ERP DIRECTED ACTIONS

SACRAMENTO VALLEY FISH SCREEN PROGRAM

For

FISH SCREEN INSTALLATIONS
And
PILOT BIOLOGICAL ASSESSMENTS

Reference
Ecosystem Restoration Program
Prop 84 Bond Funded
Project No. DFG ERP-07D-S08

Prepared by:
Family Water Alliance
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PART A. Cover Sheet

A1. Proposal Title: Sacramento Valley Fish Screen Program

A2. Lead Applicant or Organization: Family Water Alliance (FWA)

Contact Name: Susan A. Sutton
Address: P.O. Box 365, Maxwell, CA 95955
Phone Number: (530) 438-2026
Fax Number: (530) 438-2940
E-mail: susansutton@frontiernet.net

A3. Project Manager or Principal Investigator

Contact Name: Susan A. Sutton
Address: P.O. Box 365, Maxwell, CA 95955
Phone Number: (530) 438-2026
Fax Number: (530) 438-2940
E-mail: susansutton@frontiernet.net

A4. Cost of Project: $ 9,051,272 / 3-Year Plan

The total cost of the 3-year program including all design, permitting, biological assessments, construction, and post-construction testing is estimated to be $ 9,051.272. Fifty percent (50%) of this total or $ 4,525,636 is being requested from CBDA. The remaining fifty percent (50%) of the funding is to be provided by the Bureau of Reclamation, subject to annual appropriations. Approximately $1 million of federal funding is anticipated to be obligated in FY 2007 with the remainder expected to occur in subsequent years (FY 2008, FY 2009, and FY 2010).

A5. Cost Share Partners: 50% Federal Match

Bureau of Reclamation
Contact Name: Dan Meier
2800 Cottage Way, MP-410, Sacramento, CA 95825-1898
(916) 978-5264
(916) 978-5290 Fax
dmeier@mp.usbr.gov

A6. List of Subcontractors:

1. Intake Screens, Inc. (ISI)
   Russ Berry, III
   8417 River Road, Sacramento, CA 95832
   (916) 665-2727
   (916) 665-2729 Fax
   screens@citlink.net

   Tasks: Each project will include: 1) preliminary design of fish screen system, including screen retrieval system, site specific supports, automated brush cleaning intake screen, and control panel; 2) screen design, retrieval system, piling modifications, pump supports, and docking inlet (i.e. connection to pump intake), as necessary; 3) purchase materials for the manufacture and construction of screen, retrievable track system, docking inlet, pump

supports, and control system; 4) site and pump preparation, to include; the following if required: Trim existing pilings, installation of new pump supports, and modification of pump inlet for installation of new docking inlet with trash rack; 5) Installation of intake screen and control system; 6) testing of system; 7) monthly observation and adjustment of system for a period of one-year following installation.

Screen design will meet all screening criteria as set forth by the California Dept. of Fish and Game, National Marine Fisheries Service, and U.S. Fish and Wildlife as applicable. Design approvals will be made by FWA, MBK, and the Anadromous Fish Screen Program (AFSP).

2. MBK Engineers (MBK)
   Don Trieu
   2450 Alhambra Blvd., 2nd Floor, Sacramento, CA 95817
   (916) 456-4400
   (916) 456-0253
   dtrieu@mbkengineers.com

   Tasks: Contracted amount assumes up to two (2) sites for year one (1), and up to six (6) sites per year for a period of two (2) years. Engineering will include site reviews and selection, fish screen designs and reviews, construction inspections, in-the-dry inspections, engineering reporting, and communications; permit assistance, as needed.

   MBK will: 1) evaluate sites for engineering ease, feasibility, and installation of screen systems; 2) review preliminary engineering design and approve screen designs prior to payment of milestone construction phases; 3) review final designs and approve for construction installations; 4) reviews designs to assure that the conform with state and federal fish screening criteria; 5) inspect screens in the "dry" at the ISI shop site; 6) inspect overall construction and sites; 7) approve and sign-off as-built screen designs and O&M Manuals; 8) submit reports to the FWA FSP, as requested; 9) will be available for presentations, if required; 10) assist in the development of final reports to funding agencies by FWA.

3. Natural Resource Scientists, Inc. (NRSI)
   David A. Vogel
   P.O. Box 1210, Red Bluff, CA 96080
   (530) 527-9587 x 11
   (530) 527-6181 fax
   dvogel@resourcescientists.com

   Tasks: Natural Resource Scientists, Inc. (NRSI) will conduct the Pilot Biological Assessment (PBA) of this proposed project, which is anticipated to take place from April 1 through August 31, per year for up to three (3) years, to include samplings, daily fyke net checks, flow measuring, provide technical report at end of monitoring seasons describing methods and results.

   NRSI will: 1) write and submit "An Endangered Species Action Section 10 permit application to NMFS for approvals; 2) provide sampling stations at irrigation intake outfalls will be established at approximately two (2) sites for year one and up to six (6) sites per year in years two and three; 3) conduct fish sampling at each diversion outfall, which will be

performed continuously for approximately seven days each week; 4) will sample fish which will have already been diverted out of the river through irrigation pumps; 5) may provide rectangular ¼-inch mesh fyke nets to collect the fish already entrained into diversion canals; 6) will check Fyke nets once daily at each site; 7) will identify dead or moribund fish collected as to species, enumerated, measured for length, and the carcasses put back into the canals (if desired by the fishery resource agencies, specimens will be preserved and to the extent practicable, any captured live listed species will be immediately returned to the river); 8) measure flows filtered by each net with General Oceanics flow meters; and 9) will provide a technical report on the pilot fish sampling program at the end of each monitoring season describing methods and results, including all summarized data.

A7. Other Cooperators:

CVPIA Anadromous Fish Screen Program (AFSP)
Contacts: Cesar Blanco, U. S. Fish and Wildlife Service
Dan Meier, Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825-1898
(916) 414-6600 (Cesar)
Cesar_Blanco@fws.gov
(916) 978-5264 (Dan)
dmeier@mp.usbr.gov

A8. Project Topic Area

Primary: Fish Screens
Secondary: NA

A9. Project Type

Primary: Full-scale Implementation
Secondary: Pilot/Demonstration and Monitoring

PART B. Executive Summary

B1. Proposal Title: Sacramento Valley Fish Screen Program

B2. Project Description:

Family Water Alliance (FWA), in partnership with the Anadromous Fish Screen Program (AFSP), has developed a proposed 3-year Fish Screen Program that would contain the following key elements:

- The FWA will oversee and manage the development, design, manufacturing, and installation of retrievable cylindrical fish screen systems on various diversions located on the Sacramento River and its tributaries. The work will occur with oversight by the AFSP, which is a U. S. Department of Interior fish screening program jointly administered by the Fish and Wildlife Service and the Bureau of Reclamation.
- Diversions will be screened using a team of professionals with a proven track record of cost effective fish screening and biological assessments in the Sacramento Valley.

- Diversions to be screened will be selected by the AFSP based on relevant information including the size and location of the diversion, potential for biological assessments, and the voluntary participation of the diverter. Diversion sizes are anticipated to be between 20 cfs and 150 cfs. Up to 300 cfs is expected to be screened per year under this 3-year effort.
- Diversions will be screened using cylindrical screen technology.
- Biological assessments of fish losses will be conducted at diversions prior to installation of the fish screens, where practical. A range of diversion sizes and locations will be selected in order to obtain the most useful scientific data.
- It is inherent in this program that any diverter who participates in the Pilot Biological Assessment (BPA) will be provided a fish screen.

This program will provide the following benefits:

- Installation of fish screens using cylindrical screen technology provides the most cost-effective method of reducing fish entrainment at diversions that meets State and Federal fish screening criteria.
- Cylindrical screen projects will include application to larger sized diversions (over 100 cfs), which will help advance the use of this cost-effective technology for larger diversions.
- The biological assessment information will be useful in determining the relative benefits of fish screening efforts and establishing where fish screening efforts should be prioritized.

State funding is essential for implementation of the FWA Fish Screen Program (FSP). Federal funding provided by the AFSP requires at least a fifty-percent (50%) non-federal cost share match. Without a non-federal cost share from CBDA, this program is not expected to go forward.

PART C. Work Plan

C1. Project Background and Information:

Past Fish Screening Efforts

Screening of agricultural diversions has been a common practice in recent years in order to conserve and restore populations of anadromous fishes in the Central Valley of California. Fish screens contribute to the overall restoration of anadromous fisheries by protecting juvenile fish from entrainment at these diversions. Protecting fish from entrainment enhances anadromous fish out-migrant success, thereby indirectly enhancing the sport and commercial harvest of these species and the number of returning fish to the rivers.

Fish screening efforts have been focused on protecting winter, spring, fall and late-fall runs of Chinook salmon, as they migrate down the Sacramento River. Traditionally, some of the largest runs of Chinook salmon of any west coast river system have been produced in the Sacramento River. However, over recent years there has been a significant decline in winter-run, spring-run, fall-run Chinook salmon and steelhead stocks to the point that under state and federal law the winter-run has been listed as *Endangered*, the Spring-run has been listed as *Threatened*, and the Fall-run is currently a *Candidate* species for listing, as well as steelhead. In addition, there has been a substantial reduction in the population of the Delta smelt, which has currently been listed as *Threatened*.

There are over 3,400 diversions on the Sacramento and San Joaquin Rivers, their tributaries, the Delta and the Suisun Marsh. Currently, there are approximately 2,200 agricultural diversions in the Sacramento-San Joaquin Delta, over 700 in the Sacramento River system and 150 in the San Joaquin River system, and 370 in the Suisun Marsh. Approximately 98.5% of these diversions are "either unscreened or screened insufficiently to prevent fish entrainment" (Herren and Kawasaki, 2001, P. 343). About three-quarters of these diversions are less that 50 cfs in size. In general, the larger the diversion, the more likely it is to be screened. About 62% of the diversions with maximum intake capacity of over 250 cfs are screened, 37% of the diversions with a capacity of over 100 cfs are screened, but only about 12% with a capacity of less than 100 cfs are screened (D, White, NOAA Fisheries, pers. Comm.., 2003, as cited in Moyle and Israel 2005).

Under both CALFED and the Central Valley Project Improvement Act (CVPIA) there have been significant efforts to screen agricultural diversions in the Central Valley and the Sacramento-San Joaquin Delta, particularly the larger unscreened diversions (over 250 cfs) on the Sacramento River. There are many small and moderate sized agricultural diversions (under 250 cfs) that remain unscreened.

Family Water Alliance Fish Screen Program (FWA FSP)

Family Water Alliance (FWA) is a 501(c)3 non-profit corporation established in 1991. In 1996, FWA participated in the initiation of the Sacramento River Small Diversion Fish Screen Program (FSP), and has been a driving force in the screening of agricultural diversions on the Sacramento River, and its tributaries. The FWA FSP has been the program manager in cooperation with several state and federal agencies and private contributors, in spearheading research, development and installation of cylindrical fish screens on agricultural diversion.

The FWA FSP has maximized the funds it has received thus far by prudent management and economies of scale. For example, in a 2001 CALFED grant, the FWA FSP was able to double the number of diversions to be screened from 5 to 11, without changing the scope, timeline, or funding amount. Each screening project requires particular modifications and analysis to assure the screen effectively prohibits the taking of any fish. The FWA FSP has obtained invaluable knowledge and technical expertise in this field, enabling the FWA FSP to effectively, efficiently, and successfully screen small diversions. To date, twenty-two (22) projects have been completed. Two additional projects will be completed in the fall of 2007. These projects represent the cumulative screening of 563 cubic feet per second (cfs).

Pilot Biological Assessments

A key question for the CALFED Bay-Delta Program and the AFSP is: "Which of the remaining unscreened diversions should be screened to protect and restore anadromous salmonids?" Since fish screen projects compete for scarce available funding for fish and wildlife restoration projects, it is critical to evaluate the benefits that could occur with additional fish screens. It is known that there are diminishing fishery benefits as the larger diversions are screened, and that at a certain point the limited fish restoration dollars are better spent on other fish protection and restoration activities.

There are many small- and moderate-sized agricultural diversions remaining unscreened and those diversions have an unknown level of impact on anadromous salmonids. Due to the high degree of variation in the design, operation, and site-specific characteristics of these diversions, the potential magnitude of impact to fishery resources for any given diversion is likely to be highly variable. Consequently, there is a critical need to evaluate unscreened diversions to determine how to prioritize

diversions for future screening (e.g., diversion size, location, timing of diversions, fish habitat and hydraulic characteristics in the vicinity of the diversion, and other site-specific variables).
The proposed biological assessments of unscreened diversions would be focused on the Sacramento River because most of the largest unscreened diversions are on the Sacramento River. According to the California Department of Fish and Game's (CDFG) water diversion database (2004), there are approximately twenty (20) known unscreened diversions between 100 and 200 cfs in size. In addition, there are many diversions under 100 cfs or of unknown size located on the Sacramento River. Smaller unscreened diversions may collectively be responsible for a significant number of fish mortalities. This proposed pilot evaluation of unscreened diversions is needed because of the lack of data on fish losses at existing unscreened diversions.

The objective of the biological assessments is to quantify site-specific characteristics of diversions that may affect fish entrainment. The goal of this proposal is to develop and apply field-based criteria for rating or ranking unscreened agricultural diversions, in order to help develop criteria for prioritizing future fish screening efforts and funding.

The FWA FSP, using their unique position with local communities, will work with the AFSP to identify landowners and water diverters to continue its efforts to screen diversions; while at the same time develop a Pilot Biological Assessment.

C2. Project Goals and Objectives:
The National Marine Fisheries Service (NMFS) considers fish screening an essential element of a successful recovery program for California's threatened and endangered fish species. Thus, the overall project goal is to eliminate entrainment mortality of juvenile fish species on river diversions by installing state-of-the-art, retractable, self-cleaning fish screens.

This screening project will contribute to CALFED's goal of screening 25% of all smaller unscreened diversions (CALFED ERP Stage 1 Milestone No. 72).

The short-term objective is to install fish screen systems on water diversion sites among prospective candidates recruited by the FWA FSP, as to initiate a Pilot Biological Assessment.

C3. Approach/Methodology:
Landowner interest in participating in the FWA FSP has grown immensely due to the effectiveness of FWA's outreach program and their proven track record. The approach of this project starts with the AFSP, working with FWA, to identify potential landowners whose diversion may fit the assessment for continued screening. Part of the continued screening efforts may include biological assessments of entrainment. Each site under the program will undergo a site inspection and evaluation by the FWA FSP, AFSP, MBK Engineers, ISI, and cooperating agencies. Each site will be ranked for the following: 1) engineering ease; 2) environmental considerations and permitting ease; 3) site access, pump and pipe conditions, etc. and potential applications to the Pilot Biological Assessment. Sites that rank highest on the above specifications are then selected to be screened under the FWA FSP.

After selection Intake Screens, Inc. (ISI), will start planning and design review on a fish screen to meet site-specific conditions. Simultaneously, if a site is selected for screening and fits the criteria for Pilot Biological Assessment, Natural Resource Scientist, Inc. (NRSI) will establish the protocol and begin biological assessments for the pilot project.

NRSI will obtain necessary permitting for assessments. The FWA FSP will obtain the necessary environmental permits on behalf of the landowner (s) for installation of the fish screen systems. BOR will submit federal permits as the lead agency (NEPA/FESA/NHPA).

MBK Engineers will provide construction inspections during the fabrication and during installation. After successful installation of a project, ISI will provide as-built drawings to MBK Engineers for approvals, as well as developing an operations checklist, and Operation and Maintenance manuals.

More than one site may be in the planning, design and/or installation phase at any one time. ISI will monitor completed diversion sites for at least one year, and/or an irrigation season, and will provide information as to the success of each screen system, and provide the basis for any repairs or system adjustments.

Biological assessment reports will be prepared by NRSI and reviewed by FWA FSP in conjunction with AFSP. Not only will the Pilot Biological Assessment be reviewed, but also the actual process by which the study was conducted, thus assuring that landowner's rights are not compromised.

Throughout each project, participating landowners will receive technical, educational, and financial assistance in all phases of screening. This includes planning and design of screens, obtaining necessary local, state and federal permits, construction, installation, monitoring, and funding. The fish screen portion of the project will consist of three distinct phases: 1) pre-project planning, conceptual design, and organization; 2) custom manufacturing, installation, and operations; and 3) post-installation evaluation and further refinements performed by ISI.

C4. Tasks and Deliverables:

- **Task 1.** Program Management & Administration - FWA to provide all administrative services associated with performing and completing the work for this project. All administrative tasks shall include: project management, budgeting, scheduling, coordination, report preparation, invoicing, data collection, subcontractor management, overall program outreach, grant fund accounting and reconciliations, and all other tasks that may be necessary to complete the scope of work specified for this project. FWA will oversee all tasks performed under this project and work to assure that they are completed within budget, on schedule, and in accordance with approved procedures, applicable laws, and regulations. Progress reports shall detail work accomplished, discuss any problems encountered, and recommend potential solutions to those problems; detail costs incurred during the subject quarter and outline upcoming work scheduled for subsequent periods may also be provided. FWA will coordinate and facilitate program activities with state and federal agencies, and other partners, as deemed necessary.

    - **Subtask 1.1: Program Administration Management, Coordination and Oversight of Overall Program**

      FWA, and its partners, will identify landowners with river diversions willing to have fish screens installed through field contacts, etc. FWA will serve as contracting officers for construction projects with landowners. FWA and MBK will oversee field and construction operations. FWA will oversee quality control and direction to all staff and subcontractor members of project team. FWA will serve as the liaison with landowners. MBK and ISI will supply support documents to FWA for incorporation into reports. FWA will compile a final program-wide report (with assistance from MBK and ISI). FWA will be the clearinghouse

for information and data gathered during the life of the program. FWA will contract with its subcontractors to accomplish the overall project.

- **Subtask 1.2: Travel**

  Travel will be required by Subtask 1.1 personnel, Program Manager and Project Coordinator, to efficiently perform their work under this project. Rates for travel are set at the rate specified by the Department of Personnel Administration for employees. Copies of all records for auditing purposes may include: mileage; airline tickets or ticketless itinerary with total charge; lodging receipts showing name, rate, tax and form of payment; vehicle rental agreement; receipts for gas, meals, etc. if required to perform Task 1 Program Management & Administration.

- **Subtask 1. 3: Accounting**

  FWA to complete monthly grant accounting to include payroll, expenses, landowner payments, grantor billing/payment summaries, budgeting, etc. An outside CPA will complete accounting reconciliation's and adjustments to fund accounting, and tax preparation, as needed.

  A qualified CPA may perform a yearly or programmatic audit in compliance with OMB Circular No. A-133, Subpart B -- Audits.

- **Subtask 1.4: Legal Contracts**

  FWA FSP will coordinate and develop contracts with grantors, participating landowners, MBK, and other subcontractors that may be required to accomplish the goals of the program. In addition, the FWA FSP will be required to prepare such documents and receive legal counsel regarding contracts.

- **Subtask 1.5: Engineering**

  MBK Engineers will provide engineering services to include site reviews, fish screen designs and reviews, construction inspections, engineering reporting, and communications. In addition, they will provide permit assistance, if needed.

  MBK will evaluate sites for engineering ease, feasibility, and installation of screen systems. MBK will review preliminary engineering design and approve screen designs prior to payment of milestone construction phases. MBK will review final designs and approve for construction installations. MBK will assure the fish screens comply with state and federal fish screening criteria. MBK will inspect screens in the "dry" at screen Contractor shop site. MBK will inspect overall construction and sites. MBK will approve and sign off as-built screen designs and O&M Manuals. MBK to submit reports to FWA, as requested. MBK will be available for presentations, if required. MBK will assist in the development of final reports to funding agencies by FWA.

- **Subtask 1.6: Permits, Notifications and Compliance**

  The FWA FSP will secure all necessary permits, notifications, and other regulatory compliance or approvals, on behalf of the landowners. All screens projects will meet or exceed the Fish Screening Criteria of the California Department of Fish and Game, as well as

NMFS Fish Screening Criteria for Anadromous Salmonids. BOR will submit federal permits as the lead agency (NEPA/FESA/NHPA).

The following permits will be submitted for each fish screen project:

State:
-1603 Lake and Streambed Alteration Agreement – CDF&G
-Clean Water Act 401 Water Quality Certification
-Reclamation Board Encroachment Permit
-ESA Compliance (Fish and Game Code 2081.1)

Federal:
-ESA Compliance – USF&WS and NMFS Section 7 Consultation
-NEPA Compliance
-Nationwide Permit – U.S. Army Corps of Engineers
-Section 106 of the National Historic Preservation Act of 1966

Currently, all the appropriate agencies involved with the above permits and agreements are aware of the Sacramento River Small Diversion Fish Screen Program efforts and a designated contact has been identified within each permitting agency. No permit constraints are expected with implementation of the fish screen projects under this grant.

All projects on private property will include written permission from the property owners, not only to conduct the work, but also to allow state and federal agencies access, as appropriate. Specific property owners are not identified at this time.

Should the Pilot Biological Assessment be implemented the subcontractor conducting the assessment will submit necessary permits (Federal and State ESA Compliance) to accomplish their tasks (Task 3). The FWA FSP and the BOR will only be responsible for the fish screen permitting requirements.

- **Task 2 - Construction**

Intake Screens, Inc. (ISI) to develop preliminary designs of fish screen systems, including screen retrieval system, site specific supports, automated brush cleaned intake screens, and control panel. Screen designs will meet all screening criteria, as set forth by the California Dept. of Fish and Game, National Marine Fisheries Service, and U.S. Fish and Wildlife, as applicable. Design approvals will be made by the FWA FSP, MBK, and participating agencies. ISI will design site specific screens, retrieval systems, piling modifications, pump supports and docking inlet (i.e. connection to pump intake), as necessary. Purchase materials for the manufacturing and construction of screens, retrievable track system, docking inlet, pump supports, and control systems. Site and pump preparation to include the following, if required: trim existing pilings; installation of new pump supports; and modification of pump inlet for installation of new docking inlet with trash rack. Design approvals will be made by the FWA FSP, MBK, and participating agencies. ISI will install intake screen and control systems. ISI will perform system test on system components and pumping operations after installation is complete. ISI will submit final “as-built” drawings to the FWA FSP and MBK for project approvals.

ISI will provide monitoring and system adjustments for a period of one-year after installation. ISI monitoring will include: 1) visual inspections, in and out of river; 2) periodic dives to observe system in the river (pending river conditions); 3) check overall mechanical operation; 4) make minor adjustments to the system (materials and components not included); 5) check for debris accumulation, river bottom conditions, bio-fouling, and hydraulic leaks; 6) develop an operations checklist; 7) develop and produce Operation & Maintenance manuals for each screen system installed (5-copies will be provided).

- **Subtask 2.1: Site Survey & Preparation**
  Survey and sound site using divers, as necessary; record data. Preliminary design of retrievable fish screen system and pump modifications, as necessary. Follow-up surveys or divers, if required. Meet with necessary agencies for approvals.

- **Subtask 2.2: Final Design & Fabrication Drawings of Screening Systems**
  Prepare detailed fabrication drawings for fish screen and docking manifold, retrievable track, piling/platform modifications, screen supports pump modifications, and docking inlet. Meet with necessary agencies for approval.

- **Subtask 2.3: Materials Purchase & Fabrication**
  Purchase of screen system materials and shop fabrication of screen systems.

- **Subtask 2.4: Site & Pump Preparation**
  Site and pump preparation (trim-off any pump support pilings that will hinder the intake screen deployment and removal), modify pump inlet, as necessary (cut-off existing trash racks and install new docking inlet with trash racks), modify pump platform and pump supports, and attach screen supports.

- **Subtask 2.5: Installation**
  Installation of intake screen systems, including retrieval system and fish screen control panel, and power systems, as applicable. Testing of system components and pump operations.

- **Subtask 2.6: Contractor Monitoring & Adjustments**
  Visual inspections, in and out of the river. Periodic dives to observe system in the river (pending river conditions). Check overall mechanical operation. Make minor adjustments to the system, if needed (materials and components not included). Check for debris accumulation, river bottom conditions, bio-fouling, and hydraulic leaks. Develop and operations checklist. Develop and produce Operation & Maintenance (O&M) manuals (five copies will be provided per site).

- **Task 3 - Pilot Biological Assessment**

The Pilot Biological Assessment (BPA) of this proposed project is anticipated to take place from April 1 through August 31, per year for up to three (3) years. Sampling stations at irrigation intake outfalls will be established at approximately two (2) sites for year one and up to six (6) sites per year in years two and three. Fish sampling at each diversion outfall will be performed continuously for approximately seven days each week. The BPA will sample fish which will have already been diverted out of the river through irrigation pumps. Rectangular ¼-inch mesh fyke nets will be used to

collect the fish already entrained into diversion canals. Fyke nets will be checked once daily. We do not expect that any fish captured on the outfall side of the pumped diversions will be alive or salvageable. Dead or moribund fish collected will be identified as to species, enumerated, measured for length, and the carcasses put back into the canals. If desired by the fishery resource agencies, specimens will be preserved. To the extent practicable, any captured live listed species will be immediately returned to the river. Flow filtered by each net will be measured with General Oceanics flow meters.

A technical report on the fish sampling program will be prepared at the end of the assessment season describing methods and results, including all summarized data.

- **Subtask 3.1: Section 10 Permit Application**
  An Endangered Species Action Section 10 permit application will be written and submitted to the National Marine Fisheries Service to obtain approval for the fish monitoring program.

- **Subtask 3.2: Design and Installation of Fish Sampling Equipment**
  Fish sampling equipment (e.g., supporting metal framework in canals, catwalks, winches, etc.) will be designed and installed at the selected diversion sites.

- **Subtask 3.3: Daily Fish Monitoring**
  Fish assessment will take place daily between the periods of April 1 through August 31 of each fiscal year of contract. Fish monitoring using fine-mesh fyke nets will be conducted at each site from April through August. Collected species will be enumerated and measured. Flow filtered by each fyke net will be recorded each day.

- **Subtask 3.4: Written Report on Monitoring Assessments**
  A final written report will be submitted as a deliverable product describing the PBA, methods, and results, including all summarized data.

It is inherent in this program that any diverter who participates in the biological assessment portion of the program will be guaranteed a fish screen.

C5. Subcontractors:

1. Intake Screens, Inc.
   8417 River Road, Sacramento, CA 95832
   (916) 665-2727
   (916) 665-2729 Fax
   screens@citlink.net

2. MBK Engineers
   2450 Alhambra Blvd., 2nd Floor, Sacramento, CA 95817
   (916) 456-4400
   (916) 456-0253
   dtrieu@mbkengineers.com

3. Natural Resource Scientists, Inc.
   P.O. Box 1210, Red Bluff, CA 96080

(530) 527-9587 x 11
(530) 527- 6181 fax
dvogel@resourcescientists.com

C6. Work Schedule

None of the tasks listed are considered separable from any other portion of the project. Incremental funding of this project is not feasible or desired. Important milestones are noted in the aforementioned performance measures. Tasks are broken down for the entire project. It is anticipated that construction and installation will primarily occur between April and November of year after funding is received, weather and permits permitting. It is anticipated that the Pilot Biological Assessment will take place between the periods of April 1 through August 31 of each fiscal year after funding is received, weather and permits permitting.

Tasks:	**Estimated Completion Dates**
Task 1: Program Management	
Subtask 1.1 Program administration, management, coordination, and oversight of individual projects and overall program.	October 2007 to end of contract
Subtask 1.2 Travel	October 2007 to end of contract
Subtask 1.3 Accounting	October 2007 to end of contract
Subtask 1.4 Legal Contracts	October 2007 to end of contract
Subtask 1.5 Engineering	October 2007 to end of contract
Subtask 1.6 Permits, Notifications, and Compliance	October 2007 to end of contract
Task 2: Construction (ISI)	
Subtask 2.1 Site Survey and Preparation.	October 2007 until completion of project
Subtask 2.2 Final Design and Fabrication Drawings of Screening System.	5-Weeks after completion of Subtask 2.1
Subtask 2.3 Materials Purchase and Fabrication.	10-weeks after completion of Subtask 2.2
Subtask 2.4 Site and Pump Preparation.	4-weeks after completion of Subtask 2.3
Subtask 2.5 Installation	4-days after completion of Subtask 2.4
Subtask 2.6 ISI Monitoring and Adjustments	Beginning after installation of system for a period of 1-year
Task 3: Biological Assessment (NRSI)	
Subtask 3.1 Section 10 Permit Application	Submitted to NMFS by October 31, 2007
Subtask 3.2 Design & Installation of Fish Sampling Equipment	February through March 2008 February through March 2009 February through March 2010
Subtask 3.3 Daily Fish Monitoring	April 1 through August 31 each fiscal year of contract, up to 3 years
Subtask 3.4 Written Report on Monitoring Results	October 31, 2008

	October 31, 2009 October 31, 2010

See Exhibit C - Attachment 3 for Detailed Timeline.

C7. Special Equipment and Supplies Required: NA

C8. Project Impacts (beneficial or adverse):
The effects of fish screens are largely beneficial. Once installed, a properly designed and operated fish screen will appreciably assist to eliminate the harm, harassment, and injury of anadromous juvenile fish species. There are possible latent minor adverse effects, while not sufficient to exceed the "not likely to adversely affect" threshold, that are sufficiently minimized by the fish screen's reduction in loss of juvenile fish. In-water work will be confined to periods in guidance with regulatory permitting to avoid potential adverse effects.

C9. Stakeholders and Interested Parties:
The following entities have been major contributors to the success of the Sacramento River Small Diversion Fish Screen Program and continue to show interest in the progression of the FWA FSP: Family Water Alliance (FWA), CALFED, U. S. Bureau of Reclamation, California Department of Fish, the CVPIA Anadromous Fish Screen Program, National Marine Fisheries Service, NOAA Fisheries Community-Based Restoration Program, Wildlife Conservation Board, U.S. Fish and Wildlife Service, California Resources Agency; Department of Water Resources, U.S.D.A. Natural Resources Conservation Service, National Fish and Wildlife Foundation, and the U.S. Army Corp of Engineers (Reclamation District No. 999 Fish Screen Project).

The following endorsers have provided letters of support for the FWA FSP: Congressman Wally Herger, Congressman Mike Thompson, Senator Sam Aanestad, Assemblyman Doug LaMalfa, U.S. Department of Commerce, NOAA National Marine Fisheries Service Southwest Region, USDA Natural Resources Conservation Service Red Bluff Field Office, USDA Natural Resources Conservation Service Colusa Field Office, Glenn County Board of Supervisors, Yolo County Board of Supervisors, Colusa County Board of Supervisors, Tehama County Board of Supervisors, Butte County Board of Supervisors, Colusa County Resource Conservation District, Glenn County Farm Bureau, Glenn-Colusa Irrigation District, Blake's Guide Service, Caito Fisheries, Inc., Joyce Wells Trust, Mike Otterson, Butte Creek Farms, Ed Hulbert, Oji Brothers Farms, Inc., John Oji, Jerome F. Forster, H & A Andreotti, and the County of Yolo. Letters can be provided upon request.

C10. Consistency with CALFED ERP Goals:
1). Identify Project Applicability to Eco-Elements
Primary: Water Diversions
Secondary: NA

2). Identify Project Applicability to ERP Goals and Objectives:
Goal 1: *Endangered and Other At-risk Species and Native Biotic Communities*
Achieve recovery of at-risk native species dependent on the Delta and Suisun Bay as the first step toward establishing large, self-sustaining populations of these species; support similar recover of at-risk native species in San Francisco Bay and the watershed above the estuary; and minimize the

need for future endangered species listings by reversing downward population trends of native species that are not listed.

Objective 1: *Achieve, first, recovery and then large self-sustaining populations of the following at-risk native species dependent on the Delta, Suisun Bay, and Suisun Marsh; Central Valley winter-, spring- and fall/late fall-run Chinook salmon Seuss, Central Valley steelhead ESU, delta smelt, longfin smelt, Sacramento Splittail, green sturgeon, valley elderberry longhorn beetle, Suisun ornate shrew, Suisun song sparrow, soft bird's-beak, Suisun thistle, Mason's lilaeopsis, San Pablo song sparrow, Lange's metalmark butterfly, Antioch Dunes evening primrose, Contra Costa wallflower, and Suisun marsh aster.*

This proposal addresses the CALFED ERP Goal of implementing fish screen projects above the San Francisco Bay and Watershed Estuary, specifically on the Sacramento River to reduce entrainment and demonstrate retrievable screen technology. It also supports the ERP Strategic Goal #1 to achieve recovery of at-risk species (CALFED 1999a, 1999b).

Screening irrigation diversions along the Sacramento River is a high priority action for the CVPIA Anadromous Fish Screen Program (AFSP). Stabilizing and improving the population status of all runs of anadromous salmonids, especially the federally ESA-listed winter and spring runs of Chinook salmon and steelhead (NMFS 1998, 2000), is a principal objective for fish screening programs on the Sacramento River. Under this proposal, efforts will continue to screen small diversions and may develop critical information to assess the value of additional screening efforts or other protective measures for the existing unscreened diversions.

The FWA FSP will enhance or complement the efforts of CALFED to reduce entrainment of endangered fish species at large (under 250 cfs) and small diversions along the Sacramento River. This project will enhance several other agency efforts to aid salmon recovery along the Sacramento River and continue to screen under the FWA FSP.

Additionally, the following excerpts from CALFED documents specifically call for the screening of small diversions, as noted as follows:

1. **CALFED Bay-Delta Program, National Marine Fisheries Service Programmatic Biological Opinion, August 28, 2000, 6. Ecosystem Restoration, Page 60.**

   "Preliminary, significant steps towards the largest ecological restoration project yet undertaken in the United States have occurred during the past four years and continue to proceed in California's Central Valley. The CALFED Bay-Delta Program, in coordination with other Central Valley efforts including those implemented through the CVPIA, has implemented numerous habitat restoration actions that benefit Sacramento River winter-run Chinook salmon, Central Valley spring-run salmon, Central Valley steelhead, and their critical habitat. These restoration actions include the installation of fish screens, modifications of barriers to improve fish passage, and habitat acquisition and restoration."

2. **CALFED Bay-Delta Program, Record of Decision, August 28, 2000, Page 19.**

"Representative Ecosystem Restoration Program actions include: "Modifying of eliminating fish passage barriers, including the removal of some dams, construction of fish ladders, and construction of fish screens that use the best available technology."

3. **CALFED Bay-Delta Program, Record of Decision, August 28, 2000, Section 2.1.5 Environmental Preferable/Superior Alternative, Page 27-28.**

   "….Accordingly, the Preferred program alternative is the "Environmentally Preferred Alternative" under NEPA and the "Environmentally Superior Alternative" under CEQA."

   "….The Preferred Program Alternative meets the programs multiple purposes, reduces adverse environmental effects, and provides a system of research and monitoring to determine whether modifications or additional actions are needed. It provides multiple benefits, including but not limited to:
   Constructing fish screens that use the best available technology"

4. **CALFED Bay-Delta Program, Ecosystem Restoration Program, Draft Stage1 Implementation Plan, August 6, 2001, Pg. 13.**

   "CALFED Science Program Goals in Relation to the Ecosystem Program. The CALFED Program covers one of the largest and most modified watersheds on the West coast of North America (Nichols et al, 1986). Loss of habitat, water diversions, pollution, and species introductions are among the stressors considered responsible for substantial reductions in the abundance of many native fish populations and massive modifications of ecosystems.

5. **CALFED Bay-Delta Program, Ecosystem Restoration Program, Draft Stage1 Implementation Plan, August 6, 2001, Pg. 19.**

   Anadromous Fish Screen Program (AFSP) – Section 3406(b)(21): The goal of the AFSP is to encourage and facilitate fish screen and other physical fish passageway facilities construction to avoid or minimize the entrainment and impingement of juvenile Chinook salmon (all runs), steelhead trout, green and white sturgeon, American Shad, and striped bass. …Activities eligible for these cost-share funds under AFSP include, but are not limited to: constructing fish screens on unscreened diversions; rehabilitating existing fish screens; replacing existing, nonfunctioning screens; and relocating water diversions to less fishery sensitive areas.

6. **CALFED Bay-Delta Program, Ecosystem Restoration Program, Draft Stage1 Implementation Plan, August 6, 2001, Pg. 25.**

   "Fish Screens: ….The smaller diversions also the potential to entrain juvenile fish. A large number of screen projects are underway and additional screens are needed. At the same time, studies are needed to better understand how effectively fish screens protect species to better prioritize allocation of expenditures."

In addition to the above referenced CALFED documents, the following excerpts taken from various periodicals and reports support the screening of all diversions:

1. **A Citizen's Guide to the 4(d) Rule For Threatened Salmon and Steelhead on the West Coast, National Marine Fisheries Service, Northwest and Southwest Regions, June 20, 2000, Page 4**.

   "'Take' is defined as 'harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct' (ESA section 3[19]). It is also illegal under ESA section 09 to possess, sell, deliver, carry, transport, or ship any species that has been taken illegally (ESA section 9[a][1]). Violating the take prohibitions may result in civil or criminal penalties."

   "'Harass' is defined as an intentional or negligent act that creates the likelihood of injuring wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns such as breeding, feeding, or sheltering (50 CFR 17.3)."

   "'Harm' is defined as an act that actually kills or injures a protected species (50 CFR 222.102 (64FR 60727)). Harm can arise from significant habitat modification or degradation where it actually kills or injures protected species by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering."

2. **A Citizen's Guide to the 4(d) Rule For Threatened Salmon and Steelhead on the West Coast, National Marine Fisheries Service, Northwest and Southwest Regions, June 20, 2000, Take Guidance, Page 4-5.**

   "Based on available information, NMFS believes the categories of activities listed below are those activities that, as a general rule, are most likely to harm listed fish…..These types of activities are, however, those most likely to cause harm and thereby violate this rule. NMFS' ESA enforcement will focus on these categories of activities."

   "…G. Constructing or operating dams or water diversion structures with inadequate fish screens or passage facilities."

3. **A Citizen's Guide to the 4(d) Rule For Threatened Salmon and Steelhead on the West Coast, National Marine Fisheries Service, Northwest and Southwest Regions, June 20, 2000, Limit No. 9 – Water Diversion Screening, Page 12-13.**

   "Operating water diversion without adequate screening is a widely recognized cause of mortality among salmon and steelhead. Juveniles may be sucked or attracted into diversion ditches where they later die from a variety of causes, including stranding. Adult and juvenile migration may be blocked by diversion structures such as pus-up dams. Juveniles are often injured and killed when caught in pumping facilities or forced against screens."
   "State laws and Federal programs have long recognized these problems in varying ways, and encouraged or required adequate screening of diversion ditches and structures. Nonetheless, large numbers of diversion are not adequately screened and remain a threat, particularly to juvenile fish. Eliminating that source of injury or death is vital to conserving listed stocks."

"The final rule encourages all diverters to move quickly to provide adequate screening or other protections for their diversion. The rule does not apply take prohibitions provided that NMFS' engineering staff--or any resource agency or tribal representative NMFS designates as an authorized officer—has agreed in writing that the diversion facility is screened, maintained, and operated in compliance with NMFS' Juvenile Fish Screening Criteria (NMFS 1996) or, in California, in compliance with NMFS Southwest Region's Fish Screening Criteria for Anadromous Salmonids (NMFS 1997) or any subsequent revision. If a diversion is screened, operated, and maintained in a manner consistent with those criteria, adequate safeguards will be in place and no additional Federal protection is necessary or advisable for conserving listed fish."
"The final rule also provides that NMFS or its authorized officer may review and approve for a take limit a proposed juvenile fish screen design and construction plan. The plan must describe interim operations measures that will avoid taking threatened fish."

4. **Letter to Family Water Alliance from Rick Wantuck, National Marine Fisheries Service, June 26, 1998**.

"Such a rule could call for all water diversions to be screened with NMFS-approved technology by some date certain, or else compliance measures would presumable be enforced (up to, and possible including, a prohibition against unscreened water diversion devices). I must emphasize that this debate is strictly pre-decisional, but it is consistent with NMFS' unpublished goal of protecting anadromous fish within their range by screening all unscreened water diversions. It is documented that unscreened water diversions present a real and probable danger of entrainment to immature salmonid, as well as other tiny fishes and aquatic life forms. With over 3000 unscreened diversions remaining to be screened in California, it is imperative that we aggressively pursue a solution to the problem of fish entrainment into water diversions."

5. **NMFS Proposed Recovery Plan for the Sacramento River Winter-run Chinook Salmon, National Marine Fisheries Service, Southwest Region, Long Beach, California, August 1997, Goal II Improve Survival of Downstream Migrants, Page V-34.**

Objective/Action: 1. Maximize survival of juveniles at unscreened or inadequately screened diversions on the Sacramento, River, Sacramento-San Joaquin Delta, and Suisun Marsh (Priority 1)

1. Develop and implement a comprehensive plan to install positive barrier fish screens at unscreened or poorly screened diversion on the Sacramento River, Sacramento-San Joaquin Delta, and Suisun Marsh sloughs.

6. **Upper Sacramento River Fisheries and Riparian Habitat Management Plan, January 1989,The Resources Agency, State of California, Page 95, #3.**

"Require screening and screen maintenance on all diversions on the Sacramento River that significantly impact the fishery and develop a process for funding this work."

7. **Upper Sacramento River Fisheries and Riparian Habitat Management Plan, January 1989, Resources Agency, State of California, Page 96, #4**.

   "Obtain funding to design and install screens at private diversions currently not under permit from the Crops of Engineers."

8. **State of California, Resources Agency, Department of Fish and Game, Statewide Fish Screening Policy, Diversions Covered by Section 6020, June 19, 2000.**

   "The Department of Fish and Game may consider for screening any diversion with a capacity of 250 cubic-feet per second or less. Activities in this category will be assigned a lower priority than those covered by Section 5980 until all of the Department of Fish and Game obligations for both its own diversions, and for those diversions with a capacity greater than 250 cubic-feet per second, have been fulfilled."

   "In addition, all diversions covered by this section which are located within the essential habitat of a State (CESA) listed species, or the critical habitat of a federally (ESA) listed species, shall be deemed to require screening."

   "Variances from these requirements shall be supported by a report, prepared by the diverter, which includes data from onsite monitoring and a review of historical entrainment and diversion data. The scope of the report and the sampling effort shall be approved by the Department of Fish and Game prior to the initiation of work."

9. **Central Valley Project Improvement Act (CVPIA), Section: 3406(b)(21),Title: Anadromous Fish Screen Program.**

   "This section authorizes the Secretary to assist the State of California in its effort to develop and implement measures to avoid losses of juvenile anadromous fish resulting from poorly sited, unscreened, or inadequately screened diversions on Central Valley waterways. The Anadromous Fish Screen Program is voluntary, making it difficult to predict the number of program related screening projects in the future. However, of those diverters applying for inclusion, the program applies standards to ensure selected projects are of high priority."

   "Restoration Objectives: Appropriate screening of diversions is anticipated to reduce a substantial cumulative source of mortality for anadromous and resident fish species. Unscreened diversions, from small tributaries such as Butte Creek, to the salt-water interface near Suisun Bay, affect anadromous fish throughout their juvenile stages. The development of a basin-wide screen program, in a context of cooperation and partnership, is the most promising strategy for control of juvenile anadromous fish losses associated with agricultural, municipal, and industrial diversion."

10. **California Salmonid Stream habitat Restoration Manual, State of California Resources Agency, Department of Fish and Game, third Edition, January 1998, Policy and Regulations, A-7, Fish and Wildlife Coordination Act of 1934.**

"Under the provisions of this Federal legislation enacted in 1934, the Department of Fish and Game shall require installation of fish screens on all unscreened diversions where fish are present."

"The 'General Fish Screening Criteria' shall be used as the basis for design of fish screens required under this policy. The need-to-screen criteria may be modified by the Department of Fish and Game, and it is the responsibility of the project proponent to have the most recent copy of these agreement criteria. Copies are available from either the Environmental Services Division or the Inland Fisheries Division of the Department of Fish and Game.

11. **Salmon, Steelhead Trout, and Anadromous Fisheries Program Act, Chapter 8, Article 1. 6901 (d).**

"Protection of, and in increase in, the naturally spawning salmon and steelhead trout resources of the state would provide a valuable public resource to the residents, a large statewide economic benefit, and would, in addition, provide employment opportunities not otherwise available to the citizens of this state, particularly in rural areas of present underemployment."

12. **Salmon, Steelhead Trout, and Anadromous Fisheries Program Act, Chapter 8, Article 1. 6902 (a).**

"The Department shall develop a plan and a program that strives to double the current natural production of salmon and steelhead trout resources.

13. **Salmon, Steelhead Trout, and Anadromous Fisheries Program Act, Chapter 8, Article 1. 6902 (b).**

"It is the policy of the state to recognize and encourage the participation of the public in privately and publicly funded mitigation, restoration, and enhancement programs in order to protect and increase naturally spawning salmon and steelhead trout resources."

Goal 3: ***Harvested Species*** **-** *Maintain and/or enhance populations of selected species for sustainable commercial and recreational harvest, consistent with the other ERP strategic goals.*

This proposal could directly lead to increased runs of salmonids which will help sustain commercial and recreational harvest.

Objective 1: *Enhance fisheries for salmonids, white sturgeon, pacific herring, and native cyprinid fishes.*

Fall run and late-fall run and central valley steelhead are an important to the economy of surrounding counties and the Bay Delta system. The potential to increase the number of salmonids in the Sacramento River watershed may enhance the fisheries through the Bay/Delta.

3). Identify Project Applicability to Environmental Water Quality Constituents:
Primary: NA
Secondary: NA

4) Identify Project Applicability to CALFED ERP Stage 1 Milestones.

- **Milestone 6.** In the Sacramento-San Joaquin Delta EMZ, cooperatively enhance at least 15% of the ERP target for wildlife friendly agricultural practices.

- **Milestone 24.** Consolidate and screen 50 small agricultural diversions in the Delta, prioritized according to size, location, and season of operation.
  [This could be a critical proponent of this program, if a diversion is selected from this region.]

- **Milestone 44.** Develop a program to consolidate, screen, or eliminate 25% of unscreened diversions in the Suisun Marsh.
  [This could be a critical proponent of this program, if a diversion is selected from this region.]

- **Milestone 6**1. In the American River Basin, Butte Basin, Colusa Basin, Feather River/Sutter Basin EMZs, cooperatively enhance at least 15 to 25% of the ERPP target for wildlife friendly agricultural practices.

- **Milestone 72.** Install positive barrier fish screens on all diversions greater than 250 cfs in all EMZs and 25% of all smaller unscreened diversions in the Sacramento River Basin. Among those diversions to be screened are the DWR Pumping Plants and 50% of small diversion located on east side of Sutter Bypass, the Bella Vista diversion in the upper Sacramento River near Redding, East-West Diversion Weir, Weir 5, Weir 3, Guisti Weir and Weir 1 in the Sutter Bypass, White Mallard Dam, Morton Weir, Drivers Cut Outfall and Colusa Shooting/Tarke Weir Outfall and associated diversion screens in the Butte Sink.

- **Milestone 99.** Install positive barrier fish screens on all diversions greater than 250 cfs in all EMZs and 25% of all smaller unscreened diversions in the San Joaquin River Basin. Among those diversions to be screened are the El Solyo, Patterson, and West Stanislaus irrigation district diversions.
  [This could be a critical proponent of this program, if a diversion is selected from this region.]

C11. Related Projects*

1). If this project is related to another restoration project, identify other projects by number and program (e.g. CALFED, CVPIA), and if CALFED, identify that relationship by category:

- A number of agencies (many are CALFED participating agencies) have responsibility and authority dealing with fish protection at diversions and fish screening issues, including CDFG, USFWS, CDWR, USBR, State Water Resources Control Board, NOAA Fisheries, and the U.S. Army Corps of Engineers. Many of these agencies currently participate in several ongoing efforts to reduce the impacts of unscreened diversions in the Sacramento Basin streams, the Bay-Delta, and throughout the other Central Valley river basins, including CDFG's Unscreened Diversion Program, the CVPIA's AFSP and the FWA FSP. Our proposal is closely linked to other ecosystem restoration efforts along the Sacramento River that are focused on improving and restoring aquatic and riparian habitats, such as those promoted by the California Senate Bill 1086 Upper Sacramento River Fisheries and Riparian Habitat Management Plan, and being coordinated and implemented through the Sacramento River Conservation Area Forum. Identifying and providing efficient fish protection and screening of diversions will further ensure that agricultural water diversion do not impair improvements to fishery production resulting from habitat restoration.

- Continuing Project / Phased Project: Multiple proposals with multiple contracts to continue the next phases of the Sacramento River Small Diversion Fish Screen Program.

1. CALFED No. 65-9104-0-189 - Small Fish Screen Diversion Project on the Sacramento River
2. CALFED No. - Sacramento River Small Diversion Fish Screen Program Mechanical Monitoring and Maintenance Project
3. CALFED RA No. ERP01-N52 - Sacramento River Small Fish Screen Project Vertical Pump Diversions
4. DFG No. FG 8273 BD - Sacramento River Small Diversion Fish Screen Program - Oji Bros. Farms
5. DFG No. FG 6035 IF - Small Screen Diversion Project - Phase I
6. DFG No. FG 7049 IF - Small Screen Diversion Project - Phase II
7. DFG No. P0220004 - Sacramento River Small Diversion Fish Screen Program - Davis Ranches Site 1
8. NOAA No. NA07FZ0585 - Sacramento River Fish Screen Program for Water Diversions - Oji Bros. - Tisdale Fish Screen
9. NOAA No. NA17FZ1507 - Sacramento River Fish Screen Program for Water Diversions - Davis Ranches Site 1
10. NFWF No. 97-107 - Sacramento River Small Diversion Fish Screen Program
11. NFWF No. 97-110-008 - Sacramento River Small Diversion Fish Screen Program
12. NFWF No. 98-220-013 - Sacramento River Fish Screens - IV
13. NFWF No. 200-245-003 - Sacramento River Fish Screens - III
14. WCB No. WC - 4058TC - Sacramento River Fish Screen Reclamation Districts 307 and 999
15. BOR 05FG203072 - Installation of a Retrievable Fish Screen System on the River Levee Siphon Owned by Reclamation District 307 and Operated by Reclamation District 999, Sacramento River
16. BOR 06FG201031 - Sacramento River Small Diversion Fish Screen Program
17. Fish America - Sacramento River Small Diversion Fish Screen Program
18. Mary Crocker Trust - Sacramento River Small Diversion Fish Screen Program

This project will assist in the continuation of the Sacramento River Small Diversion Fish Screen Program, which was started in 1996, and continues to be a cooperative effort among several entities including: landowners, Family Water Alliance (FWA), CALFED, U. S. Bureau of Reclamation, Wildlife Conservation Board, California Department of Fish, the CVPIA Anadromous Fish Screen Program, National Marine Fisheries Service, NOAA Fisheries Community-Based Restoration Program, U.S. Fish and Wildlife Service, California Resources Agency; Department of Water Resources, U.S.D.A. Natural Resources Conservation Service, National Fish and Wildlife Foundation, U.S. Army Corp of Engineers (Reclamation District No. 999 Fish Screen Project) and private foundations.

PART D. Budget Summary

D1. Budget: See Budget Detail - Exhibit B - Attachment 2

PART E. Project Location Information

E1. Project Location: Program-Wide (TBD)

E2. County or Counties Project is Located In: Northern California Counties (TBD)

E3. ERP Eco-Region, Eco-Zone, and Eco-Unit Project is Located In: Sacramento Bay/Delta River Watershed

E4. Project Centroid: (TBD)
Latitude/Longitude Coordinates

E5. Project Map: (TBD)

E6. Digital Geographic File:* (TBD)

E7. Congressional District: Congressman Wally Herger, District No. 2

PART F. Environmental Information

F1. CEQA/NEPA Compliance

1). Will this project require compliance with CEQA, NEPA, both, or neither: Both

2). Is your project covered by either a Statutory or Categorical Exemption under CEQA or a Categorical Exclusion under NEPA: TBD, usually the FWA FSP receives a "Notice of Exemption" under CEQA and a Categorical Exclusion under NEPA for installation of cylindrical screens.

3). If your project requires additional CEQA/NEPA analysis, please indicate which type of documents will be prepared: NA

- Initial Study/Negative Declaration
- Environmental Assessment/FONSI
- EIR/CEQA Findings of Fact
- EIS/ Record of Decision

4). If the project will require CEQA and/or NEPA compliance, identify the lead agency(ies).

- CEQA Lead Agency: Calif. Dept. of Fish & Game
- NEPA Lead Agency (Must be a Federal Agency): Bureau of Reclamation

5). If your project is not covered under items 2 or 3, and you checked no to question 1, please explain why compliance is not required for the actions in this proposal: NA

6). If the CEQA/NEPA process is not complete, please describe the estimated timelines for the process and the expected date of completion: Six (6) months from receipt of preliminary approved drawings.

7). If the CEQA/NEPA document has been completed, what is the name of the document and provide State Clearinghouse number: NA

F2. Environmental Permitting and Approvals

Please indicate what permits or other approvals may be required for the activities contained in your proposal and which have already been obtained. Please indicate all that 1) are needed, and 2) if needed, have been obtained:

1). Local Permits and Approvals

Local permitting requirements will be determined on a per project basis. Although marked "Not Needed", it is possible that local permits will be required as sites are selected.

- Conditional use permit: Not needed
- Variance: Not needed
- Subdivision Map Act: Not needed
- Grading permit: Not needed
- General plan amendment: Not needed
- Specific plan approval: Not needed
- Rezone: Not needed
- Williamson Act Contract cancellation: Not needed

2) State Permits and Approvals:

- Scientific collecting permit: TBD
- **CESA compliance: 2081.1; Take authorization: Needed**
- **CESA compliance: 2080.1; Consistency determination: Needed**
- CESA compliance: NCCP: Not needed
- **1602: Lake or Streambed Alteration Permit: Needed**
- **CWA 401 certification: Needed**
- Coastal development permit: Not needed
- **Reclamation Board approval: Needed**
- Notification of DPC or BCDC: Not needed

FWA FSP & NRSI to consult with California Department of Fish & Game to make the determination on the state permits mentioned above, and if required applications will be submitted.

3) Federal Permits and Approvals:

- **ESA compliance Section 7 consultation: Needed**
- **ESA compliance Section 10 permit: Needed**
- Rivers and Harbors Act: Not needed
- **CWA 404: Needed**
- **NHPA Section 106: Needed**

PART G. Land Use Questionnaire

G1. Land Use Changes

1). Do the actions in the proposal involve physical changes in the land use, or potential future changes in land use (Yes/No): No.

- If yes, describe what actions will occur on the land involved in the proposal.
- If no, explain what type of actions are involved in the proposal (i.e., research only, planning only).

2). How many acres of land will be subject to a land use change under the proposal: No.

3). Is the land subject to a land use change in the proposal currently under a Williamson Act contract (Yes/No): No.

4). For all lands subject to a land use change under the proposal, describe what entity or organization will manage the property and provide operations and maintenance services. NA

5). Does the applicant propose any modifications to the water right or change in the delivery of the water (Yes/No): No.

- If yes, please describe the modifications or changes:

G2. Current Land Use and Zoning

1). What is the current land use of the area subject to a land use change under the proposal: NA

2). What is the current zoning and general plan designation(s) for the property: Agricultural

3). How is the land categorized on the Important Farmland Series (IFL) maps (published by the California Department of Conservation): TBD

G3. Land Acquisition

1). Will the applicant acquire any land under the proposal, either in fee or through a conservation easement (Yes/No): No.

- If yes, describe the number of acres that will be acquired and whether the acquisition will be of fee title or a conservation easement:
- Total number of acres to be acquired under proposal:
- Number of acres to be acquired in fee:
- Number of acres to be subject to conservation easement:

2). For land acquisitions (fee title or easements), will existing water rights be acquired (Yes/No): NA

G4. Land Access

1). Will the applicant require access across public or private property that the applicant does not own to accomplish the activities in the proposal (Yes/No): Yes

- After sites are selected, each Landowner will be required to sign a “Permission to Come Upon Property” agreement, which not only allows FWA FSP personnel, engineers, and ISI to enter project site, but regulatory and funding agencies as well.

PART H. Qualifications

H1. Qualifications

Family Water Alliance

Family Water Alliance (FWA) is a 501(c) (3) non-profit corporation established in 1991. The primary mission of FWA is to educate the public about rural issues. In 1996, FWA initiated the Sacramento River Small Diversion Fish Screen Program (FSP), and has been a driving force in the screening of small diversions along the Sacramento River. The FWA FSP has a proven track record regarding the installation of small fish screens.

To date, twenty-two (22) projects have been completed. Two additional projects will be completed in the fall of 2007. These projects represent the cumulative screening of 563 cubic feet per second (cfs), while at the same time protecting over 22,000 acres of productive agricultural lands.

During this time, the FWA FSP has provided overall project management, funding through grants, budgeting, grant fund accounting, outreach and education, fiscal, programmatic, progress reports and final reports, and represented the landowner on key issues relating to the screening program. FWA's primary motto, "As long as there are fish in the river, there will be water on the land," demonstrates FWA's commitment to the protection of the fisheries resource.

Intake Screens, Inc.

State of California Contractors License No. 796197 – Class C-61

Intake Screens, Inc. has participated in the successful installation of twenty (20) fish screens, as a partner in the Sacramento River Small Diversion Fish Screen Program.

Russell Berry, the Vice President of Intake Screens, Inc. (ISI) has been involved in the designing and manufacturing a variety of intake screens for over 20 years. In 1979, Berry started a custom welding and fabrication business. At the same time he began to manufacture rotating back-washed drum screens under the name of Plum Creek Manufacturing. These were used mostly in the agricultural and turf markets. Selling Plum Creek to the Claude Laval Corporation (Lakos) in 1990, Berry moved to Fresno, California and worked for a Laval unit until 1995. While working for Laval he developed the "Trash Blaster," a stationary drum screen with rotating backwash header, and a rotating drum screen with air purge.

In 1995, he left Laval and designed and manufactured the ISI solar powered Brushed Cone, self-cleaning fish screens now in use in Suisun Marsh. Berry has designed hundreds of site specific screen installations, has two patents, and one patent pending pertaining to self-cleaning intake screens. Intake Screens, Inc. (Berry's new company) currently has completed the Reclamation District No. 999 ISI Retrievable Fish Screen System installation on the Sacramento River in the Delta Region with a 100 cfs, new H-configuration. All systems are currently working and have demonstrated that the ISI retrievable features and brush cleaning mechanisms address the adverse conditions of the Sacramento River. Berry attributes his successes to an innate talent for design, fabrication, and a desire for excellence. Berry regularly consults a network of associate experts/engineers in order to design the best solution for specific problems.

MBK Engineers

MBK Engineers has participated in the successful installation of sixteen (16) fish screens, as a partner in the Sacramento River Small Diversion Fish Screen Program.

MBK Engineers is a consulting civil engineering firm whose main emphasis is water resources. Its three main areas of specialization include water supply planning, flood control and water rights. MBK represents many water diverters located in the Sacramento/San Joaquin Delta watershed. This association has resulted in MBK personnel involvement in many existing and planned fish screen facilities. The services provided include feasibility design and environmental/regulatory review. The list of projects includes Pelger Mutual Water Company, Deseret Farms Wilson Ranch, Maxwell Irrigation District, Thousand Acre Ranch, Browns Valley Irrigation District, Boeger Family Farms, Hastings Island Land Company, Reclamation District No. 999, and the Sacramento River Small Diversion Fish Screen Program projects installed since 2001.

Gilbert Cosio, PE, is a Principal Engineer with MBK. MBK's work in regard to fish screen facilities is performed under his supervision and management. His experience includes performance of all aspects of fish screen design and construction including topographic surveys, preliminary design and cost estimates, design plans, vendor and contractor coordination, construction inspection and performance monitoring. In addition, his fish screen expertise includes environmental and regulatory aspects such as environmental assessments, CEQA coordination and documentation, and coordination with federal and state regulatory agencies.

Don Trieu, PE, is an Engineer with MBK. His experience includes performance of all aspects of fish screen design and construction including topographic surveys, preliminary design and cost estimates, design plans, and environmental and regulatory requirements. At MBK Don has worked with the firm's Delta levee reclamation district on projects related to levee rehabilitation and maintenance. He has also worked on hydrologic and hydraulic studies for flood control projects in the Central Valley.

Natural Resource Scientists, Inc.

Dave Vogel, Senior Scientist and Principal of Natural Resource Scientists, Inc., in Red Bluff, CA has 31 years of work experience in fisheries science and holds a Master of Science degree in Natural Resources (Fisheries) from the University of Michigan. He has worked on projects in California, Oregon, Washington, South Dakota, Wyoming, Nevada, New Jersey, Hawaii, and along the Gulf of Mexico. Dave Vogel has served as a scientific consultant for water districts throughout the Central Valley.

Dave Vogel brings to this program over 25 years of experience in designing and conducting investigations to improve upstream and downstream fish passage. He has strong expertise in implementing complex, comprehensive projects to sample entrainment of juvenile fish in unscreened water intakes. He has designed and conducted evaluations on a variety of water diversions, fish screens, and fishways and provided oversight on the operation and maintenance of some of those facilities. Mr. Vogel has served as a key individual in the development of the biological criteria and associated bioengineering design for fish facilities and is thoroughly familiar with modern-day fish screen technologies. He was the Principal Investigator in a study of fish entrainment at the largest unscreened agricultural diversion in Oregon and developed the

conceptual design that ultimately led to a fish screen and bypass facility on the A-Canal in the Klamath Irrigation Project. Currently, Dave Vogel is working as the biological study team leader on behalf of state and federal agencies and Glenn-Colusa Irrigation District (GCID) for the new fish screen facilities at GCID's Sacramento River pumping station. This multi-year evaluation program involves extensive testing of the new fish screens and bypass systems using fish mark-recapture techniques.

Dave Vogel served as Task Manager on numerous projects for the USBR to define interrelationships of fishery resources and water project operations. He developed a life history guide for salmon in California's Central Valley to improve interagency coordination and communication concerning fishery and water resource management. He also assessed techniques to estimate the annual run sizes of the endangered winter Chinook salmon to recommend improved methodologies to enhance population restoration. He was the Task Manager for the original Biological Assessment of the federal Central Valley Project and the principal author of biological portions of the original Biological Assessment for the USBR's Klamath Irrigation Project.

Dave Vogel has served as a Principal Scientific Investigator for numerous research projects in the Sacramento – San Joaquin Delta. During a 10-year period, he conducted a variety of studies using radio telemetry to evaluate the behavior and migratory pathways utilized by salmon smolts in relation to hydrodynamic conditions. He is currently serving as one of the scientists evaluating the movements of juvenile salmon at the Delta Cross Channel and Georgiana Slough in the north Delta using both radio- and acoustic-telemetry methods. He is presently in charge of conducting detailed evaluations of new fish telemetry equipment to assess juvenile salmonid migration throughout the Delta.

Mr. Vogel is very knowledgeable of provisions of the Federal Endangered Species Act (ESA) having served on the original National Marine Fisheries Service's Winter-Run Chinook Salmon Recovery Team and the U.S. Fish and Wildlife Service's Endangered Lost River Sucker and Shortnose Sucker Working Group. He developed the framework for the original winter-run Chinook salmon restoration program and has worked on projects associated with the endangered monk seal, threatened green sea turtle, bald eagle, and other species. He has given public presentations to a wide variety of groups concerning ESA policy including Congressional testimony on three separate occasions. He frequently works on ESA Section 7 Consultations associated with threatened and endangered fish. He recently participated in a 5-year status review of endangered fish in Oregon and is presently serving on the Science Team for the upper Klamath Basin ecosystem restoration program.

Mr. Vogel previously worked for the U.S. Government in the USFWS's Fishery Research and Resources Divisions, and the National Marine Fisheries Service over a 15-year period. He received the "Fishery Management Biologist of the Year" award for six western states and numerous outstanding and superior achievement awards. He served as Chairman of the USFWS SCUBA Diving Control Board for six western states during an eight-year period. At the time he left the Federal government, he directed an extensive program to develop restoration measures for salmon and steelhead populations. Much of this work involved large-scale monitoring projects and the development of mitigation programs associated with water development facilities. Mr. Vogel designed and conducted evaluations of Federal and state fish hatcheries to

improve their effectiveness. He was Chairman of the Sacramento River Steelhead Trout Technical Committee for six years. He also developed and directed numerous projects to improve the survival and contribution of hatchery salmon and represented the USFWS on the California Department of Fish and Game's Salmon Smolt Quality Committee during the 1980s. Recently, Mr. Vogel served as a peer reviewer for the Interim and Final reports of the National Academy of Sciences' National Research Council Klamath Committee (Interim Report: Scientific Evaluation of Biological Opinions on Endangered and Threatened Fish in the Klamath River Basin; Final Report: Endangered and Threatened Fish of the Klamath River Basin: Causes of Decline and Strategies for Recovery). For the past 16 years, he has worked as a private consultant and periodically serves as an expert witness on a variety of fishery resource issues. Additional information on Dave Vogel and Natural Resource Scientists, Inc. is available at: www.resourcescientists.com.