

## Work Plan for Fiscal Year 2005

I. **Program Title** Tracy Pumping Plant CVPIA Section 3406(b)(4) Tracy Fish Test Facility Project

II. **Responsible Entities**

	Agency	Staff Name	Role
Lead	USBR	Ron Silva	Project Manager
Co-Lead	USFWS	Dave Harlow	Project Manager

III. **Program Objectives for FY 2005**

- A. Improve Fish Protection and Fish Salvage at Tracy Fish Collection Facility (TFCF). Action is in compliance with CVPIA 3406(b)(4), Biological Opinions for Winter-Run chinook, Delta smelt, Sacramento Splittail, Central Valley Steelhead, and the July 1992 “Agreement with California Department Fish and Game (CDFG to Reduce and Offset Direct Fish Losses Associated with the Operation of the Tracy Pumping Plant and the Tracy Fish Collection Facility.”
- B. Determine Best Practical Fish Protection Technology for making Long-term Future Improvements at Tracy and Other South Delta Facilities Proposed by CALFED - Integral to CALFED’s South Delta Program and is in conformance with the ROD and Framework documents released last year.  
 \* Species Benefitted - Chinook salmon (fall- and winter-run), Steelhead, Delta smelt, Splittail, Sacramento blackfish, Longfin smelt, Striped bass, and American shad.

IV. **Status of the Program.**

The Tracy Fish Test Facility (TFTF) will be a new fish screening technology development and evaluation facility located adjacent to the existing TFCF in the South Delta. The TFTF will develop critical information for new fish screens and salvage technology for the Delta export facilities at Tracy and at Clifton Court Forebay, and a possible screened through Delta facility on the Sacramento River. The TFTF will allow for the testing and evaluation of new facilities for fish screening, holding, sorting, and transportation in the South Delta which is influenced by tides, heavy debris loads, and a mix of 51 species. The completed facility will include a 250-500 cfs test channel, new state-of-the-art fish screens, new fish friendly lifts, holding and sorter facilities in one large enclosed building, fish transfer/off loading facilities to fish tanker trucks, debris and sediment management structures, and support infrastructure including laboratory, office, and maintenance buildings. The TFTF is being designed by Reclamation with the oversight and assistance of a multi-agency coalition of fish facility experts pursuant to a “Project Management and Organization

Agreement” signed by involved regulatory and water interests. The TFTF Project is being implemented as part of Section 3406(b)(4) of the CVPIA, and is integral to CALFED’s South Delta and Conveyance Programs. Funding sources include appropriations from Reclamation, the State of California, and CALFED.

V. **FY 2004 Accomplishments.** (Note: Additional accomplishments have been included to facilitate reviewer’s understanding of this complex and comprehensive program for developing new fish facility technology for the Delta of California.)

1. February 19, 1999 - NOI in Federal Register
2. March 17-18, 1999 - Public Scoping Meetings
3. April 6, 1999 - CALFED’s Policy Group agreed that Reclamation should proceed with the planning of a 500cfs fish screen facility for testing and evaluating new technologies.
4. June 1999 - CALFED Bay Delta Program Draft EIS included the proposed 500 cfs structure
5. September 1999 - Agreement on Project Management and Organization for the TFTF and Clifton Court Fish Facility was signed by Reclamation, Service, Department of Water Resources, CALFED, CDFG, and National Marine Fisheries Service (NMFS).
6. Monthly Tracy Technical Advisory Team (TTAT) meetings have been held since November 1998 which has resulted in a preferred option for the test facilities
7. Value Engineering Study - February 10, 2000 identified a number of actions to reduce costs
8. Project Management Plan - May 15, 2000 road map to all activities and tasks for the Program, established 12 task teams
9. Draft EA/IS released for public comments July 28, 2000
10. Framework and Agreements Document - provides a continuous record of all decisions agreed to by the TTAT, Central Valley Fish Facilities Review Team and Coordination Team
11. Site Infrastructure Workshop - May 2000 - building, additions, upgrades, staffing, resources
12. Site Infrastructure Workshop Final Report - August 14, 2000 – recommendation Final Feasibility Report - August 14, 2000
13. 30% and 60%, and preliminary 90% Design Reports ( recent design changes will require another 90% report)
14. Public Workshops for the Environmental Assessment Impact Statement - August 15-16, 2000
15. Developed Fishery Engineering Flumes at Denver where TFTF Research and Technology Development has been ongoing since 1998
16. Research Studies at Tracy Site for TFTF including leaky louver efficiencies , traveling screens for debris control, and fish friendly pumping tests-ongoing since 1998
17. Research Studies for TFTF at Red Bluff Pumping Plant on fish friendly lifts and screens have been ongoing since 1995
18. UCD Studies - working with the UCD to cooperate on laboratory studies needed to refine facilities to be built at the TFTF

19. CDFG Studies- are exploring new fish distribution and stocking strategies to compliment the new facilities
20. Establishment of Research Team – Tracy Fish Research Evaluation and Development, for developing the test procedures and evaluations to be conducted at the TFTF
21. Specific research activities conducted for 2004 included the following:
  - Laboratory evaluations of the TFTF fish sorting and holding tank physical model
  - Whole facility evaluations
  - Predator tracking using sonic tags
  - Recessed holding tank stress tests
  - Improved debris management
  - Water quality analysis at the TFCF
  - Evaluation of Dual-Frequency Identification Sonar (DIDSON) for direct observation of fish movement and behavior near structures
  - Development of TFFIP technical web site and enhanced data accessibility

## VI. Tasks, Costs, Schedules and deliverables.

### A. Narrative Explanation of Tasks.

1. Program Management
  - 1.1 Project Management - Planning, budget oversight, and coordination of all activities and offices associated with this multi-year program is accomplished by the Project Manager.
  - 1.2 Public Involvement - Reclamation staff from the Public Affairs Office are responsible for the public outreach activities, maintaining and updating the telephone information line, maintaining and updating the website, managing the development of a project video, and preparing and distributing project newsletters. A contract has been awarded to a consultant to assist with the Public Involvement aspects of this large and complex project.
  - 1.3 Tracy Office Program Implementation - Reclamation staff from the Tracy Office are responsible for assisting the planning and coordination of all activities and offices associated with this multi-year program.
- 2 Fisheries Engineering Research Program - Research continues on a number of subtasks at either the Denver Technical Service Center/Research Hydraulics Laboratory or at the TFCF. Study Plans are currently under development which will then be provided in August 2005 to the interagency Tracy Technical Advisory Team which oversees activities associated with improving or researching new technologies for the TFCF. The following are the proposed research activities for FY 2005. Costs for each of the following sub-tasks will be available after the Tracy Technical Advisory Team has reviewed and commented on proposed study plans and a decision can be reached on which studies will be undertaken with the funding available for this Research Task.

2.1 Evaluations of a pumped fish bypass and above ground holding tank

In 1998 a research project on fish friendly pumps and above ground holding tanks was funded under the Tracy Research Program. As part of the project, Tracy Fish Facility holding tank no.1 was taken out of normal service. In place of using the in-ground holding tank, a 16-inch Hidrostal pump was installed on the holding tank influent line and bypass flow pumped to an above ground holding tank. The above ground holding tank was designed for collecting fish during short-term fish pump evaluation tests. Three years of fish passage tests on the Hidrostal pump have shown this type of pump can be used with low injury and mortality to delta fish species. During the same period, laboratory testing and development of improved designs for fish holding tanks was conducted in Reclamation's Water Resources Research Laboratory. This proposal builds on prior work by constructing and evaluating a demonstration facility of a state of the art pumped bypass fish salvage and holding facility.

2.2 Evaluation of holding tank influences on chinook salmon and delta smelt.

Fish are collected and held for up to 24 hr in large, circular, concrete tanks (about 20-ft diameter, 15-ft high) in moderate velocity (0.6-3.1 ft/s) with ambient debris. Fish holding time is dependent on fish density and time of year. Typically, fish are held for 8 hr in the spring when Delta smelt are present, 12 hours in the winter when Chinook salmon smolts are present, and 24 hours the remainder except when either fish density or debris load is high (based on guidelines in Bates et al. 1960). Fish are further concentrated into a 500 gallon lift bucket one, two, or three times per day and moved to a transport truck. The influence of holding conditions on fish condition and survival is not well understood and believed significant.

The objective of this study is to complete holding/swirl experiments using Chinook salmon and Delta smelt. Experiments with Sacramento blackfish suggest some external damage occurs during high velocity/high debris conditions but immediate mortality is low. We will evaluate holding influences on diverted fish at the Tracy Fish Facility and document areas that could be improved.

2.3 Pilot tests of survival and condition of salvaged fish after release from holding tanks.

Fish salvaged at the Tracy Fish Collection Facility (TFCF) are currently held for up to 24 h in recessed holding tanks before being transported by truck to release sites and returned via conduits to the Sacramento River. This short-term confinement can cause physiological stress because fish are held in unnatural habitat, at high densities, and sometimes in poor water quality. Physiological stress can lead to delayed mortality through reduced swimming performance, increased susceptibility to disease (Barton and Iwama 1991), reduced reproductive potential (Adams et al. 1985), or death (Barton et al. 2002). Furthermore, interactions such as aggression and

predation may be intensified in holding tanks (e.g., Olla et al. 1995), and some fish are injured when they reach the TFCF. New technologies being developed by Reclamation will allow different techniques to be used for fish holding and sorting, and these new salvage techniques may improve performance of fish after release. Although the short-term effects of entrainment and holding in the TFCF are being studied (Karp et al. 2004; Portz et al. 2004), the long-term condition and survival of salvaged fish is less well understood. One means of testing the effects of different holding strategies on fish released from TFCF is to hold them for extended periods in net pens. This research will develop techniques for releasing salvaged fish into net pens for subsequent measurements of survival and injury rates. Specific goals of pilot or subsequent research will be to obtain estimates of (1) long-term survival rates of several species after normal salvage procedures. (2) effects of recessed versus above-ground oval holding tanks on subsequent survival (3) effects of different acclimation or recovery techniques on subsequent survival of released fish.

2.4 Studies on tracking fish movements inside fish salvage facilities using telemetry.

Studies to develop potential methods for accurately assessing fish predator and prey movements and positioning inside salvage facilities will continue. Both radio tagging and sonic tagging will be examined for eventual expanded use in the TFCF. New techniques using small “pinger” tags for juvenile salmon and striped bass will be given special effort. (Fish are fitted with a small sonic emitting device and the signal is picked up with sonic receivers; now being used in the Pacific Northwest to track salmon around dams). Ability to use these techniques in the TFCF would be extremely valuable in determining if fish are “residing” or “hanging out” in the system, where, and under what hydraulic conditions.

2.5 Design and evaluation of improved louver cleaning technology for the TFCF.

This study will investigate using medium to high-pressure spray to clean debris off the primary and secondary louvers at the Tracy Fish Facility. The goal of the study is to determine the best combination of spray nozzle shape, size and spray pressure required to fragment and dislodge aquatic debris impinged on the louvers. Rather than trying to remove the small fragmented debris (mainly *Egeria*), the material will be allowed to flush through the louvers carried by the flow. The first phase of the study will be conducted in the Hydraulics Laboratory using a prototype size section of louver and elodea as the primary debris.

2.6 Fish sorting and debris handling research.

The US Bureau of Reclamation (USBR) has an active fish salvage evaluation program that is investigating ways to improve operations and salvage efficiency of the existing facility (TFCF) and to assist with the design of various elements for proposed on-site Tracy Fish Test Facilities.

A model will be used to test the effectiveness of fish sorting and holding designs to meet modern fish protection requirements prior to constructing improvements or replacement of fish salvage facilities for the state and federal water diversions in the South Delta.

Holding and fish sorting systems are critical to the process of returning healthy fish to the Delta. Currently, the in-ground circular collection system is believed inadequate because fish are confined in multispecies assemblages with varying debris type and load for 8 to 24 hours. It is believed that fish may be more vulnerable to stress and predation because of these holding conditions.

A 1:3 scale physical model of a proposed on-site fish sorting and holding facility has been constructed in the USBR's Water Resources Research Laboratory in Denver. Several concepts for fish sorting and holding will be tested to determine which methods or designs provide the best performance. In addition, the model will provide continuous hydraulic design data, operation data, and will examine methods for debris control using a fisheries-engineering approach.

3. Finalize Environmental Assessment/Initial Study, FONSI/Negative Declaration.  
USBR staff from the Denver Technical Service Center are responsible for the preparation of all documentation necessary for compliance with the National Environmental Policy Act and the California Environmental Quality Act.
4. Complete Designs and Specs
  - 4.1 Design - USBR staff are responsible for the completion of the designs.
  - 4.2 Engineering Review and Support - Reclamation staff are responsible for the engineering review and support during the design process.
  - 4.3 Spec Package - USBR staff are responsible for the completion of the spec package.
- 5 Construction of the Test Facility
  - 5.1 Construction Contract - Contractors will be used to construct the TFTF and manufacture pumps prior to award of TFTF construction. Pumps will be Government furnished property.
  - 5.2 Construction Management - USBR staff are responsible for construction management.
  - 5.3 Construction Support – USBR staff are responsible for construction support during the construction of the facilities and pumps.

- 6. Support Buildings and Infrastructure
  - 6.1 Planning and Design - USBR staff is responsible for the completion of the planning and design.
  - 6.2 Construction Contract - Contractors will be used to construct the Tracy Fish Site Improvements
  
- 7. Land Acquisition
  - 7.1 Reality Activities - USBR staff are responsible for all the negotiations and documentation for all the reality activities, including the acquisition of the easements and in-fee titles required for the TFTF and TFSI.
  - 7.2 Land Acquisition - Reclamation staff are responsible for the purchase of the required easements and in-fee titles.

Should funds become limited and not allow total program accomplishment in FY05 as provided in this AWP, certain minimum levels of funding will be necessary to prevent either abandonment of the Program, or, seriously delaying the Program, thus resulting in potential stranded costs. If total anticipated funds are not provided in FY05, any fund reductions would be taken from the amounts required for the first phase of the construction contract and/or related program tasks resulting in a possible delay in the construction schedule. Additional funding would be required in FY06 to replace amounts not made available in 05.

Priority tasks that need to be funded as a minimum in FY04 include:

- 1. Program Management
- 2. Fisheries Engineering Research Program
  - 4.1 Design
  - 4.2 Engineering Review and Support
  - 5.1 Construction Contract for Site Work
  - 5.2 Construction Management
  - 5.3 Construction Support
  - 6.1 Planning and Design of Infrastructure Buildings and Support
  - 6.2 Construction Contract for Infrastructure

The above funding for FY05 will facilitate proceeding with construction of the TFTF when additional funds do become available in FY06. It also assumes that all permitting and environmental documentation requirements will have been completed beforehand.

**B. Schedule and Deliverables**

#	Task	Dates		Deliverable
		Start	Complete	
1	Program Management	10/01/04	09/30/05	Program Coordination, Budget Oversight, Team Leader assignments and direction
1.1	Project Management	10/01/04	09/30/04	Obtain all required environmental permits, develop schedules, coordinate team actions
1.2	Public Involvement	10/01/04	09/30/05	Public Involvement Plan, Public Outreach, TFTF Video documentary
1.3	Tracy Office Program Implementation	10/01/04	09/30/05	Review specifications, continue aquaculture facility operation and development, support for land and permitting actions
2	Research Program	10/01/04	09/30/05	Complete study plan, implement studies, model development
3	Environmental Documentation	10/01/04	06/01/05	Complete NEPA and CEQA compliance. Amend EA/IS.
4	Complete Designs and Specs	10/01/04	09/30/05	
4.1	Design	10/01/04	05/01/05	Revise Concept Plans, Complete Final TFTF designs
4.2	Engineering Review and Support	10/01/04	05/01/05	Review TFTF designs, provide design data
4.3	Spec Package	06/01/05	12/01/05	Assemble spec package for bid, Award
5	Construct the Test Facility	01/01/06	06/01/06	
5.1	Award/Initiate Construction	01/01/06	06/01/06	Begin construction of the TFTF, to be completed in 2006
5.2	Construction Management	10/01/04	09/30/06	Review bids and submittals, oversee construction, utility agreements and relocations
5.3	Construction Support	10/01/04	09/30/05	Specifications and drawings preparation

#	Task	Dates		Deliverable
		Start	Complete	
6	Support Buildings/Infrastructure	10/01/04	09/30/05	
6.1	Planning and Design	10/01/04	09/30/05	Complete Phase 1 Infrastructure designs, infrastructure planning, coordination, and budget oversight
6.2	Construction Contract	06/01/05	06/01/06	Begin construction of Infrastructure
7	Land Acquisition	N/A	N/A	
7.1	Reality Activities	N/A	N/A	

**C. Summary of Program Costs and Funding Sources.**

#	Task	Total Cost	Funding Sources		
					Prop 13
1.1	Project Management	491,000			\$91,000
1.2	Public Involvement	\$25,000			\$25,000
1.3	Tracy Office Program Implementation	\$25,000			\$25,000
2	Research Program	\$675,000			\$675,000
3	Environmental Documentation	\$75,000			\$75,000
4.1	TFTF Design	\$1,000,000			\$1,000,000
4.2	Engineering Review and Support	\$70,000			\$70,000
5.1	TFTF Construction Contract	\$10,000,000			\$10,000,000
5.2	Construction Management	\$57,000			\$57,000
5.3	Construction Support	\$190,000			\$190,000
6.1	Support Buildings & Infrastructure Design	\$100,000			\$100,000
6.2	Construction Contract - TFSI	\$3,000,000			\$3,000,000
7.1	Reality Activities	\$0			\$0
	<b>Total Program Budget</b>	<b>\$15,313,000</b>			<b>\$15,313,000</b>

**D. CVPIA Program Budget**

<b>#</b>	<b>Task</b>	<b>FTE</b>	<b>Direct Salary and Benefits Costs</b>	<b>Contracts Costs</b>	<b>Miscellaneous Costs</b>	<b>Administrative Costs (Incl. O/H &amp; Indirect)</b>	<b>Total Costs</b>
1.1	Project Management	0.5	\$48,000		\$5,000	\$43,000	\$96,000
1.2	Public Involvement	0.1	\$5,000	\$20,000			\$25,000
1.3	Tracy Office Program Implementation	0.5	\$12,000		\$2,000	\$11,000	\$25,000
2	Research Program	6.0	\$520,000	\$80,000	\$50,000	\$25,000	\$675,000
3	Environmental Documentation	0.6		\$75,000			\$75,000
4.1	TFTF Design	1.5	\$950,000		\$25,000	\$25,000	\$1,000,000
4.2	Engineering Review and Support	0.6	\$50,000			\$20,000	\$70,000
4.3	Spec Package						\$0
5.1	TFTF Construction.			\$10,000,000			\$10,000,000
5.2	Construction Mngt	0.2	\$30,000			\$27,000	\$57,000
5.3	Construction Support	1.2	\$100,000			\$90,000	\$190,000
6.1	Support Buildings & Infrastructure Design	0.8	\$100,000				\$100,000
6.2	Construction Contract Infrastructure			\$3,000,000			\$3,000,000
7.1	Reality Activities						\$0
	<b>Total by Category</b>	<b>16.52</b>	<b>\$1,815,000</b>	<b>\$13,175,000</b>	<b>\$82,000</b>	<b>\$241,000</b>	<b>\$15,313,000</b>

**VII. Future Years Commitments/Actions.**

The approximate budget to complete the TFTF is as follows:

	FY06	FY07	FY08
Planning, Design, and Research	\$2.0 mil	\$1.5 mil	\$1.5 mil
Construction Contracts	\$2.0 mil	\$1.0 mil	\$0.5 mil
TFTF Staffing (O&M)	<u>\$1.5 mil</u>	<u>\$1.5 mil</u>	<u>\$1.5 mil</u>
Total	\$5.5 mil	\$4.0 mil	\$3.5 mil