any State or Federal permit conditions necessary to the project would be acquired and complied

with. There would be no adverse effect to any endangered, threatened, or migratory bird species, or to any cultural or historic resource.

Monitoring and Assessment

Currently, operational spill flows are measured with float type water level sensors installed in stilling wells at each canal spill site. Staff must travel to each spill recorder to obtain data by downloading onto a laptop computer. Data is then transferred to District computers at SID headquarters. Analysis of data is performed biannually for operational analysis of spill flow rates. The addition of radio telemetry (SCADA) to important spill sites will greatly improve operational efficiency as real-time spill rate data can be automatically transmitted to a master computer at District offices, providing for daily analysis. The project will provide measurable results, and the success of the project will be determined by the District's ability to utilize the data to reduce losses.

Assessment of the project's outcomes and attainment of goals will be the responsibility of the project manager, Michael Messina, who is SID's Water & Power Operations Manager. Mr. Messina and the District Associate Engineer will analyze data, maintain the database, and evaluate the success of the system at a cost of \$5856.00 over the two year period of the project.

SID's Agricultural Water Conservation Coordinator will submit quarterly fiscal and programmatic reports to DWR, and will submit a comprehensive final report at the end of the project. Annual reports of benefits and costs will be prepared for five years after project completion. Information sharing, outreach with interested parties, and oversight of the project's budget will also be managed by the Conservation Coordinator. Total labor and overhead costs are estimated at \$2470.00 over the two year period.

Qualifications of the Applicants and Cooperators

The project manager and contact person for the project will be the Water & Power Operations Manager, Michael Messina. Mr. Messina will provide project oversight and assessment. Mr. Messina's resume is attached.

The project will not require the involvement of any cooperators.

The District will utilize their consulting engineer, Summers Engineering, Inc. to provide additional oversight and analysis. Summers Engineering, Inc. is currently under contract with SID and numerous other irrigation districts and water agencies to provide design and construction management services for irrigation improvement projects.

The District plans to contract with Meyer Control Corporation to install SCADA components and perform computer programming. Meyer Control is currently under contract with SID to install and implement SCADA systems for District water treatment plants, as well as for SID partnerships with cities and the Solano County Water Agency. Meyer Control Corporation has established itself as a leader in industrial instrumentation and control systems for the water industry.

SID is participating in a DWR Agricultural Water Conservation Study Grant, a two year award closing in May 2005. The grant is providing \$89,000.00 towards a study to determine the costs and benefits of improving the operational flexibility of SID water conveyance facilities. The District is contracting with Summers Engineering, Inc. to produce and complete the study. Improvements being researched include real-time spill flow monitoring and the installation of additional upstream and downstream control gates.

Outreach, Community Involvement, & Acceptance

The District is willing to share project results with any interested parties and its umbrella agency, the Solano County Water Agency. The District would be willing to contribute articles to be published in water conservation newsletters. It is anticipated that other irrigation districts and water agencies will express interest, as the project demonstrates the application of SCADA systems towards operational spill flows.

Innovation

The implementation of a SCADA system to obtain spill flow data uses new technology commonly applied in the waste water and drinking water industry. However, its application to irrigation district conveyance facilities is new. The technology we plan to utilize is state of the art and not widely known among irrigation districts.

Benefit Summary and Breakdown

The project provides direct benefits to the District and both direct and indirect benefits to the CALFED program and other water users. The quantified benefits include water conservation and the reduction of District operational costs. The anticipated conservation of 7500 acre-feet per year has an estimated current value of \$79/acre-foot. The value is determined by calculating agricultural and domestic water value in proportion to current demand and applying 50% of the conserved water towards beneficial uses. The water conservation benefit is estimated to be \$296,250.00 per year. SID estimates that during 2006 – 2007, the percentages of conserved water sold for agriculture and for domestic use would be 66%, and 33%, respectively, at a value of \$18 per acre-foot for agricultural use and \$200 per acre foot for domestic use.

The District's consulting engineer, Summers Engineering, Inc., produced a study in 1993, "An Update Plan for the Development of the Irrigation Distribution Works." The Plan supports the estimated value of \$200/acre foot/year for water leased to cities and Solano agencies.

Population growth in Solano County will dictate the likelihood of providing additional water from the conserved supply. It is anticipated that within three-five years, a greater percentage of conserved water will be applied to municipal and industrial demand, at a much greater value.

Operational cost reductions are derived from lower labor, energy and vehicle costs to monitor canal flow during customer deliveries. The District estimates a savings of \$3680.00 per year.

Non-quantified benefits include 1) the increased water supply for beneficial uses, 2) better containment of aquatic pesticides within District conveyance facilities, and 3) the achievement of water quality objectives in the regional drainage system.

APPENDIX C: Project Costs and Benefits Tables

Table C- 1: Project Implementation Costs (Budget)

Table C- 2: Annual Operations and Maintenance Costs

Table C- 3: Total Annual Project Costs

Table C-4: Capital Recovery Factor

Table C- 5: Project Annual Physical Benefits (Quantitative and Qualitative Description of Benefits)

Table C- 6: Project Annual Local Monetary Benefits

Table C- 7: Project Local Monetary Benefits and Project Costs

Table C- 8: Applicant's Cost Share and Description

**APPENDIX C
PROJECT IMPLEMENTATION COSTS TABLE**

**APPLICANT: Solano Irrigation District
Project Title: Spill Measurement SCADA System**

If using the excel tables on DWR website, complete shaded areas only.

Section A projects must complete Life of Investment, column VII and Capital Recovery Factor, column VIII. Do not use 0.

Table C-1: Project Costs (Budget)

	Category	Project Costs \$	Contingency % (ex. 5 or 10)	Project Cost + Contingency \$	Applicant Share \$	State Share \$	Life of investment (Years)	Capital Recovery Factor (Table C-4)	Annualize costs \$
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)
	Administration (for initiation of project)								
	Salaries, wages	1518	5	1594					
	Fringe benefits								
	Supplies								
	Equipment								
	Consulting services								
	Travel								
	Other								
(a)	Total Administration Costs ¹	1518	5	1594	1594				
(b)	Planning/Design/Engineering	25000	5	26250	15225	11025			
(c)	Equipment Purchases/Rentals/ Rebates/Vouchers	78600	5	82530	19005	63525	10	1359	1121
(d)	Installation/Implementation	14400	5	15162	2940	12222			
(e)	Implementation Verification	1110	5	1166		1166			
(f)	Project Legal/License Fees								
(g)	Monitoring and Assessment	5587	5	5866		5866			
(h)	Report Preparation	1242		1304		1304			
(i)	Structures								
(j)	Land Purchase/Easement								
(k)	Environmental Compliance/Mitigation/Enhancement								
(l)	Construction	2400	5	2520		2520			
(m)	Operations/Maintenance	10400	5	10920	10920				
(n)	TOTAL (=a+...+m)		NA	147312	49684	97628	NA	NA	1121
(o)	Cost Share Percentage	NA	NA	NA	(row n, column V/IV) x 100	(100 - row o, column V)	NA	NA	NA

Table C-2: Annual Operations and Maintenance Costs

Operations (1) (I)	Maintenance (II)	Other (III)	Total (IV) (I + II + III)
4247.00	4940.00		9197.00
			0

(1) Include annual O&M administration costs here.

Table C-3: Total Annual Project Costs

Annual Project Costs (1) (I)	Annual O & M Costs (2) (II)	Total Annual Project Costs (III) (I + II)
\$ 11,216.00	\$9,197.00	\$ 20,413.00

(1) From Table C-1, row (n) column (IX)

(2) From Table C-2, column (IV)

Table C-4: Capital Recovery Factor

(for a discount rate of 6%)

Life of Project (in years)	Capital Recovery Factor
1	1.0600
2	0.5454
3	0.3741
4	0.2886
5	0.2374
6	0.2034
7	0.1791
8	0.1610
9	0.1470
10	0.1359
11	0.1268
12	0.1193
13	0.1130
14	0.1076
15	0.1030
16	0.0990
17	0.0954
18	0.0924
19	0.0896
20	0.0872
21	0.0850
22	0.0830
23	0.0813
24	0.0797
25	0.0782

Life of Project (in years)	Capital Recovery Factor
26	0.0769
27	0.0757
28	0.0746
29	0.0736
30	0.0726
31	0.0718
32	0.0710
33	0.0703
34	0.0696
35	0.0690
36	0.0684
37	0.0679
38	0.0674
39	0.0669
40	0.0665
41	0.0661
42	0.0657
43	0.0653
44	0.0650
45	0.0647
46	0.0644
47	0.0641
48	0.0639
49	0.0637
50	0.0634

Table C-5: Project Annual Physical Benefits (Quantitative and Qualitative Description of Benefits)				QUALITATIVE BENEFITS – (where data are available) ²	
QUALITATIVE DESCRIPTION - REQUIRED OF ALL APPLICANTS ¹				QUANTITATIVE BENEFITS (in-stream flow and timing, water quantity and water quality) for:	
Description of physical benefits (in-stream flow and timing, water quantity and water quality) for:	Time Pattern and Location of Benefit	Project Life: Duration of Benefits	State Why Project Bay-Delta benefit is Direct ³ , Indirect ⁴ or Both	Quantified Benefits (in-stream flow and timing, water quantity and water quality)	
Bay-Delta: DESCRIPTIVE PARAGRAPHS. PLEASE SEE ATTACHED					
Local:			Not Applicable		

¹The qualitative benefits should be provided in a narrative description. Use additional sheets to describe the benefits.
²The project benefits that can be quantified (i.e. volume of water saved or mass of constituents reduced) should be provided.
³Direct benefits are project outcomes that contribute to a CALFED objective within the Bay-Delta system during the life of the project.
⁴Indirect benefits are project outcomes that help to reduce dependency on the Bay-Delta system. Indirect benefits may be realized over time.

Table C-6. Project Annual Local Monetary Benefits

ANNUAL LOCAL BENEFITS		ANNUAL QUANTITY ⁴	UNIT OF MEASUREMENT	ANNUAL MONETARY BENEFITS (Thousands \$/yr)	
(a) Avoided Water Supply Costs (Current or Future Sources)		7500	Acre Feet	\$296,250.00	
(b) Avoided Energy Costs		80	Hours	\$1,200.00	
(c) Avoided Waste Water Treatment Costs					
(d) Avoided Labor Costs		80	Hours	\$2480.00	
(e) Other (describe)					
(f) Total [(a)+(b)+(c)+(d)+(e)]		NA	NA	\$299,930.00	

Table C-5: Project Annual Physical Benefits

Qualitative Description

Physical Benefits for the Bay-Delta

Operational spills from the District's irrigation distribution system flow into artificial and natural drainage canals that eventually discharge into the Sacramento River, approximately 20 miles southeast of the District. The project will achieve 1) water conservation, 2) greater supplies that can be developed as a new water source for the region's cities, and 3) water quality objectives within the regional drainage system.

Local Physical Benefits

The installation of a SCADA system on (8) major canal spill sites will accomplish data collection, better estimates of system losses, and the development of more accurate water budgets. The system will also facilitate future improvements to the system, including automatic control gates or additional spill sites.

Improved water quality and compliance with NPDES regulations would be achieved within the agricultural distribution system through timely management of flows during chemical treatment periods. In addition, real-time spill flow rate data available to the District will improve operational efficiency by reducing labor and vehicle costs required to operate the system.

Project Life: Duration of Benefits

Local and Bay-Delta:

The District estimates a project life of (10) years for equipment and computer programming. However, the resulting water conservation, new water supply, and improved water quality are expected to provide benefits to the Bay-Delta for a much longer duration.

State Why the Bay-Delta Benefit is Direct

By monitoring and controlling irrigation delivery spills, three very important water management objectives are achieved which bring direct benefit to all stakeholders. The objectives are 1) reduce irrecoverable losses, 2) creation of a "new water supply" which can be put to beneficial use, either within SID or by selling the conserved water to the cities in Solano County, and 3) improved water quality in the Bay-Delta system, as treated canal water can be better contained in the District's distribution system.

State Why the Bay-Delta Benefit is Indirect

Indirect benefits to the Bay-Delta include:

1. Spill rate data can be compiled and analyzed to determine drainage flow rates and support studies to improve the regional drainage distribution system.
2. Water banking or marketing among interested cities in Solano County is made possible from the estimated 7500 acre feet of conserved water per year.
3. The District plans to use innovative, state-of-the art technology that is not common among irrigation districts. The results of our project will be shared with other water agencies and irrigation districts, and should be of great interest.

Time Pattern and Location of Benefit for the Bay-Delta and Locally

Direct benefits from the project would occur during the District's irrigation season, generally from April 1st – October 15th. However, indirect benefits may occur throughout the year, as operational analysis from collected data can continue.

Solano Irrigation District is located in Solano County, midway between San Francisco and Sacramento. The District's service area includes portions of Fairfield, Suisun, Vacaville, Dixon, Winters, and Lake Solano. Drainage from operational spills enter natural and artificial drainage canals that flow southeast through the District's service area and through two neighboring irrigation districts, Maine Prairie Water District and Reclamation District 2068. Flows eventually reach Cache Slough, where it discharges into the Sacramento River.

See attached maps.

Quantitative Benefits

Solano Irrigation District estimates that 7500 acre-feet per year can be conserved by reducing operational spills that currently enter the District's drainage system. The quantity is based on measurements at canal spill sites, data from SID's current spill recorder program, and analysis by Summers Engineering, Inc.

A DWR Agricultural Water Conservation Feasibility Study Grant was awarded to SID in 2003, and will be completed in May, 2005. The District contracted with Summers Engineering, Inc. to produce the study.

The study involves the following tasks:

1. Compilation of current flow, demand, and spill data for all major distribution facilities.
2. Rank facilities according to their contribution to operational spills.
3. Identify facility upgrades and operational changes that can be applied to reduce spills.
4. Link District facilities with appropriate improvement/modification
5. Estimate costs and determine potential water conserved through spill reductions.
6. Identify best course of action.

This study, made possible with grant funding from DWR, supports our proposed project and will provide further quantitative estimates.

See attachment

⁴ Examples include avoided cost of current water supply (or future supply if available), energy savings, labor savings, waste water treatment.

Table C-7: Project Local Monetary Benefits and Project Costs

(a) Total Annual Monetary Benefits (Table C-6, row(f))	\$299,930.00
(b) Total Annual Project Costs (Table C-3, column III)	\$ 20,413.00

Table C-8: Applicant's Cost Share and Description

Applicant's cost share (%): (from Table C-1, row o, column V)	34%
Describe how the cost share (based on relative balance between Bay-Delta and Local benefits) is derived (see Section A-7 for description). Provide description in a narrative form.	

Cost Share and Description

Solano Irrigation District is contributing \$49,684.00, or 34% of the total project cost towards the proposed SCADA system. SID's cost share consists of two ongoing District programs that serve as the foundation for the proposed project:

1. The existing spill measurement program measures spill flow rates from (31) canal spill sites. Data from the program provides the District with a baseline of spill flow rates annually, for each canal spill site. The program allows the District and its consulting engineer to estimate spill losses and determine management strategies to increase operational efficiency and reduce losses. Spill flow information from the entire service area is crucial for planning appropriate and effective improvements such as adding SCADA systems. The District considers the proposed project an expansion of the existing spill measurement program. Approved plans for the program in 2005-2006 include water level sensor calibrations, sensor replacements, regular maintenance, computer programming, and monitoring, at a total cost of \$21,334.00
2. SID is installing SCADA systems on its distribution system at one water treatment plant, three pumping plants, and a master computer at District headquarters. SID partnerships are also installing SCADA systems at one water treatment plant and three pumping plants. The SID Rehabilitation and Betterment Plan budget for the SCADA systems is \$170,470.00. The implementation is ongoing and expected to be completed in 2005-2006, and the majority of the work is contracted with Meyer Control Corporation.

Portions of the ongoing SCADA work contribute to the proposed project. The scope of work necessary to initiate and support the addition of SCADA systems to spill flow measurement include radio surveys, planning and design, master computer installation, programming, and testing at a cost of \$28,350.00.

Michael J. Messina
531 Alamo Dr. #A
Vacaville, Ca 95688
Cell 707-249-6242

WORK EXPERIENCE

1997 to Present

Solano Irrigation District

Water & Power Operations Manager

- Supervision and administration of 73 employees,
- Program planning and maintenance of dams, wells, reservoirs, hydroelectric generators, water treatment facilities, pipelines, pumping stations, joint use canals, facility rehabilitation projects, direction of canal operations, water distribution, and hydroelectric power production, dam operations, and SCADA programs.
- Preparation of 5 individual operating budgets including 2 joint powers agencies, and a Federal contractor agency (Solano County Water Agency)
- Contract administration, and water supply responsibility for 4 cities.
- Liaison for other governmental agencies including: Fish & Game, DWR, U.S. Bureau of Reclamation, Pacific Gas and Electric Co., California Dept. of Health Services, Fed. Energy Regulatory Commission.
- Presentation of reports to Board of Directors.
- Preparation of reports and presentation of information at joint boards and other public meetings.

1993 to 1997

Oroville-Wyandotte Irrigation District

Water Division Manager

- Supervision and Administration of 40 employees
- Including water treatment, and pipeline construction crews.
- Contract administration.
- Contact point for other governmental agencies including: Fish & Game, Department of Water Resources, U.S. Forest Service, State and local health departments.
- Presentation of reports to Board of Directors.
- Preparation and presentation of information at public meetings.
- Design and replacement of aging district infrastructure (40 mi. of pipelines).
- Implementation of Graphic Information System and Global Positioning System.
- Community relations.

1991 to 1993

Oroville-Wyandotte Irrigation District

Operation and Maintenance Manager

- Duties similar to above.

1984 to 1991

Oroville-Wyandotte Irrigation District

Assistant Engineer

- Responsible for a variety of technical, administrative functions.
- Contact with other governmental agencies, District Safety Officer, Water Rights administration.
- Design and administration of district facilities.

Attachment 1, pg. 1

- Computer modeling of distribution system, and district newsletter.

WORK EXPERIENCE *cont.*

1976 to 1984

Oroville-Wyandotte Irrigation District

Engineering Assistant

- Contract administration and inspection of contractor installed facilities.
- Employee safety program.
- Preparation of information for the public.
- Design of district facilities.

ADDITIONAL WORK EXPERIENCE

1974 - 1976

Peter Kiewit Sons' Engineering Contractors

Field Engineer

- Responsible for supervision and administrative functions on large construction projects.
- Field Supervision of construction crews.
- Cost estimating.
- Contract administration.
- Job cost accounting.
- Surveying.

ADDITIONAL SKILLS

- Auto/CAD Automated drafting.
- Graphic Information System (development and implementation).
- Global Positioning Systems (G.P.S.).
- Desktop Publishing (Aldus Pagemaker). Excel, WordPerfect, Word.

EDUCATION

- **Associate of Arts, Orange Coast College,**
Liberal Arts
- **Bachelor of Arts, University California Berkeley**
Environmental Design (Architecture, Planning, Civil Engineering)
- **Butte College**
Business, Real Estate, Water Treatment classes
- **California State University Chico**
Post-Graduate Classes in Public Administration

SCHOLASTIC HONORS

- **Honor Students Society University of California Berkeley**

PERSONAL HISTORY

- **Born:** Oakland, California 1946
- **Military Service:** U.S. Army 1967 - 1969 Honorable Discharge
- **Married:** 1970 - Ann E. Haramia, Laguna Beach, Calif.
- **Children:**
Laura, Newport Beach, CA.
Gabrielle, Chico, CA.
Emily, Chico, CA
- **Community Service:**
Chico Comm. Ballet
Kiwanis
Solano County Adult Literacy Program.

Contract No. F63110

Local Agency
Agricultural Water Conservation
Feasibility Study Grant

Received
Department of Water Resources

JAN 03 2003

Div. Of Planning and Local Asst.
Financial Assistance Unit

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

CONTRACT BETWEEN THE STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
AND

SOLANO IRRIGATION DISTRICT

FOR AN AGRICULTURAL WATER CONSERVATION FEASIBILITY STUDY GRANT UNDER THE
CALIFORNIA SAFE DRINKING WATER, CLEAN WATER, WATERSHED PROTECTION, AND FLOOD
PROTECTION ACT

F631 (REV 8/02)

ATTACHMENT 2

EXHIBIT C
PROJECT DESCRIPTION
**Solano Irrigation District
Spill Reduction Feasibility Study**

Project Description

In a typical year, SID delivers approximately 140,000 acre-feet of water for irrigation. The total quantity of all operational spills is unknown, but based on measurements at some of the major spills over the last two years, it is estimated that at least 7,500 acre feet of water is lost from district facilities each year. The proposed study will analyze the open channel water conveyance facilities and operations of SID to determine the cost and benefits of installing automatic control gates (and other improvements) to reduce operational spills.

The study will identify the facilities that contribute to operational spills, determine the best means and potential improvements to reduce the spills, estimate the cost of such improvements, and determine the quantity of water that will be conserved. The improvements that will be considered are upstream and downstream control gates and real-time flow monitoring. The estimated cost of the proposed study is \$89,000.

The proposed project is a feasibility study to determine the costs and benefits of improving the operational flexibility of SID water conveyance facilities. In a typical year, it is estimated SID spills a minimum of 7,500 acre feet of water through operational spills.

Scope of Work

The project will involve the following tasks:

1. Compile current flow, demand, and spill data for all major distribution facilities.
2. Rank facilities according to their contribution to operational spills.
3. Identify facility upgrades and operational changes that can be applied to reduce spills. This will include control gate automation and real-time flow monitoring.
4. Link district facility with appropriate improvement/modification.
5. Estimate cost to implement facility improvements and determine potential water conserved through spill reductions.
6. Identify best course of action for the district.
7. Compile report detailing the study and its findings.
8. Administer project, including overhead, secretarial services, progress reporting and invoicing.

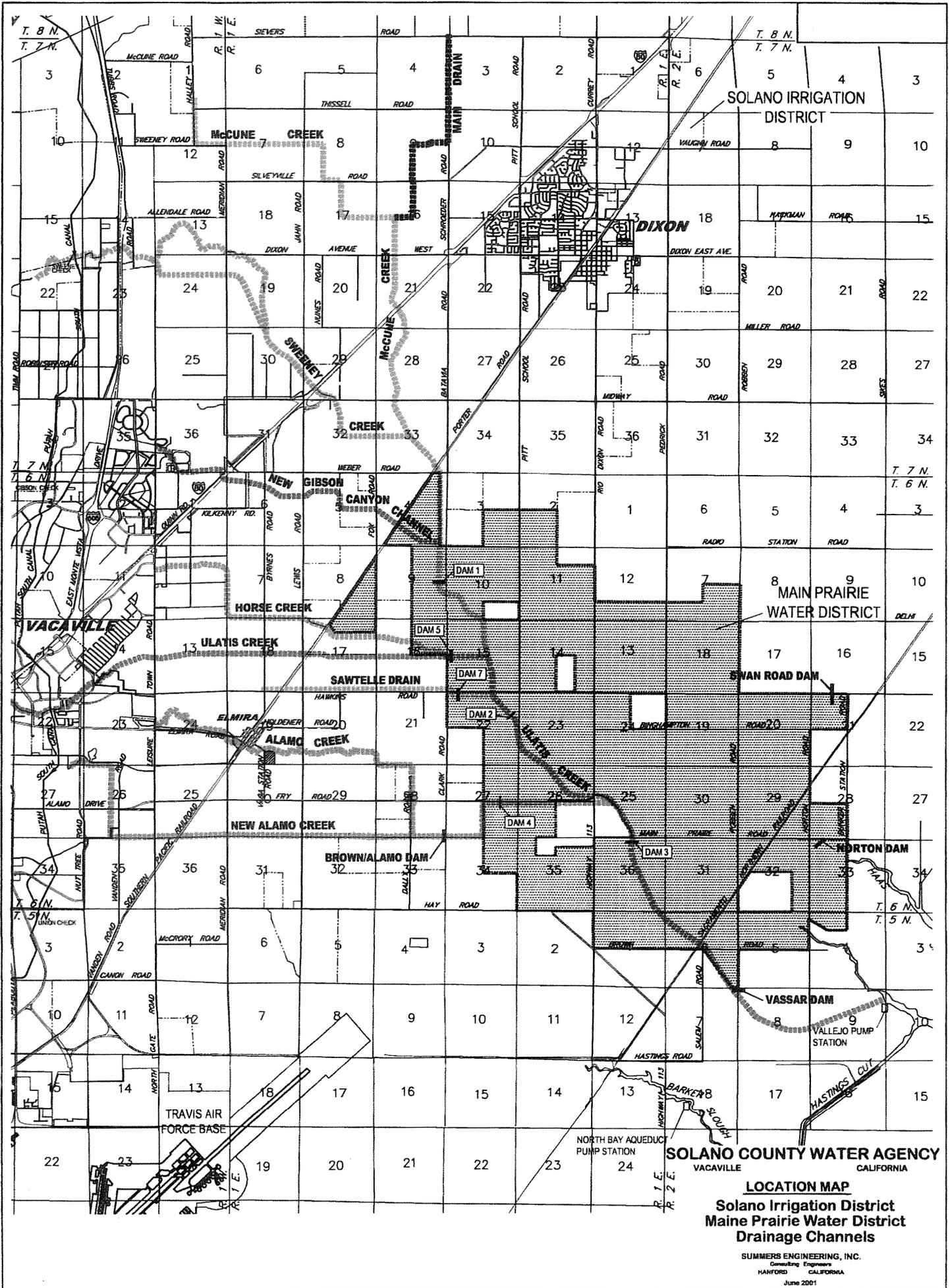
The feasibility study will be completed in approximately 18 months.

Economic Justification

The study will address the costs involved in improving the district's canal and water supply infrastructure so as to reduce operational spillage. The district could potentially conserve 7500 ac-ft of water with a potential economic value of 1.5 million dollars.

Project Location

The Solano Irrigation District is located in Solano County. Solano Irrigation District (SID) is a 72,000 acre district located in Solano County, north of the Sacramento/San Joaquin Delta. The district is a member unit of the Solano County Flood Control and Water Conservation District and receives its primary water supply from the Solano Project. The Solano Project consists of Monticello Dam, Lake Berryessa, the Putah Diversion Dam on Putah Creek, and the Putah South Canal, the conveyance facility of the Solano Project which delivers the surface water supply from Putah Creek to the member units.



LOCATION MAP
Solano Irrigation District
Main Prairie Water District
Drainage Channels

SUMMERS ENGINEERING, INC.
 Consulting Engineers
 HANFORD CALIFORNIA
 June 2001