

Work Plan for Fiscal Year 2004

I. Program Title. Anadromous Fish Screen Program CVPIA Section 3406 (b)(21)

II. Responsible Entities

	Agency	Staff Name	Role
Lead	USFWS	William O'Leary	Program Manager
Co-lead	USBR	Tracy Slavin	Acting Project Manager

III. Program Objective for FY 2004

The primary objective of the Anadromous Fish Screen Program (AFSP) is to protect juvenile chinook salmon (all runs), steelhead trout, green and white sturgeon, striped bass and American shad from entrainment at priority diversions throughout the Central Valley. Section 3406(b)(21) of the Central Valley Project Improvement Act (CVPIA) requires the Secretary of the Interior to assist the State of California to develop and implement measures to avoid losses of juvenile anadromous fish resulting from unscreened or inadequately screened diversions on the Sacramento and San Joaquin Rivers, their tributaries, the Delta, and the Suisun Marsh. Additionally, all AFSP projects meet Goal 3 of the Ecosystem Restoration Program's (ERP) Implementation Plan (7/18/01, Page 29, Goal 3) which states that A...the goal is to maintain and/or enhance populations of selected species for sustainable commercial and recreational harvest consistent with the other ERP Strategic Goals. Currently, there are approximately 2,100 agricultural diversions in the Sacramento-San Joaquin Delta, 450 in the Sacramento River system, 150 with the San Joaquin River system, and 370 in the Suisun Marsh basin. The National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) estimates that up to 10,000,000 anadromous salmonid fish fry are lost annually to diversions from the Sacramento River alone. The AFSP contributes to the overall restoration of anadromous fisheries within the Sacramento and San Joaquin River systems, and the Delta by protecting juvenile fish from entrainment at these diversions. By protecting fish from entrainment, the AFSP indirectly enhances anadromous fish outmigrant success, thereby indirectly enhancing the commercial and recreational harvest of these species, which meets ERP Draft Stage 1 Implementation Plan Strategic Goals.

The AFSP should not only serve the CVPIA mandate, but should also be consistent with other region wide, ecosystem wide programs. The AFSP currently supports the CALFED ERP goals identified in the Strategic Plan for Ecosystem Restoration and the ERP Draft Stage 1 Implementation Plan. The AFSP also is committed to completing all ongoing fish screen projects, which is also identified as a commitment in the Implementation Plan. Consistency with other program goals allows AFSP funded

project applicants to apply for other non federal funding sources, such as CALFED, through their Proposal Solicitation Package (PSP) process, and California Department of Fish and Game (CDFG) Proposition 204 funds when available. Since the Secretary of the Interior's share of costs associated with AFSP activities can not exceed 50 percent of the total cost of any such activity, water users involved in the program must secure 50 percent or more of the non federal cost share of the projects.

IV. Status of the Program

Since 1994, 19 fish screen projects have been completed with cost share funds from the AFSP. Two AFSP projects will be completed in calendar year 2003. These projects are the City of Sacramento's intakes on the Sacramento River and American River. The AFSP functions through two primary means. First, the AFSP provides funds to water users who apply to the program to install fish screens on their diversions. Second, the AFSP Technical Team, made up of experts from federal and State agencies, provides fish screen design and development guidance to water users and their consultants throughout project phases.

Funds are provided on a priority basis, as discussed in the AFSP Program Description. The Program Description document was completed in 1999 and outlines the program purpose, scope, organization, and project priority guidelines for the AFSP. In addition, current fish screening project priorities are coordinated between the AFSP and CALFED to ensure consistency of the goals and objectives of Section 3406(b)(21) of CVPIA with the goals and priorities of the CALFED Strategic Plan for Ecosystem Restoration and the ERP Draft Stage 1 Implementation Plan.

The AFSP is also coordinating with CALFED to ensure that federal funds allocated to specific projects can be reasonably expected to be matched by the State, and that funding commitments in any year are linked to specific tasks defined in AFSP and CALFED proposals and scopes of work. Future fish screen priorities will also be coordinated between AFSP and CALFED. The feasibility of funding future projects will also be considered in the coordinated fish screening project priority effort.

The AFSP is currently developing an updated future fish screen prioritization and developing a plan to assess the benefits of fish screen projects on overall fisheries restoration, through coordination with the State of California, NOAA Fisheries, and other agencies charged with protection of anadromous fish. The AFSP is also coordinating with CALFED to solicit input from their Independent Science Board regarding the future of screening diversions. Although quantifying the benefits of fish screens on fisheries restoration in the short term is infeasible, decisions regarding future fish screen projects will be made from an ecosystem approach with input from the State, appropriate regulatory agencies, CALFED and their Independent Science Board, and regional fisheries restoration experts. This process has been initiated in FY 03 and will continue in FY 04.

The AFSP is also coordinated with other programs such as the Anadromous Fish Restoration Program (AFRP) and the Comprehensive Assessment and Monitoring Program (CAMP). For example, the Restoration Plan for the AFRP identifies restoration actions, including fish protective measures at water diversions, throughout the Central Valley/Bay Delta to help double populations of naturally produced anadromous fish. The CAMP provides a funding mechanism targeted at assessing the effectiveness of various restoration activities. Both of these programs have been, and will continue to be coordinated with the AFSP.

The AFSP has assisted irrigation districts, water companies, and municipalities with the screening of many diversions ranging from 17 cubic feet/second (cfs) up to 1,000 cfs since the mid 1990s. Currently, the AFSP is involved with at least nine water user applicants completing various phases of their projects from the feasibility study to construction.

Lack of secure funding is often an impediment to water users considering a fish screen for their diversion. Fish screen projects are constructed in phases, starting with a feasibility study, preliminary design (in conjunction with preliminary preparation of environmental documents), final design (in conjunction with completion of appropriate environmental documents), and ultimately construction. Thus, the water user must commit to a project that will take several years to complete, often without both federal and non-federal funds completely secured. Upon completion of the project, the water user becomes the owner of the facility and is solely responsible for the operation and maintenance of the fish screen.

The AFSP has received over \$4.4 million in CVPIA funds in FY03 and will be receiving another \$3 million in CVPIA funds in FY04 for ongoing projects. The AFSP project proponents also received a commitment of over \$17 million in CALFED funds for projects in FY03 through their FY02 PSP process. No additional CALFED funds were awarded in FY03. The CALFED funds are non-federal and could constitute 50 percent or more of the cost of the projects.

In spite of these funding commitments, in the event that all the ongoing AFSP projects are on schedule and therefore ready for construction in the summer of 2004, the majority, if not all, of funds both federal and non federal, should be completely committed for each project in FY04. A full commitment of project funds in FY04 for the projects mentioned in this work plan would greatly exceed the available \$3 million in CVPIA funding discussed here.

V. FY 2003 Accomplishments

Construction was completed in 2003 for the City of Sacramento's American River facility. This screen protects outmigrating spring, fall, and winter-run Chinook salmon, as well as resident game and non-game fish from entrainment. The City's Sacramento River facility is expected to be completed by December 2003. When completed, it will protect spring, fall, and winter-run Chinook salmon, as well as delta smelt, Sacramento splittail, and resident game and non-game fish from entrainment. These two large, year-round municipal diversions were not adequately screened in the past. The completion of these fish screen projects will ensure year round protection of the abovementioned fisheries from entrainment losses at these intakes.

At the Sacramento River intake, the original structure historically was inadequately screened, and a modern fish screen could not be retrofitted to the structure. Thus, the original intake facility was preserved as a historic structure and a new diversion facility was constructed immediately downstream with a fish screen structure that meets modern CDFG, NOAA Fisheries, and Service screen criteria. This new intake is within an area occupied by Delta smelt, so the fish screen was designed to meet the more stringent delta smelt protection criteria.

The City of Sacramento's American River facility, including the landside water treatment plant, doubled in size to enable the City to divert their full contract allotment, and is now screened to prevent take of listed species, including spring, winter, and fall-run Chinook salmon and Central Valley steelhead. However, the AFSP is not providing cost share funding for the water treatment project, and is only cost-sharing for the portion of the fish screen which equals their historical diversion amount. For both City of Sacramento screen projects, cost-share funding is only provided for features of the projects required for screening and protecting fish.

Construction also was completed in FY2003 on the Ducks Unlimited Lower Butte Creek West Side Channel fish screen and ladder project. This facility includes a fish ladder, flash board flow control structure, and fish screen on Lower Butte Creek. This project is one of several relatively small fish passage/screening projects currently underway or completed on the Lower Butte Creek. This completed project, along with a suite of other completed fish passage and fish screen improvements along Lower Butte Creek funded by the AFSP and other sources, now facilitates better fish passage at the diversion dam and protects listed species such as fall and spring run Chinook salmon, Central Valley steelhead and other resident game and non-game fish from entrainment at the diversion.

University of California Davis is completing their fish treadmill-developed fish screen research studies funded by the AFSP, which began in FY01. These studies include performance tests of fish under the influence of various fish screen diversion conditions. Behavioral observations for species of different sizes, at different temperatures and time of day, and at different approach and sweeping velocity combinations are ongoing. Fish injury

and latent mortality also are being investigated with results presented in draft form for AFSP Technical Team (AFSPTT) and other expert peer review. Studies will be complete in FY04.

Finally, as a result of the 2002 PSP process, CALFED has committed \$15,886,650 to AFSP funded projects. These non federal funds were awarded to Natomas Mutual Water Company, Sutter Mutual Water Company (NMWC), Reclamation District 108 (RD108), Meridian Farms Water Company (MFWC), the M&T Ranch, and Llano Seco Wildlife Refuge. The AFSPTT Team assisted CALFED through these PSP awards and the subsequent recipient agreement processes in FY03.

Prior year AFSP funding (FY99 through FY03) also has contributed to the completion of engineering feasibility studies and/or reconnaissance studies, the initiation of environmental documentation, and the initiation of final designs in FY03 for the NMWC, SMWC, RD108, Pleasant Grove/Verona Water Company, and MFWC

VI. Tasks, Costs, Schedules, and Deliverables

A. Narrative Explanation of Tasks.

1. Program Management.

The AFSP will continue work for ongoing fish screen projects currently supported by the CVPIA and CALFED and conduct studies to improve knowledge of fish screens. The AFSP has worked with the fish screen projects discussed below, and potentially will work on additional projects resulting from integration with CALFED. To date, \$3,000,000 has been identified for the AFSP from the Restoration Fund in FY04. \$602,387 is needed for program management and \$171,400 for hired engineering expertise (Table B), and the remaining \$2,226,213 is intended to be used for cost-share funding of the projects discussed below. In the event that projects begin construction in FY04, additional funding needs discussed below are only a fraction (based on the \$3,000,000 available) of funds actually needed, particularly if full federal and nonfederal cost share funds for construction are to be secured prior to initiation of construction.

1.1. Natomas Mutual Water Company

NMWC initiated environmental permitting and preliminary design in FY02 and has initiated final engineering designs in FY03. This project consists of consolidating five existing unscreened diversions into two screened diversions for a total of approximately 630 cfs on the Sacramento River. Cost-share funding of \$3,008,805 was committed through FY03 from the AFSP for environmental documentation, feasibility studies, preliminary design, final design, right of way acquisition and initiation of construction. The full non-federal cost share funding estimated at \$12.6 million was secured through the CALFED Directed Action process in FY03. Construction is expected to begin in FY04. **Estimated Cost=\$ 490,000**

1.2 Meridian Farms Water Company

MFWC diverts water from the Sacramento River to irrigate 10,000 acres in Sutter County from three diversions (100 cfs, 50 cfs and 40 cfs). The Company has been working with the AFSP with the intention of consolidating these diversions, if possible, and installing a fish screen on the consolidated diversion structure. Cost share funding of \$350,000 from the AFSP was committed in FY99 through FY02 for the completion of environmental documents and permits and the completion of final design. Cost-share funding of \$750,000 was also committed through the CALFED PSP for FY02 and constitutes a portion of the non-federal cost share. Construction is expected to begin in late FY04. **Estimated Cost=\$ 110,000**

1.3 City of Sacramento

The City has two diversions, one on the American River, the other on the Sacramento River. The construction on the American River facility was completed in FY03. This facility was enlarged to meet the City's full water rights at this location. The Cooperative Agreement recognizes that the project will cost approximately \$42 million, of which the AFSP agreed to provide up to \$10,002,430 if funds are available. This amount is attributable to only the fish screen aspects for the historical diversion rates of the project. The City received \$6,999,930 in FY99 funds in the original Agreement. The Agreement states that, should funds become available, the additional \$3,002,500 could be provided to the City. No funds were available in FY00 and FY01. CDFG provided \$700,000 of Proposition 204 funds in FY01. In FY02, the AFSP provided \$331,000 and in FY03, \$252,943 was provided to the City. With \$1,135,000 made available in FY04 funds, an additional \$583,557 may still be needed to provide the \$10,002,430, tentatively obligated in the Agreement to complete final construction items, reconcile contractor change orders, and perform the post construction hydraulic evaluation of the facility in FY04. If funds are not available this fiscal year, the City should be made the AFSP's top priority for FY05 funds, not only because the Agreement states that additional funds would be provided when they become available, but also because it indicates to other unscreened diverters that we fully support our Agreements.

Estimated Cost= \$ 1,135,000

1.4 Reclamation District 2035

RD2035 has a 400 cfs diversion on the Sacramento River just upstream of the City of Sacramento. The diversion provides irrigation water for over 17,000 acres of agricultural land in Yolo County. The District also manages 2,000 acres of waterfowl habitat on an annual basis. Final design for the fish screen structure for this diversion was completed in 2003. The AFSP has not provided any funding for this project. To date, all funding of this project has been provided through CALFED. This project will be ready for construction in FY04. **Estimated Cost=\$291,213**

1.5 Patterson Irrigation District

PID has a 190 cfs unscreened diversion on the San Joaquin River near Patterson. PID has received \$685,000 in funds from CALFED for feasibility studies and final

design and anticipates being ready for construction in June 2004. If funding becomes available, this project could be constructed by spring of 2005. The AFSP has not provided any funding for this project to date. **Estimated Cost = \$200,000**

1.6 Program Management

The function of the AFSP is to protect juvenile anadromous fish as specified in the CVPIA. This protection is provided by facilitating the construction of fish screens and other facilities that minimize entrainment of the juvenile life-stage of the species identified. Costs for the AFSP involves salaries and benefits for Program Manager, technical support, administrative support, engineers, biologists, and overhead costs (Table B). Management tasks for the AFSP include design review, contract administration, developing and tracking budgets, reviewing invoices, coordinating Technical Team actions, preparing cooperative agreements and grants, and coordinating environmental compliance. An additional task provided by the AFSP will be to continue with efforts to evaluate the contribution of fish screen projects on overall fisheries restoration and prioritize future screening efforts. This effort will be coordinated with CALFED, NOAA Fisheries, the State of California, and other agencies charged with protection of anadromous fish and was initiated in FY03. **Estimated Cost=\$ 602,387**

1.6a Engineering Expertise

Engineering services are provided to the AFSP through a separate annual contract with the NOAA Fisheries. Engineering services include technical design assistance and review of project deliverables, dive inspections of existing and newly constructed facilities, and post-construction hydraulic and other field evaluations.

Estimated Cost =\$171,400 Total CVPIA Estimated Cost=\$ 3,000 ,000

Additional Funding Needs

The City of Sacramento's project on the Sacramento River is in the final construction phase, and is anticipated to be completed by December 2003. As mentioned in Subsection 1.3, the funding provided to the City has been short of the AFSP cost-share funds identified in the original FY99 Cooperative Agreement. Thus, it would be appropriate that any available funds be directed to this grantees existing Agreement .

SMWC initiated final design for its fish screen project in FY02. This diversion, (approximately 1,000 cfs) is the largest unscreened diversion on the Sacramento River. The AFSPPTT considers this project to be of high priority for screening. Cost-share funding of \$3,154,005 has been committed from FY02 through FY03 through the AFSP for activities pertaining to environmental documents, feasibility studies, preliminary design, design completion, preparation of the post construction evaluation and assessment plan, the long-term operation and maintenance plan, and the initiation of project construction. Cost-share funding of \$1,870,000 also has been committed through non-federal sources such as the CALFED PSP. Construction of the project could be initiated in FY04.

RD108 completed a reconnaissance investigation for screening three of their pumping plants along the Sacramento River. The preferred option entails consolidating the facilities into one screened diversion of approximately 260 cfs. Currently, the three individual diversions total about 377 cfs. The consolidated alternative would require the construction of new and more efficient canal systems interconnecting the three separate diversions, thereby requiring fewer intake facilities to meet the same water needs. The District has received \$1,792,705 through FY03 from the AFSP for completion of project design and environmental documents, post construction evaluations and assessment plans, and long term operation and maintenance plans to construct the project. Construction is expected to begin in FY04. Non-federal cost share funding of \$630,000 was secured through the CALFED Directed Action process in FY03.

PGVWC diverts approximately 200 cfs of water from the Sacramento River from two diversions and the Natomas Cross Canal from three diversions, irrigating about 7,300 acres of agricultural land in Sutter County. During low water years, Sacramento River water is pumped into the Cross Canal by PGVWC. This Company has been working with the AFSP with the intention of consolidating some diversions, relocating their diversion from the Cross Canal to the Sacramento River and installing fish screens on the consolidated facilities. Cost share funding of \$1,089,100 from the AFSP has been committed from FY00 through FY03 for the completion of environmental documentation and final designs. Construction is expected to begin in late FY04.

In addition to the ongoing project discussed above, new project applicants also may request participation in the AFSP, and if appropriate, funding may be made available for initial phase work such as feasibility studies. Potential new projects brought to the attention of the AFSP include those unscreened diversions covered under the Family Water Alliance Small Screen Program on the Sacramento River and Delta, and unscreened diversions on the San Joaquin River such as the San Luis National Wildlife Refuge Complex, and the West Stanislaus Irrigation District.

Although several of these abovementioned projects are smaller than those projects currently funded by the AFSP, they may have a large cumulative effect on fish entrainment losses and are important to screen to current criteria. Unforeseen post construction problems also may occur on some AFSP projects, and under limited circumstances, the AFSP may agree to assist the water user with cost share funding to correct the problem .

B. Schedule and Deliverables

#	Task	Dates		Deliverable
		Start	Complete	
1.1	Natomas Mutual Water Co	Ongoing	6/30/06	Final design, initiation of construction
1.2	Meridian Farms Water Co	Ongoing	6/30/06	Final design, initiation of construction
1.3 1.4	City of Sacramento	Ongoing	12/31/03	Completion of two Municipal and Industrial
1.4	RD2035	Ongoing	06/30/06	
1.5	Patterson Irrigation District	Ongoing	5/1/05	Final design, initiation of construction

Explanatory Notes: *1.1, 1.2, 1.3, 1.4, and 1.5 - In out years the deliverable will be diversions with fish screens that meet regulatory agencies criteria/concerns. Accurate schedules cannot be provided until final designs are successfully completed, but a reasonable estimate for completion of construction would be two years beyond the final design completion date.

Schedule and Deliverables - Additional Funding Needs

City of Sacramento	Ongoing	12/31/03	Agreement stipulates that the City would receive \$ 583,557, if available
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C. Summary of Program Costs and Funding Sources.

#	Task	Total Cost	Funding Sources
			RF
A.1	Natomas Mutual Water Company	490,000	490,000
A.2	Meridian Farms Water Company	110,000	110,000
A.3	City of Sacramento	1,135,000	1,135,000
A.4	RD 2035	291,213	291,213
A.5	Patterson Irrigation District	200,000	200,000
A.6	Program Management	602,387	602,387
A.6a	Engineering Expertise	171,400	171,400
Total Program Budget		3,000,000	3,000,000

Explanatory Notes: Non-federal Calfed funds will not be received in FY04

D . CVPI A Program Budget

#	Task	FTE	Direct Salary and Benefits Costs	Contracts Costs	Misc Costs	Admin Costs	Total Costs
A.6	Program Management	-----					
	Fish & Wildlife Service	2.07	\$255,518		\$0	\$45,993	\$301,511
	Bureau of Reclamation	2.0	\$300,876**	\$0	\$0	\$0	\$300,876
	Engineering Expertise			\$171,400*			\$171,400
	Projects						
A.1	Natomas Mutual Water Company			\$490,000			\$490,000
A.2	Meridian Farms			\$110,000			\$110,000
A.3	City of Sacramento			\$1,135,000			\$1,135,000
A.4	RD 2035			\$291,213			\$291,213
A.5	Patterson Irrigation District			\$200,000			\$200,000
	Total by Category	3.75	\$556,394	\$2,397,613	\$0	\$45,993	\$3,000,000

Explanatory Notes: * National Marine Fisheries Service Engineer

** is comprised of partial time of 3 staff, and includes funds for engineering project review, NEPA, coordination, contract preparation, travel and administration, regional and office indirect costs

CVPIA Program Budget - Additional Funding Needs.

Task	FTE	Direct Salary and Benefits Costs	Contract Costs	Misc. Costs	Admin Costs	Total Costs
City of Sacramento	0.0	\$0	\$583,557	\$0	\$0	\$583,557
Total by Category	0.0	\$0	\$583,557	\$0	\$0	\$583,557

VII. Future Years Commitments/Actions

The AFSP project commitments into out-years as presented and discussed in this Annual Work Plan are highlighted below:

Sutter Mutual Water Co. is a large project, with a diversion of about 1,000 cfs. After the final design phase is completed in FY04, construction will begin. This project will have a total design and construction cost in excess of \$-17 million, with roughly 50 percent of the cost anticipated to

be provided through the AFSP. Construction is expected to begin in FY04 with anticipated completion in Summer of 2006.

Meridian Farms Water Co. is a relatively small project, with a diversion of 190 cfs. Consolidation of three diversions is being considered as part of the project. This will likely be more cost effective than screening each diversion site separately. An approximate estimate for construction is \$5 million, with roughly 50% of the cost anticipated to be provided through the AFSP.

Pleasant Grove-Verona Mutual Water Company is a small diversion of about 200 cfs. This project potentially involves consolidating several diversions that take water from different water sources, the Sacramento River and the Natomas Cross Canal. A rough estimate of the total cost of construction for this fish screen project is about \$6 million, with roughly 50% of the cost anticipated to be provided through the AFSP.

Providing up to the additional \$ 583,557 addressed in this Annual Work Plan to the City of Sacramento for final construction items, contractor change orders, and hydraulic testing of the facility in FY04 would demonstrate DOI's commitment to its prior Agreements.

Natomas Mutual Water Company has a screen project involving the consolidation of five diversions (on the Sacramento River and Natomas Cross Canal), totaling about 560 cfs, into two screened diversions. Total cost of the project is estimated at about \$23 million, with roughly 50 percent of the cost anticipated to be provided through the AFSP. Construction is expected to begin in FY04 with anticipated completion in the Summer of 2006.

RD108 is investigating the screening of 3 diversion locations on the Sacramento River (377 cfs total) or consolidating them into one screened diversion with a more efficient conveyance system (260 cfs total) within their service area. Total cost of the project is estimated at about \$15 million, with roughly 50 percent of the cost anticipated to be provided through the AFSP. Construction is expected to begin in FY04 and completion in the Summer of 2006.

RD2035 has a screen project totaling about 400 cfs on the Sacramento River upstream from the City of Sacramento. Total cost of the project is estimated at about \$17 million. The percentage to be cost shared through the AFSP has not been estimated at this time. Construction of this project is expected to begin in FY04 and completion in the Summer of 2006.

Patterson Irrigation District has a screen project for 190 cfs on the San Joaquin River near Patterson. Total cost of the project is estimated at \$5.8 million. The percentage to be cost shared through the AFSP has not been estimated at this time. Construction of the project could begin in summer 2004 with a potential completion date of Spring of 2005.

In spite of the existing CVPIA commitments through the AFSP and the CALFED non-federal funds for the abovementioned projects, considerably more funding needs to be committed in FY04 in the event that construction will be initiated on all projects in FY04. Most, if not all, federal and non-federal funds should be secured prior to initiation of construction. If sufficient funds are not

secured for construction of a project, that project may be placed on hold after final design until such time as all funding, both federal and non-federal is secured. Currently, all AFSP funded projects identified in this work plan do not have their full construction funding secured. The AFSP and CALFED are committed to fund projects at least through final design and environmental compliance phases at this time.