

Sutter Mutual Water Company-Tisdale Positive Barrier Fish Screen and Pumping Plant

Project Information

1. Proposal Title:

Sutter Mutual Water Company-Tisdale Positive Barrier Fish Screen and Pumping Plant

2. Proposal applicants:

Max Sakato, Sutter Mutual Water Company

3. Corresponding Contact Person:

Max Sakato
Sutter Mutual Water Company
15094 Cranmore Rd PO Box: 128 Robbins, Ca 95676
530 738-4423
Xminusmax@aol.com

4. Project Keywords:

At-risk species, fish
Fish Passage/Fish Screens
Fish, Anadromous

5. Type of project:

Fish Screen

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

No

7. Topic Area:

Fish Screens

8. Type of applicant:

Private non-profit

9. Location - GIS coordinates:

Latitude: 39.029

Longitude: -121.822

Datum: WGS 84

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

The project location is near the existing Tisdale Diversion, approximately 300 yards downstream of the Tisdale Bypass at Rivermile 118.5 L (Left Bank of River looking downstream) on the Sacramento River.

10. Location - Ecozone:

3.4 Colusa to Verona

11. Location - County:

Sutter

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:

CD 03

15. Location:

California State Senate District Number: SD 04

California Assembly District Number: AD 02

16. How many years of funding are you requesting?

3 years

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: \$10,635,000

b) Do you have cost share partners already identified?

Yes

If yes, list partners and amount contributed by each:

U.S. Bureau of Reclamation \$250,000

CA State Prop 204 \$600,000

c) Do you have potential cost share partners?

Yes

If yes, list partners and amount contributed by each:

U.S. Bureau of Reclamation \$10,635,000

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

Yes

If yes, list total non-federal funds requested:

\$10,635,000

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?

Yes

If yes, identify project number(s), title(s) and CVPIA program (e.g. AFRP, AFSP, b(1) other).

00FG200155	Feasibility Study for Positive Barrier Fish Screen Facility at Tisdale Pumping Plant on the Sacramento River	CVPIA Section 3606(b)
01FG200101	Initiate Environmental Documentation and Prepare Initial Designs, Engineering Drawings, and Specifications for Construction	CVPIA Section 3606(b)

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)

Rick Wantuck National Marine Fishery Service 707/575-6063

Ron Bachman U.S. Fish and Wildlife Service 916/414-6543 ronald_bachman@fws.gov

Dan Odenweller California Department of Fish and Game 916/654-2731 dodenwel@dfg.ca.gov

Paul Raquel California Department of Fish and Game 916/227-2330 praquel@dfg.ca.gov

21. **Comments:**

17a. Overhead rate. Sutter Mutual Water Company will administer the contract at no cost to CALFED. Therefore, there is no overhead rate. 17b. The USBR provided \$250,000 for the Tisdale Positive Barrier Fish Screen Feasibility Study, the results of which form the basis of this Grant application. 17b. CA Prop 204 provided \$600,000 for the initial environmental documentation and the initial designs.

Environmental Compliance Checklist

Sutter Mutual Water Company-Tisdale Positive Barrier Fish Screen and Pumping Plant

1. CEQA or NEPA Compliance

- a) Will this project require compliance with CEQA?

Yes

- b) Will this project require compliance with NEPA?

Yes

- c) If neither CEQA or NEPA compliance is required, please explain why compliance is not required for the actions in this proposal.

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

CEQA Lead Agency: Sutter Mutual Water Company

NEPA Lead Agency (or co-lead:) U.S. Bureau of Reclamation

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

-none

NEPA

-Categorical Exclusion

☒ Environmental Assessment/FONSI

-EIS

-none

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?

No

If the CEQA/NEPA process is not complete, please describe the dates for completing draft and/or final CEQA/NEPA documents.

Data compilation and summary is complete including field surveys. Final CEQA/NEPA documentation will be complete within 1 year.

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 Required

General Plan Amendment

Specific Plan Approval

Rezone

Williamson Act Contract Cancellation

Other

STATE PERMITS AND APPROVALS

Scientific Collecting Permit

CESA Compliance: 2081 Required

CESA Compliance: NCCP

1601/03 Required

CWA 401 certification Required

Coastal Development Permit

Reclamation Board Approval Required

Notification of DPC or BCDC

Other Required

FEDERAL PERMITS AND APPROVALS

ESA Compliance Section 7 Consultation Required

ESA Compliance Section 10 Permit

Rivers and Harbors Act

CWA 404 Required

Other

PERMISSION TO ACCESS PROPERTY

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

Agency Name:

Permission to access state land.

Agency Name: State Lands Commission

Required

Permission to access federal land.

Agency Name:

Permission to access private land.

Landowner Name:

6. Comments.

Question 5 State Permits and Approvals/Other: State Lands Commission

Land Use Checklist

Sutter Mutual Water Company-Tisdale Positive Barrier Fish Screen and Pumping Plant

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?

Yes

If you answered yes to #3, please answer the following questions:

- a) How many acres of land will be subject to a land use change under the proposal?

20 acres

- b) Describe what changes will occur on the land involved in the proposal.

The land use will remain agricultural with a portion utilized for fish screen and pumping plant facilities as well as irrigation water conveyance.

- c) List current and proposed land use, zoning and general plan designations of the area subject to a land use change under the proposal.

Category	Current	Proposed (if no change, specify "none")
Land Use	Agricultural	None
Zoning	AG-General Agriculture	None
General Plan Designation	AG-20	None

- d) Is the land currently under a Williamson Act contract?

No

- e) Is the land mapped as Prime Farmland, Farmland of Statewide Importance, Unique Farmland or Farmland of Local Importance under the California Department of Conservation's Farmland Mapping and Monitoring Program?

Yes

If yes, please list classification:

Prime Farmland (P)

- f) Describe what entity or organization will manage the property and provide operations and maintenance services.**

The site of the proposed fish screen and pumping plant will be maintained and the fixed works operated by Sutter Mutual Water Company.

4. Comments.

Conflict of Interest Checklist

Sutter Mutual Water Company-Tisdale Positive Barrier Fish Screen and Pumping Plant

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):

Max Sakato, Sutter Mutual Water Company

Subcontractor(s):

Are specific subcontractors identified in this proposal? Yes

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

Rich Jenness	Laugenour & Meikle Civil Engineers
Charles Hanson	Hanson Environmental Inc.
Peter Rude	CH2M HILL
Howard Wilson	CH2M HILL
Robert Gatton	CH2M HILL
Kevin O'Brien	Downey Brand Seymour & Rohwer

Helped with proposal development:

Are there persons who helped with proposal development?

No

Comments:

Budget Summary

Sutter Mutual Water Company-Tisdale Positive Barrier Fish Screen and Pumping Plant

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	Final Environmental Documents						10,000			10000.0		10000.00
2	Design						570,000			570000.0		570000.00
3	Permits						25,000			25000.0		25000.00
4	Administrative						30,000			30000.0		30000.00
5	Construction						1,825,000			1825000.0		1825000.00
6	Services During Construction						40,000			40000.0		40000.00
		0	0.00	0.00	0.00	0.00	2500000.00	0.00	0.00	2500000.00	0.00	2500000.00

Year 2												
Task No.	Task Description	Direct Labor Hours	Salary (per year)	Benefits (per year)	Travel	Supplies & Expendables	Services or Consultants	Equipment	Other Direct Costs	Total Direct Costs	Indirect Costs	Total Cost
1	Administrative						30,000			30000.0		30000.00
2	Construction						5,550,000			5550000.0		5550000.00
3	Services During Construction						330,000			330000.0		330000.00
		0	0.00	0.00	0.00	0.00	5910000.00	0.00	0.00	5910000.00	0.00	5910000.00

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
1	Administrative						30,000			30000.0		30000.00
2	Construction						1,950,000			1950000.0		1950000.00
3	Services						120,000			120000.0		120000.00
4	Test and Monitor						125,000			125000.0		125000.00
		0	0.00	0.00	0.00	0.00	2225000.00	0.00	0.00	2225000.00	0.00	2225000.00

Grand Total=10635000.00

Comments.

The tasks listed for all 3 years will be carried out by consultants and a construction contractor hired by SMWC. The Administration Task is work carried out by Mr. Rich Jenness, long-time SMWC Engineer, and Mr. Kevin O'Brien, SMWC Attorney solely at the direction of SMWC for work associated with this project.

Budget Justification

Sutter Mutual Water Company-Tisdale Positive Barrier Fish Screen and Pumping Plant

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

Sutter Mutual Water Company will administer the contract at no cost to CALFED. Therefore, there are no direct costs.

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

Sutter Mutual Water Company will administer the contract at no cost to CALFED. Therefore, there are no direct costs.

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

Sutter Mutual Water Company will administer the contract at no cost to CALFED. Therefore, there are no direct costs.

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

Sutter Mutual Water Company will administer the contract at no cost to CALFED. Therefore, there are no direct costs.

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

Sutter Mutual Water Company will administer the contract at no cost to CALFED. Therefore, there are no direct costs.

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.

All Tasks listed below are from Form VI Budget Summary: Year 1: Tasks 1, 2, 3, 4, and 6 will be conducted by consultants. Task 5 will be conducted by a construction contractor. Year 2: Tasks 1 and 3 will be conducted by consultants. Task 2 will be conducted by a construction contractor. Year 3: Tasks 1, 3, and 4 will be conducted by consultants. Task 2 will be conducted by a construction contractor. At this time the fees per task have been estimated as a percent of construction and experience from other large capital improvement projects. The 2001 hourly rates for the six senior consultants on the project are as follows: Richard Jenness \$105/hr Charles Hanson \$120/hr Peter Rude \$137/hr Howard Wilson \$187/hr Robert Gatton \$174/hr Kevin OBrien \$225/hr

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 anticipated for purposes of Sutter Mutual Water Company project administration. All project equipment is covered in Task 5 of the Budget Summary.

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.

Project management will be done by Max Sakato, Sutter Mutual Water Company Manager and his staff, at no cost to the CALFED Grant.

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

Sutter Mutual Water Company will administer the contract at no cost to CALFED. Therefore, there are no direct costs.

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.

Sutter Mutual Water Company will administer the contract at no cost to CALFED. Therefore, there are no indirect costs.

Executive Summary

Sutter Mutual Water Company-Tisdale Positive Barrier Fish Screen and Pumping Plant

Screening Sutter Mutual Water Company's (SMWC) diversions from the Sacramento River is specifically listed in the Proposal Solicitation Package as one of the priority projects (SR-6) for this phase of funding (CALFED, 2001). The problem is that the Tisdale diversion (960 cfs) has been identified as a threat to entrainment and mortality of winter, spring, and fall-run Chinook salmon, steelhead, and other high-risk species by both State and Federal fishery agencies. The diversion is located 45 miles north of Sacramento on the Sacramento River. Project goals and objectives are to eliminate entrainment losses, while maintaining company diversions. This fish screen project will help achieve recovery of at-risk native species of fish as a step toward establishing large, self-sustaining populations of these species. Screening the Sutter Mutual Water Company's Tisdale diversion would be best accomplished by: - A new Tisdale pumping plant with a 960-cfs capacity - A positive barrier fish screen structure with vertical plate screens - Demolition/salvage of the existing Tisdale Pumping Plants Nos. 1 and 2 once the new facility is operational The general approach and schedule to implement the recommended project is provided below, with the assumption that obtaining the required level of funding is not a constraint: - Completed Feasibility Study--September 2001 - Obtain Additional Required Funding--April 2001 to June 2002 - Conduct Preliminary Design and Modeling--October 2001 to April 2002 - Conduct Environmental Documentation January 2002--August 2002 - Conduct Final Design and Permitting--May 2002 to October 2002 - Construction--November 2002 to March 2004 - Project on-line--April 2004 The total 3-year grant request is \$10,635,000 from CALFED and \$10,635,000 from USBR. This funding package provides a total construction budget of \$18,650,000 with a total program cost of \$21,270,000. This amount does not include the \$850,000 already committed to this project.

Proposal

Sutter Mutual Water Company

**Sutter Mutual Water Company-Tisdale Positive Barrier Fish Screen and
Pumping Plant**

Max Sakato, Sutter Mutual Water Company

Sutter Mutual Water Company Tisdale Positive Barrier Fish Screen and Pumping Plant

A. Project Description: Project Goals and Scope of Work

1. Problem

Sutter Mutual Water Company (SMWC) provides water to approximately 50,000 acres of agricultural lands on the east side of the Sacramento River, approximately 45 miles northwest of Sacramento, California. The Company was formed on February 5, 1919, to provide a reliable Sacramento River water supply to the area's farmers through the construction and maintenance of an irrigation system. This system has evolved to include four pumping plants at three locations on the Sacramento River and a network of 56 miles of canals and 144 miles of laterals. Major crops in the area include rice, tomatoes, melons, walnuts, vegetables, winter grains, and other field crops. The three pumping locations, listed in order of upstream to downstream, are Tisdale Pumping Plants Nos. 1 and No. 2 (combined 960-cubic-feet-per-second [cfs] capacity), State Ranch Bend Pumping Plant (128-cfs capacity), and Portuguese Bend Pumping Plant (106-cfs capacity). An overall map of SMWC boundaries and its diversions is presented on Figure 1.

SMWC is now voluntarily engaged in the Central Valley Project Improvement Act Anadromous Fish Restoration Program (CVPIA/AFRP) to screen the largest of these three diversions, and to look at actions that may include fish protection at one or both of the much smaller pumping plants. A feasibility study has been conducted by an SMWC engineering consultant to evaluate the engineering feasibility, costs, and benefits of several potential alternatives in an effort to ultimately protect fish species. In this effort to screen for the protection of species identified under the California and Federal Endangered Species Act, the Company is working with the California Department of Fish and Game (CDFG), the National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service (USFWS), and the U.S. Bureau of Reclamation (USBR) to develop fish protection solutions at SMWC's pumping plants on the Sacramento River. Fish species of concern include the winter-run and spring-run chinook salmon, steelhead, and the Sacramento splittail.

Screening Sutter Mutual Water Company's diversions from the Sacramento River is specifically listed in the Proposal Solicitation Package as one of the priority projects (SR-6) for this phase of funding (CALFED, 2001 and 2001b). SMWC has been identified as a major diverter of surface water from the Sacramento River through its Tisdale Pumping plant. The problem is the diversion has been identified as a threat to entrainment and mortality of winter, spring, and fall-run Chinook salmon, steelhead, and other high risk species by both State and Federal fishery agencies.

The most relevant past study is a feasibility study for the Tisdale Positive Barrier Fish Screen prepared by CH2M HILL, September 2001. The recommendation from the study is to replace the existing Tisdale Pumping Plant No. 1 (installed in 1919) and Pumping Plant

No. 2 (installed in 1940) by constructing a new Tisdale pumping plant and fish screen structure near the existing location. State Ranch Bend and Portuguese Bend Pumping Plants are not recommended for screening at this time.

The screening of SMWC's Tisdale diversion would best be accomplished by a project that included:

- A new Tisdale pumping plant with a 960-cfs capacity
- A positive barrier fish screen structure with vertical plate screens
- Demolition/salvage of the existing Tisdale Pumping Plants Nos. 1 and 2 once the new facility is operational

The final location of the fish screen facility must consider a range of factors related to hydraulics, sediment transport and deposition, and river geomorphology to ensure the new facility will function properly. Modeling work for these factors is proposed to be completed during the preliminary design phase so that final location and facility design criteria can be determined prior to commencing final design.

The project goals and objectives are to eliminate fish entrainment losses while maintaining company diversions by replacing the existing Tisdale Pumping Plant No. 1 and Pumping Plant No. 2, and constructing a new Tisdale Pumping Plant Fish Screen Structure near the existing location.

2. Justification

This is a Fish Screen Construction proposal. Response to Item 2 is not required in accordance with the PSP.

3. Approach

The following tasks are required to implement the recommended project as identified in the Feasibility Study (CH2M HILL, 2001):

Task 1—Preliminary Design

- Conduct topographic survey of project location
- Conduct bathymetry survey in the river
- Conduct Sacramento River water/surface profile modeling, hydraulics evaluation of structure/fish screen, sediment transport and geomorphology
- Prepare 30 percent design drawings and cost estimate
- Identify temporary and permanent construction easements
- Prepare Preliminary Design Report
- Conduct meetings as necessary with resource and funding agencies

Task 2—Final Design

- Obtain temporary and permanent construction easements
- Prepare 60 percent design drawings and cost estimate
- Prepare 90 percent design drawings, specifications, and cost estimate
- Prepare final design drawings, specifications, and cost estimate

Task 3—Permitting

The following permits would need to be obtained during the final design process, prior to construction.

- California Department of Fish and Game – Section 1601 Steambed Alteration Agreement
- California Department of Fish and Game – 2081 permit with respect to winter-run chinook salmon incidental take
- National Marine Fisheries Service—Biological Opinion with respect to winter-run chinook salmon incidental take
- U.S. Fish and Wildlife Service—Informal consultation with respect to Sacramento splittail incidental take
- U.S. Army Corps of Engineers – Section 404/Section 10 permit
- Central Valley Regional Water Quality Control Board – Section 401 Water Quality Certification (or waiver of certification) of compliance with state water quality standards
- California State Reclamation Board—Permit
- California State Lands Commission—Permit
- Sutter County—Building Permit

Environmental Documents

- NEPA (National Environmental Policy Act)
- CEQA (California Environmental Quality Act)

Task 4—Bidding Services

- Advertise for construction bids
- Issue addendums
- Conduct pre-bid meeting
- Evaluate lowest qualified bidder(s)
- Award construction contract

Task 5—Construction

- Build the proposed facilities
- Provide services during construction
- Connect proposed facility to the existing irrigation system
- Decommission old facilities

4. Feasibility

The described approach is both feasible and appropriate for this project and can be completed in the time allotted provided required funding is available in a timely fashion. Project feasibility was assessed in the *Tisdale Positive Barrier Fish Screen Feasibility Study* (CH2M HILL, 2001). The feasibility study presented 10 alternatives, which were consolidated into four general alternatives. The feasibility study also provided a preliminary implementation plan for the selected alternative. In-river construction will be carefully staged and coordinated with the appropriate agencies to minimize impacts to fish and wildlife and to avoid interruptions to agricultural water deliveries.

The following alternatives were considered to provide screening for the three diversion locations:

- Screen Existing Tisdale Pumping Plants Nos. 1 and 2
- Screen New Tisdale Pumping Plant
- Screen New Consolidated Tisdale Pumping Plant — facility would also serve State Ranch Bend and Portuguese Bend Pumping Plants
- Screen New Tisdale Pumping Plant and add a new consolidated pumping plant to serve State Ranch Bend and Portuguese Bend Pumping Plants

Criteria that were considered during the development of the alternatives included:

- Diversion requirements
- Resource agency fish screen criteria
- Fish screen structure criteria, pumping station/intake design criteria
- Internal SMWC facilities required for combined pumping plant alternatives
- Sediment deposition
- Operation issues (e.g., timing and flexibility of water delivery)
- Maintenance issues (e.g., equipment age and performance, and sediment removal)
- Costs

The selected alternative was a new screened pumping plant at Tisdale with State Ranch Bend and Portuguese Bend pumping plants remaining unscreened at this time.

It is anticipated that the fish screen would consist of 8 bays with two 20-foot-wide by 12-foot-high screens located in each bay. Although the screens would be perpendicular to flow, the bays themselves may be angled into the flow of the river for improved hydraulics within the bays. See Figures 2 and 3 for a conceptual illustration of the facilities. Each bay would be connected to a single pump. Solid panels would be located above the screens to an elevation above the high-water level. The sediment buildup directly behind the screens would be removed by use of nozzle jetting or a flushing tank. The sediment discharged from the pumps would settle into an enlarged section of the head of the Main Canal (acting in a sense as a settling basin) before entering the majority of the canal system. The enlarged portion of the upper end of the Main Canal would be constructed with soil cement so that equipment could move into the basin to remove the silt.

The New Tisdale Pumping Plant would be sized to pump 960 cfs as indicated by historical system requirements. The pumping plant would include eight, 120-cfs vertical turbine pumps (two pumps with variable speed drives) and a control building. As shown on Figures 3 and 4, the pumps would be positioned on the river side of the levee immediately adjacent to the fish screens and would pump water over the levee into the Main Canal. The advantage of this alternative is that both the screen and pumping plant could be constructed within a common coffer dam, and the discharge pipeline could be located above the 100-year flood by building up the levee. The electrical control system for the screen cleaning system would be housed in a new building.

5. Performance Measures

A monitoring program will be established in coordination with CDFG and NMFS to evaluate the effectiveness of the screen. It is anticipated that the fish screen will need to meet the following CDFG and NMFS criteria for the species of concern in this reach of the Sacramento River, which include salmonids and splittail:

- Average approach velocity (water velocity perpendicular to the screen), less than or equal to 0.33 foot per second (fps)
- Minimum sweeping velocity (water velocity parallel to the screen) of two times the approach velocity
- Exposure time (the time a fish might be exposed to the screen = length of screen ÷ sweeping velocity), less than 60 seconds – waiver may be required
- Screen slot opening size, 1.75 mm

Once the fish screen is operational, the screen will be tested using water velocity probes at the maximum diversion rate to check for compliance.

6. Data Handling and Storage

For this project, we will use a broad range of information management tools and systems. The following are general examples of the types of tools available to manage and provide access to project data:

- E-mail with file attachments (Microsoft Exchange server with Microsoft Outlook client)
- Microsoft Office suite of desktop applications (Word, Excel, Access, PowerPoint)
- Additional desktop applications (e.g., Visio, Acrobat Reader, Internet Explorer, Microsoft Project)
- Internet-deployed reference material and project/client-specific web sites

7. Expected Products/Outcomes

The expected products are the reports, design documents, and contractor documents outlined in Item 3, Approach. The final product will be a new screened pumping plant with a 960-cfs capacity that replaces the existing unscreened Tisdale Pumping Plants 1 and 2.

The outcome of this project will be a dramatic reduction in fish mortality. Estimates were calculated of the cumulative (hypothetical) entrainment loss of (1) juvenile Chinook salmon (all races); (2) Sacramento splittail; and (3) a composite list of native fish vulnerable to entrainment at the unscreened SMWC Tisdale diversions over a 20-year period (2001-2020).

Estimates of the cumulative entrainment losses were calculated assuming baseline unscreened diversion operations throughout the 20-year period (Alternative 1), and assuming installation of a positive barrier fish screen at the Tisdale Pumping Plant in 2004 (Alternative 2). It was assumed that entrainment losses after completion of a positive barrier fish screen would be reduced by 95 percent from the unscreened baseline condition. On the basis of the resulting cumulative entrainment loss over the 20-year period of operations, a percentage reduction in fish losses was calculated for each of the alternative options, including fish screening (Alternative 2) when compared to unscreened baseline conditions.

Results of the entrainment loss and percentage reduction calculations provided in Table 1 showed that the entrainment losses would be reduced by 66 percent assuming the reconstruction of the Tisdale Pumping Plant will include the installation of positive barrier fish screens (Alternative 2).

TABLE 1
Summary of Estimated (hypothetical) Fish Losses at the Sutter Mutual Water Company Tisdale Pumping Plants

Taxon	Cumulative Fish Losses		Percentage Reduction in Losses from Baseline
	Baseline (Alternative 1)	Tisdale Reconstruction (Alternative 2)	Tisdale Reconstruction (Alternative 2)
Chinook Salmon	82,260	27,721	66
Splittail	8,340	2,833	66
Composite of Selected Species	226,740	72,459	68

Notes:

Fish densities are based on average monthly entrainment monitoring data observed at the unscreened RD108 Wilkins Slough Pumping Plant during 1996, which is approximately 0.5 miles downstream.

Positive barrier fish screens are assumed to reduce fish losses by 95% from baseline conditions.

Results of these analyses show that installing a positive barrier fish screen at the Tisdale Pumping Plant offers substantial biological benefit in reducing the mortality of both migratory and resident fish species inhabiting the Sacramento River.

8. Work Schedule

The general schedule to implement the recommended project is provided below, with the assumption that obtaining the required level of funding is not a constraint:

- Completed Feasibility Study – September 2001
- Obtain Additional Required Funding – April 2001 to June 2002
- Conduct Preliminary Design and Modeling – October 2001 to April 2002
- Conduct Environmental Documentation January 2002 – August 2002
- Conduct Final Design and Permitting – May 2002 to October 2002
- Construction – November 2002 to March 2004
- Project on-line – April 2004

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

9. ERP, Science Program, and CVPIA Priorities

This project is linked directly to CALFED's Ecosystem Restoration Program (ERP) restoration priorities for the Sacramento Region. As listed on page 61 of the *ERP Draft Stage 1 Implementation Plan* and on page 29 of the *2002 ERP Proposal Solicitation*, Screening SMWC diversion from the Sacramento River, this project will result in progress towards Strategic Goal 1, At-Risk Species.

Screening the Tisdale Diversion is **specifically listed in the PSP as one of the priority projects** (SR-6) for this phase of funding (CALFED, 2001b). This fish screen project will help achieve recovery of at-risk native fish species as a step toward establishing large, self-sustaining populations of these species. This project will directly help contribute to the resolution of the conflict between protecting endangered species and providing reliable supplies of water for agriculture. This project will help achieve the recovery of the following at-risk fish species: all runs of chinook salmon, steelhead trout, and Sacramento splittail. In addition to the above-mentioned, at-risk species, this project will also contribute to the goal of doubling the other anadromous fish named in the Central Valley Improvement Act (CVPIA), specifically, white and green sturgeon, American shad, and striped bass.

The successful downstream migration season for juvenile chinook salmon depends on weather and water temperatures among other factors. Some of the migration periods coincide with the normal season for irrigation water diversion at SMWC. Construction of the new Tisdale pumping facility and fish screen meeting federal and state agencies' design criteria will protect fish species by eliminating the entrainment of juvenile fish into the pump intakes during their migration and protecting the fish from predators in the area of the diversion and screen facilities.

Construction of a new screened pumping facility is consistent with the identified stressors and priorities for project funding by CALFED. The prevention of entrainment of at-risk fish species will result in a significant improvement in the aquatic habitat of the Sacramento River and Bay-Delta system. In addition, the project will assure a reliable supply of water to agriculture, which also provides significant migratory waterfowl wetland habitat.

2. Relationship to Other Ecosystem Restoration Projects

This project has been discussed and coordinated with the USFWS and USBR under the Central Valley Project Improvement Act Anadromous Fish Screen Program (CVPIA/AFSP). Discussions and consultation have also been held with the NMFS and CDFG in terms of their respective fish screen project development and regulatory programs. The project permitting, design, and construction will be performed in consultation and coordination with the technical team and regulatory agencies designated in the CVPIA/AFSP.

3. Requests for Next-phase Funding

This is not an application for next-phase funding.

4. Previous Recipients of CALFED Program or CVPIA Funding

SMWC has not received any previous CALFED funding. SMWC has received a grant of up to \$250,000 from the Bureau of Reclamation (CVPIA) for conducting a fish screen feasibility study as documented in the Feasibility Study (CH2M HILL, 2001). SMWC recently received \$600,000 from California State Proposition 204 funding to initiate environmental documentation and design work.

5. Systemwide Ecosystem Benefits

This project will enhance the protected fish passage area on the Sacramento River. This project will help achieve CALFED and CVPIA objectives by helping to improve the aquatic environment of several fish species, while concurrently providing needed water supply for the applicant. This project provides synergistic Sacramento River system benefits by allowing more fish to reach the upstream restoration projects now implemented or planned for the future. The project will not conflict with CALFED non-ecosystem objectives, such as water quality for in-stream and Delta flows, but may benefit water supply reliability for the applicant as it will reduce the entrainment of fish at the diversion facility. No impacts to third parties are anticipated.

6. Additional Information for Proposals Containing Land Acquisition

The proposed project, as presented here and identified in the Feasibility Study (CH2M HILL, 2001), could be built on land already owned by SMWC. Approximately 20 acres would be required. However, the precise amount of land and its location will not be known until mid-way through design.

C. Qualifications

SMWC has an extensive history of successfully implementing large, complex capital improvements with the cooperation and funding support of state and federal agencies. The

Company is currently working with the CDFG, the NMFS, the USFWS, and the USBR to develop solutions to prevent the entrainment of fish at the Company's pumping locations on the Sacramento River. SMWC's General Manager, Max Sakato, will be the project manager. He will be assisted by Rich Jenness of Laugenour & Meikle Civil Engineers, the Company's Engineer. Dr. Charles Hanson/Hanson Environmental will be the senior fishery biologist and environmental permit coordinator. In addition, they will be assisted by pumping plant/fish screen engineers Peter Rude/CH2M HILL, Howard Wilson/CH2M HILL, and Robert Gattton/CH2M HILL. Kevin O'Brien of Downey, Brand, Seymour & Rohwer is the Company's legal counsel. Following are brief biographical sketches of the principal participants.

Max Sakato, General Manager

Mr. Sakato is the General Manager for Sutter Mutual Water Company. He has served in this position for more than 11 years. In this capacity, he is responsible for irrigation operations and administration for a 50,000-acre private water purveyor along the Sacramento River in Sutter County. He has extensive knowledge and experience dealing with water-related issues concerning the Sacramento Valley and the State. He is also General Manager for Reclamation District No. 1500, responsible for the flood control and drainage operations and activities of this 70,000-acre Special District located along the Sacramento River. Additionally, Mr. Sakato has extensive corporate managerial and executive experience. He was a lead manager for 12 years in agricultural- and natural resource-related businesses while employed by a Fortune 500 company based in San Francisco. Prior to that, he was an area agricultural manager for a large food product and processing firm.

Richard Jenness, P.E., District Engineer

Mr. Jenness is a Registered Civil Engineer in the State of California, Consulting Engineer for the Sutter Mutual Water Company, and President of Laugenour & Meikle, Civil Engineers. Mr. Jenness has more than 30 years experience in the planning, design, and construction of water resource projects. He has been involved with planning and has designed fish guidance facilities on the Sacramento River and has been responsible for preparation of fish screen appraisal studies and assists in project management of fish screen projects, including the 830-cfs Wilkins Slough Positive Barrier Fish Screen Project at RD 108.

Mr. Jenness will work on behalf of Sutter Mutual Water Company in reviewing the design, engineering drawings, and specifications for construction.

Charles Hanson, Ph.D., Senior Fishery Biologist

Dr. Hanson has more than 25 years of experience in freshwater and marine biological studies and is the Senior Biologist, Principal for Hanson Environmental, Inc. Dr. Hanson has been the senior fishery biologist and environmental permit coordinator for the SMWC 960-cfs Tisdale Positive Barrier Fish Screen and Pump Station Feasibility Study, the RD 108 830-cfs Wilkins Slough Positive Barrier Fish Screen, and RD 108's Fish Screen Reconnaissance Investigation.

Dr. Hanson has contributed to the study design, analysis, and interpretation of fisheries, stream habitat, and stream flow (hydraulic) data collected in the evaluation of in-stream flow

requirements and potential fishery impacts on salmonid spawning, production, survival, and migration success associated with water project development and operations. Dr. Hanson has conducted site-specific evaluations of the effectiveness of various water diversion screening systems, passage facilities, and operational modifications in reducing organism losses while maintaining operational reliability of the system. Dr. Hanson has been extensively involved in incidental take monitoring and investigations of endangered species, development of recovery plans, consultations, and preparation of aquatic Habitat Conservation Plans. Dr. Hanson has also participated in the development of adaptive management programs including real-time monitoring and management of power plant cooling water and other diversion operations, and the San Joaquin River Vernalis Adaptive Management Plan (VAMP).

Peter Rude, P.E., Project Manager

Mr. Rude has more than 14 years of experience as an agricultural/civil engineer. He is responsible for managing multidiscipline teams for a variety of fish screen, irrigation, agricultural water supply, water reclamation, and watershed management projects.

For Sutter Mutual Water Company, Mr. Rude has been the project manager for the 960-cfs Tisdale Positive Barrier Fish Screen and Pump Station Feasibility Study. Mr. Rude was the design manager for a 10-month, fast-track effort from preliminary design through award of construction contract for RD 108's 830-cfs Wilkins Slough Positive Barrier Fish Screen Project. He managed the construction effort and subsequent hydraulic monitoring and sediment removal facility design. He has been the project manager for the RD 108 Fish Screen Reconnaissance Investigation. For Tulare Irrigation District, Mr. Rude was the project manager for design, environmental documentation and permitting support, contract documents, bid services, and construction management for lining 9.7 miles of the Main Intake Canal. Final design drawings, technical specifications, engineering cost estimates, and bidding documents were submitted on time and within budget.

Howard Wilson, P.E., Senior Consultant

Mr. Wilson possesses more than 34 years of engineering experience, including project management and lead design experience on large fish screens and agricultural water conveyance systems.

Mr. Wilson is the senior consultant for the SMWC Tisdale Positive Barrier Fish Screen Feasibility Study. Mr. Wilson managed the design of Glenn-Colusa Irrigation District's (GCID) 450-foot-long flat-plate interim fish screen and served as the District's project manager for elements of the 3,000-cfs "final solution" screen extension project for which the District was responsible. He is also a senior consultant for the RD 108 Fish Screen Reconnaissance Investigation. Mr. Wilson was senior consultant for the feasibility study, alternatives analysis, agency and stakeholder coordination, and design of the 830-cfs flat-plate, wedge-wire Wilkins Slough Positive Barrier Fish Screen for RD 108. Mr. Wilson managed preliminary design of the M&T Ranch pump station relocation and fish screens. He recommended submerged cylindrical screens with an automated cleaning system because this design best met the applicable standards and site-specific conditions. He also managed design of the 200-cfs Crooked River pumping facility and fish screens for the North Unit Irrigation District on the Deschutes River. Other fish screen designs include the Westpac

Utilities Orr Ditch diversion of the Truckee River, Nevada; Clear Lake intake for the Geysers Water Supply Project, Lake County; and the Yakima-Tieton Irrigation Company intake screens, Yakima, Washington.

Bob Gatton, P.E., Senior Consultant

Mr. Gatton has 29 years of engineering experience, specializing in fish screening, passage, and hatchery facilities. He has managed or provided senior consultant services for some of the largest fish passage projects in the Sacramento Valley and Pacific Northwest.

Mr. Gatton has been a senior consultant for the SMWC Tisdale Positive Barrier Fish Screen Feasibility Study. He also was the Project Manager for the design of Reclamation District No. 108's 830-cfs Wilkins Slough Positive Barrier Fish Screen, which was constructed with no water delivery interruptions and minimal fish impacts. He was senior consultant for the feasibility study, environmental documentation and permitting, design, and construction of Anderson Cottonwood Irrigation District's (ACID) Sacramento River Fish Passage Improvement Project in Redding. The project involved a 450-cfs fish screen and two fish ladders at the ACID Diversion Dam. Mr. Gatton was senior reviewer for GCID's fish screen extension and is currently helping to develop the Fish Passage Improvement Project at the Red Bluff Diversion Dam for Tehama-Colusa Canal Authority (TCCA). His major Pacific Northwest fish screen projects include 2,000-cfs and 5,000-cfs screens at the Rocky Reach Dam on the Columbia River, 800-cfs screens at Yelm Hydropower plant and North Shore Dalles Hydro plant, and the 210-cfs Dryden Canal fish screens.

D. Cost

1. Budget

The Sutter Mutual Water Company estimates a total need of \$5,000,000 for FY 2002 (October 1, 2001 through September 30, 2002) as follows:

• Final Environmental Documentation	\$20,000
• Final Design and Specifications	\$1,140,000
• Permitting	\$50,000
• Administration	\$60,000
• Construction	\$3,650,000
• Services During Construction	<u>\$ 80,000</u>
Total	\$5,000,000
(\$2,500,000 CALFED, \$2,500,000 USBR)	

The Company estimates a total need of \$11,820,000 for FY 2003 (October 1, 2002 through September 30, 2003) as follows:

• Administration	\$60,000
• Construction	\$11,100,000
• Services During Construction	<u>\$660,000</u>
Total	\$11,820,000
	(\$5,910,000 CALFED, \$5,910,000 USBR)

The Company estimates a total need of \$4,450,000 for FY 2004 (October 1, 2003 through September 30, 2004) as follows:

• Administration	\$60,000
• Construction	\$3,900,000
• Services During Construction	\$240,000
• Testing and Monitoring	<u>\$250,000</u>
Total	\$4,450,000
	(\$2,225,000 CALFED, \$2,225,000 USBR)

The total 3-year grant request is \$10,635,000 from CALFED and \$10,635,000 from USBR. This funding package provides a total construction budget of \$18,650,000 with a total program cost of \$21,270,000. This amount does not include the \$850,000 already committed to this project.

2. Cost-sharing

The Federal cost share through the USBR is expected to be 50 percent of the total cost. The total federal cash commitment through FY 2002 is estimated to be \$2,750,000. The remaining funding needs are expected to be acquired through State sources including CALFED. The balance of funding for FY 2003 through FY 2004 will be 50 percent federal and 50 percent from State sources.

E. Local Involvement

Our approach involves working with SMWC landowners, the public, and affected agencies, thereby maximizing project success and minimizing any surprises to decisionmakers. Development of the project is proceeding with regular participation and input from the USBR, USFWS, CDFG, and NMFS. Public meetings have been held and the project appears to have public support.

F. Compliance with Standard Terms and Conditions

Sutter Mutual Water Company will comply with the standard terms and conditions specified in the proposal solicitation package.

G. Literature Cited

CALFED. 2001a. Ecosystem Restoration Program *Draft Stage 1 Implementation Plan*. August.

CALFED. 200b. Ecosystem Restoration Program, Proposal Solicitation Package, August.

CH2M HILL. 2001. *Sutter Mutual Water Company Tisdale Positive Barrier Fish Screen Feasibility Study*, September.



Sutter County Public Works Department



Robert E. Barrett, Director
George Musallam, Asst. Director

(530) 822-7450, FAX (530) 822-7457
1160 Civic Center Blvd., Yuba City, CA 95993

September 10, 2001

SEP 14 2001

R. D. #1500

TO WHOM IT MAY CONCERN:

Sutter Mutual Water Company, a private water company located in southern Sutter County along the Sacramento River, has been identified as a major diverter of surface water from the Sacramento River through its Tisdale Pumping Plant. This diversion has been identified as a potential threat to entrainment and mortality of winter, spring, and fall-run Chinook salmon, steelhead trout, and other high-risk species by both State and Federal fishery agencies.

The Company is completing a fish screen feasibility study concerning its Tisdale Pumping Plant location on the Sacramento River near the Tisdale Weir. This site is the last major unscreened diversion on the Sacramento River and, thus, a priority project for the California Department of Fish and Game, CALFED, U.S. Fish and Wildlife Service, and the U.S. Bureau of Reclamation. The feasibility study, funded by the U.S. Bureau of Reclamation, is scheduled for completion by September or October 2001. Upon completion and acceptance of the study, modeling, final design, permitting, environmental documentation, and pre-construction engineering will follow in 2002 and should be completed by the fall of 2003, with the project constructed and operational by the fall of 2004 or spring of 2005.

If funded and constructed in a timely way, this fish screen project will improve water supply infrastructure and efficiencies for local farmers and water users. **Sutter County supports this project and feels it represents the best efforts and interests of the local community working with State and Federal agencies to provide state-of-the-art fishery protection in conjunction with efficient water delivery to meet agricultural and human needs for the County area.**

Sincerely,

ROBERT E. BARRETT
PUBLIC WORKS DIRECTOR

REB:jah
402-SMWC
cc: Sutter Mutual Water Company

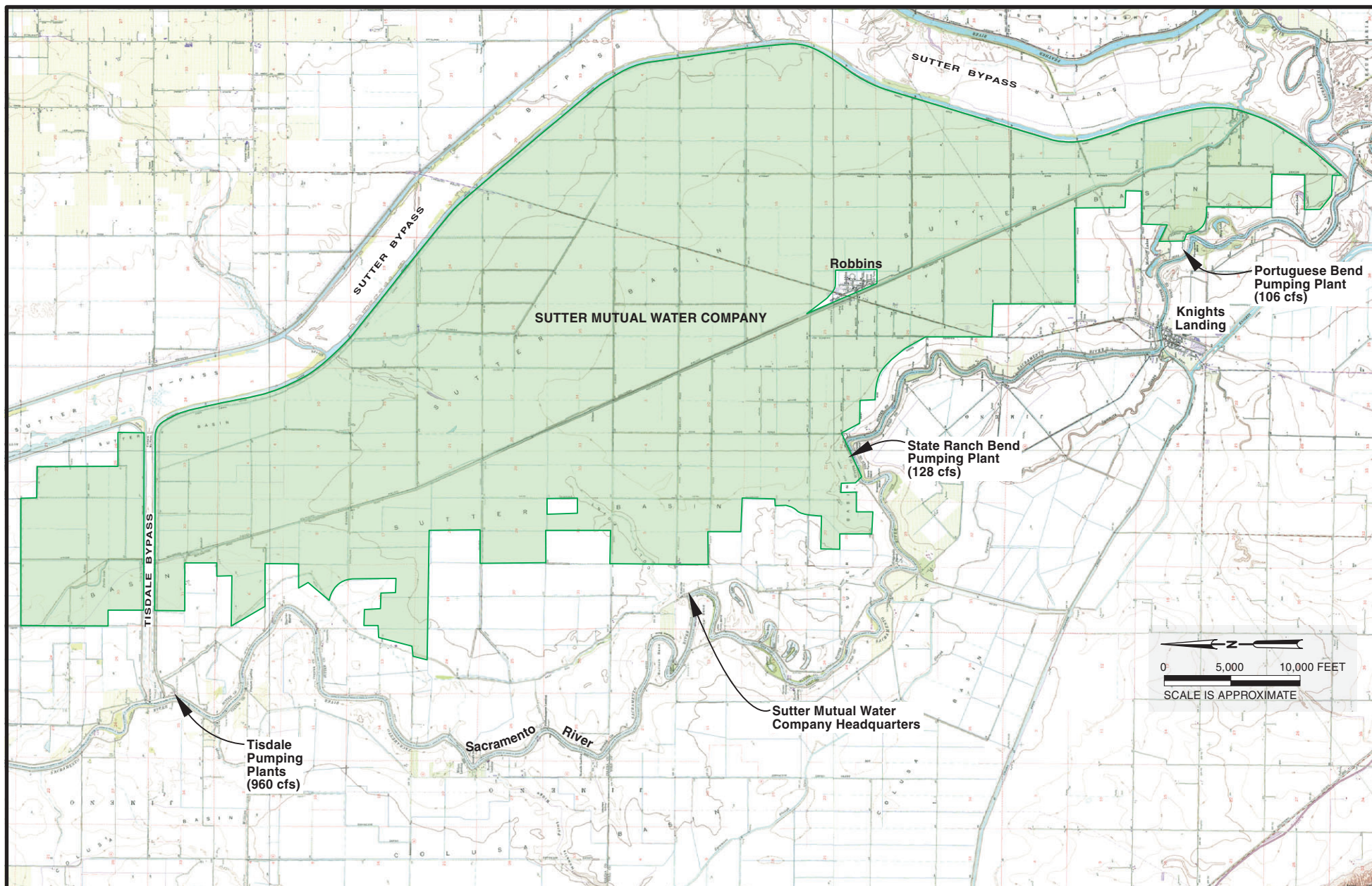
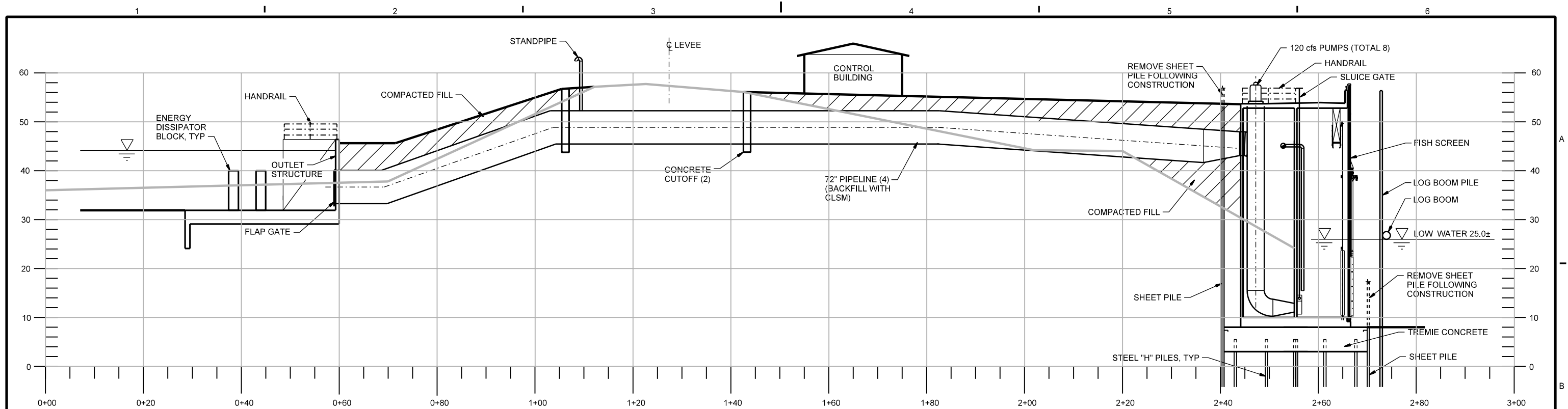


FIGURE 1
SUTTER MUTUAL WATER
COMPANY BOUNDARY MAP
CH2MHILL



DSGN	H. WILSON				
DR	E. McClelland				
CHK	P. RUDE				
APVD	X	NO.	DATE	REVISION	BY
					APVD

VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 0 1"
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.



CH2MHILL

SUTTER MUTUAL WATER COMPANY
 ROBBINS, CALIFORNIA
 FISH SCREEN FEASIBILITY REPORT

FIGURE 3
NEW TISDALE PUMPING PLANT
OVERALL SECTION

SHEET	
DWG NO.	
DATE	AUGUST 2001
PROJ NO.	163208.FS.AL

14:16:52

25-SEP-2001

3208c010.dlv

PRELIMINARY

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