

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, # 5

(b) implementation of Agricultural Efficient Water Management Practice, # _____

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

(d) Specify other: _____

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

(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):

City of Benicia

4. Project Title:

Large Landscape ET Controller System Project

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

Name, title

Dan Schiada, Public Works Director

Mailing address

250 East L St

Benicia, CA 94510

Telephone

(707) 746-4792

Fax.

(707) 747-1637

E-mail

Dan.Schiada@ci.benicia.ca.us

6. Contact person (if different):

Name, title.	David Wenslawski
Mailing address.	Water Quality Technician
	614 East 5 th St
	Benicia, CA 94510
Telephone	(707) 746-4792
Fax.	(707) 745-1199
E-mail	davidw@ci.benicia.ca.us

7. Grant funds requested (dollar amount): **\$33,000**
(from Table C-1, column VI)

8. Applicant funds pledged (dollar amount): \$8,109

9. Total project costs (dollar amount): \$41,295
(from Table C-1, column IV, row n)

10. Percent of State share requested (%): 80%
(from Table C-1)

11. Percent of local share as match (%): 20%
(from Table C-1)

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.

(a) yes

(b) no

(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.)

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):

March 2006 – June 2006

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

8

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

4

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

7

16. County where the project is to be conducted:

Solano County

17. Location of project (longitude and latitude)

-122 longitude

38 latitude

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

9,053

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

5,200

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 _____

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

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

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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.

Signature

Name and title

Date

**Statement of Work,
Section One
Relevance and Importance**

This grant application is for the purchase and installation of an evapotranspiration (ET) controller system for a large public landscape. After review of various best management practices (BMPs) it was determined that large landscapes are a high priority. These large landscapes are large water users and use large amounts of water during peak summer demand periods. The technology of ET controllers is a proven technology. Our analysis shows that the ET controller on large landscapes gives us a good opportunity to reduce water use. There is also great potential for expansion of this program to numerous other sites. Since many ET controllers can share the same centralized computer, weather stations and communication facilities, the program can be expanded in the future at less cost. The City of Benicia was part of Proposition 13 grant with Solano County in 2002 that funded the installation of an ET system in the Benicia Community Park consisting of 35 acres of turf. The ET system was installed in 2003/2004. This grant application is for the expansion of this system to another public landscape in the City.

ET controller systems consist of solenoid valve controllers at each landscape site linked to a centralized computer programmed with software to maximize irrigation efficiency. A weather station is used to get daily data on evapotranspiration, wind, and other factors important to irrigation efficiency.

Benicia would like to expand its current ET system to include an additional 7.35 acres of turf at Benicia Middle School. Estimated savings from expanding the ET system will be approximately 5 acre feet a year. Currently the site uses 20 acre feet a year. With an ET system we could reduce the water use to 15 acre feet a year.

As with most other communities in California, the City of Benicia faces critical water issues in the future. Our major sources of water supply are, at best, fixed amounts of water supply. Long term projections show that additional water supplies are needed for future growth. We understand the need to address demand management. Demand management is an integral part of the City's Urban Water Management Plan and other water conservation plans. Additionally, demand management is an important part of State, Federal and CalFed policy.

**Statement of Work
Section Two
Technical/Scientific Merit, Feasibility**

The Rain Master ET Controller System consist of several components that when interconnected result in a water, energy and labor efficient irrigation system. At each large landscape site Rain Master satellite controllers handle up to 48 solenoid valves. Each solenoid valve control groups of sprinkler heads. Larger sites will have multiple satellite controllers. These controllers are linked to valves and sensors that allow it to manage all the irrigation that is run by a specific controller. The satellite controllers are

linked by radio, phone or hard wire to a central control computer. The central computer can run all Rain Master controllers for the whole city.

The central computer is programmed with Rain Master Evolution software and Advanced Irrigation Management (AIM) software. The Evolution software features a user-friendly graphical interface. The software uses data from the weather station and preprogrammed characteristics of the landscape and determines optimal irrigation needs. The AIM software analyzes the water demand and distributes the water to different valves to conduct irrigation in the most efficient manner. This results in a condensed period of irrigation which reduces pumping cost and can help avoid irrigation peak city water use periods.

The central computer, the satellite controllers and weather stations are connected by radio, phone lines or hard wire. A major capital cost of this system is the communication components to link these devices. Since only one central computer and one weather station (or multiple stations if there are significantly different microclimates) is needed the satellite controllers can be located some distance from the central computer. A series of antenna and repeaters are necessary to make this system work.

No environmental mitigation is necessary. This project is exempt from CEQA under Section 15301 of the CEQA guidelines. Section 15301 of CEQA Guidelines discusses the operation, repair, maintenance or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use beyond that previously existing. According to this section of CEQA, this is an exempt project because there is no expansion of an existing site use.

Based on the anticipated timing of grant funds being available, the ET controller equipment is anticipated to be installed in the spring of 2006.

Statement of Work
Section 3
Monitoring and Assessment

Extensive monitoring and assessment of results will be preformed. The site has a dedicated meter so there are accurate numbers on past water usage. The City will be reporting the annual water savings comparing water use with the new ET controller versus prior water usage. Estimates of water savings are assumed to be approximately 25%. Of course, these estimates will be verified in the field after installation and operation of the ET controllers.

Annual reports will be completed for at least 5 years to ensure that a wide variety of hydrologic conditions are encompassed. This information will be used not only to report to California Department of Water Resources (DWR) but also to promote the program to encourage program expansion to other large landscapes.

Qualification of the Applicants and Cooperators

This application was prepared by the City of Benicia Public Works Department. The City of Benicia is a water retailer and has an active water conservation program focused at the locally cost effective best management practices. This application for ET controller equipment was developed through the Water Quality Department who will be involved in all phases of the program from construction through monitoring.

This program will be conducted under the supervision of David Wenslawski, Water Quality Technician for the City of Benicia. Appendix A contains the resume of Mr. Wenslawski. The technical representative from Green Tech is Tony Yarish, District Manager for Green Tech. Also in Appendix A is Mr. Yarish's resume. The City of Benicia Parks Department will be working with Green Tech to install, operate, and maintain the ET controller system. The Parks department has already been trained in the operation of the ET system. Green Tech will conduct any additional training they may need.

Outreach, Community Involvement and Acceptance

This project is a collaboration of the City of Benicia Public Work Department, the City of Benicia Parks Department, and the Benicia Unified School District. Each department will be involved in the implementation of the program. Their involvement in this project will help assist in publicizing the program to expand to other large landscape areas within the City.

After the first irrigation season the findings of water savings will be reported to all parties associated with the ET controller program. This information will be provided to DWR and included in the Benicia web site. Benicia will use the finding to promote program expansion throughout the community.

Agency staff will be trained to operate and maintain the ET controller. This type of program does not create new jobs, however it provides a high level of efficiency in managing these large landscapes. The "high tech" training will undoubtedly have positive benefits in the public agency workforce.

Innovation

The ET program will help innovate the large landscape irrigation at the Benicia Middle School. By installing the ET system the irrigation system will be modernized and will increase the irrigation efficiency.

The ET controller system consist of solenoid valve controllers at the site and linked to a central computer programmed with software to maximize irrigation efficiency. A

weather station is also used to get daily data on evapotranspiration, wind and other factors important to irrigation efficiency. This innovative technology will be able to produce measurable reductions in irrigation water use.

Benefits and Cost

While not a large project, this project will achieve direct benefits to the Bay-Delta System. Anticipated water savings from the project will be approximately 5 acre feet a year. The majority of the water savings will be during the irrigating season, which is June through October. By reducing the demand for water during this time frame the City will not have to import as much water from the State Water Project leaving more water for instream flow during the dry season. By reducing demand on the water system more instream flow will help improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species. The reduced demand on the Bay-Delta will help improve the water quality and quantity for the environment and downstream users.

Benefits to this project will be the Bay-Delta and the Benicia Unified School District. This project is not cost effective for the City of Benicia. The water savings from the project should save 5 acre feet of water. The current price the City pays per acre foot is \$20.50. Through water savings the City will save approximately \$102. The City will also save approximately \$415 in energy cost by reducing the amount of water treated and pumped. In all it is anticipate that the project will save the City approximately \$517 a year. By reducing the water usage for the BUSD the City will also loose approximately \$4,000 in revenue in water volume charges. The City would like to proceed with this project to be good stewards of the environment by maximizing water use efficiency within its service area.

The project is benefiting the City by expanding the ET system to another large landscape. It is the City's goal to continue to expand the ET system to include all large landscapes within the City's service area. The City views the ET system as an effective method to reduce water usage during the peak water demand months.

TABLES

APPENDIX A
RESUMES

Applicant: City of Benicia

THE TABLES ARE FORMATTED WITH FORMULAS: **FILL IN THE 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) in Dollars

	Category (I)	Project Costs \$ (II)	Contingency % (ex. 5 or 10) (III)	Project Cost + Contingency \$ (IV)	Applicant Share \$ (V)	State Share Grant \$ (VI)	Life of investment (years) (VII)	Capital Recovery Factor (VIII)	Annualized Costs \$ (IX)
	Administration ¹								
	Salaries, wages	\$3,720	10	\$4,092	\$4,092	\$0	7	0.1791	\$733
	Fringe benefits	\$270	10	\$297	\$297	\$0	7	0.1791	\$53
	Supplies	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
	Equipment	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
	Consulting services	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
	Travel	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
	Other	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(a)	Total Administration Costs	\$3,990		\$4,389	\$4,389	\$0			\$786
(b)	Planning/Design/Engineering	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(c)	Equipment Purchases/Rentals/Rebates/Vouchers	\$0	0	\$0	\$0	\$0	10	0.0000	\$0
(d)	Materials/Installation/Implementation	\$30,000	10	\$33,000	\$0	\$33,000	7	0.1791	\$5,910
(e)	Implementation Verification	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(f)	Project Legal/License Fees	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(g)	Structures	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(h)	Land Purchase/Easement	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(i)	Environmental Compliance/Mitigation/Enhancement	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(j)	Construction	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(k)	Other (Specify)	\$0	0	\$0	\$0	\$0	0	0.0000	\$0
(l)	Monitoring and Assessment	\$1,860	5	\$1,953	\$1,860	\$93	7	0.1791	\$350
(m)	Report Preparation	\$1,860	5	\$1,953	\$1,860	\$93	7	0.1791	\$350
(n)	TOTAL	\$37,710		\$41,295	\$8,109	\$33,186			\$7,396
(o)	Cost Share -Percentage				20	80			

1- excludes administration O&M.

Applicant:

City of Benicia

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Table C-2: Annual Operations and Maintenance Costs

Operations (1) (I)	Maintenance (II)	Other (III)	Total (IV) (I + II + III)
\$3,000	\$1,160	\$0	\$4,160

(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)
\$7,396	\$4,160	\$11,556

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

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

Table C- 4: Capital Recovery Table (1)

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
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

(1) Based on 6% discount rate.

Applicant:

City of Benicia

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

	Qualitative Description - Required of all applicants ¹				Quantitative Benefits - where data are available ²
	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	See attached sheet	See attached sheet	7 years	See attached sheet	n/a
Local	See attached sheet	See attached sheet	7 years	Not applicable.	5 acre feet

¹ The qualitative benefits should be provided in a narrative description. Use additional sheet.

² Direct benefits are project outcomes that contribute to a CALFED objective within the Bay-Delta system during the life of the project.

³ Indirect benefits are project outcomes that help to reduce dependency on the Bay-Delta system. Indirect benefits may be realized over time.

⁴ The project benefits that can be quantified (i.e. volume of water saved or mass of constituents reduced) should be provided.

Applicant:

City of Benicia

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Table C-6 Project Annual Local Monetary Benefits

ANNUAL LOCAL BENEFITS	ANNUAL QUANTITY	UNIT OF MEASUREMENT	ANNUAL MONETARY BENEFITS
(a) Avoided Water Supply Costs (Current or Future Source)	102	dollars	\$102
(b) Avoided Energy Costs	415	dollars	\$415
(c) Avoided Waste Water Treatment Costs	0	0	\$0
(d) Avoided Labor Costs	0	0	\$0
(e) Other (describe)	0	0	\$0
(f) Total [(a) + (b) + (c) + (d) + (e)]			\$517

Table C-7 Project Local Monetary Benefits and Project Costs

(a) Total Annual Monetary Benefits [(Table C-6, row (f))]	\$517
(b) Total Annual Project Costs (Table C-3, column III)	\$11,556

Table C-8 Applicant's Cost Share and Description

Applicant's cost share %: (from Table C-1, row o, column V)	20
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.	

The cost share has been calculated based on the amount of benefit to the Bay-Delta system. Locally the project is not cost effective for the City because the avoided cost of water is only \$517 annually and the City will also be losing revenue from water sales. The City will cost share the staff salary and benefits, the cost for monitoring and assessment, and for report preparation. These measures put the City's cost share at 20%. Because the Bay-Delta will receive most of the benefits from this project it is anticipated that 80% should be funded through the grant.