

South Delta Fish Facility Forum

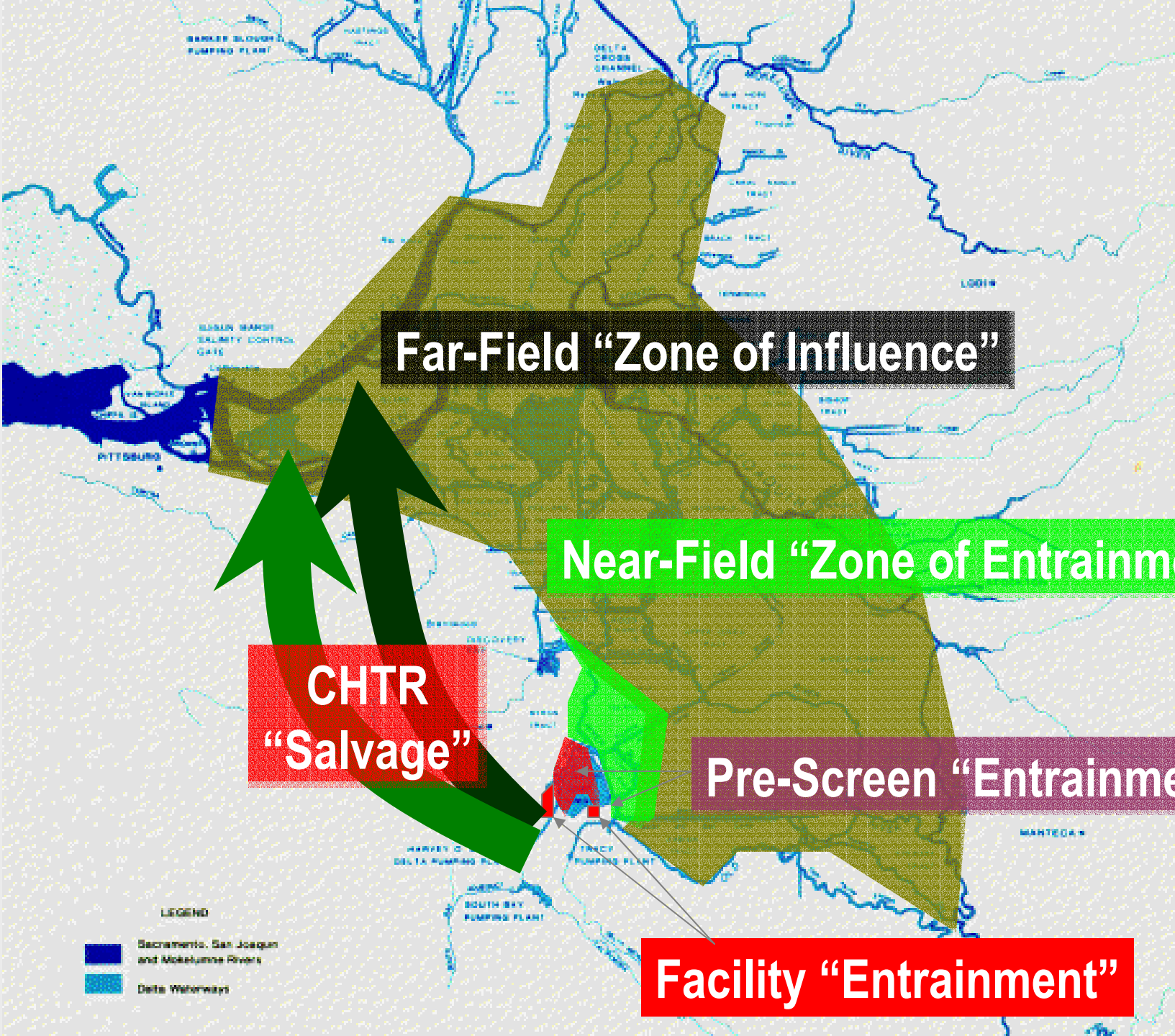
Where Do We Go From Here?

November 3, 2003



South Delta Fish Facility Forum Proposals

- ◆ **South Delta Hydrodynamics/Fisheries Investigations**
- ◆ **Collection, Handling, Transportation, and Release (CHTR)**
- ◆ **South Delta Fish Facility Improvements**
- ◆ **Clifton Court Forebay – Diversion Facility Location Options**
- ◆ **Alternative Fish Facility Concepts using Combinations of Non-Salvage Screens and Flow Recirculation**
- ◆ **Fish Facility Technology Development - Tracy Fish Test Facility**



Far-Field "Zone of Influence"

Near-Field "Zone of Entrapment"

**CHTR
"Salvage"**

Pre-Screen "Entrapment"

Facility "Entrapment"

LEGEND
Sacramento, San Joaquin
and Mokelumne Rivers
Delta Waterways



South Delta Hydrodynamics and Fisheries Investigations



South Delta Hydrodynamics and Fisheries Investigations

Proposed Study

◆ Objectives

- Understand *in detail* the hydrodynamics of the Central and South Delta regions
- Understand the transport of fishes through the Central and South Delta and into the export facilities
- Determine if there are feasible gate, diversion, barrier, or Delta facility operations to reduce fish impacts while meeting delivery and water quality objectives
- Support future planning of facility options and operations



South Delta Hydrodynamics and Fisheries Investigations

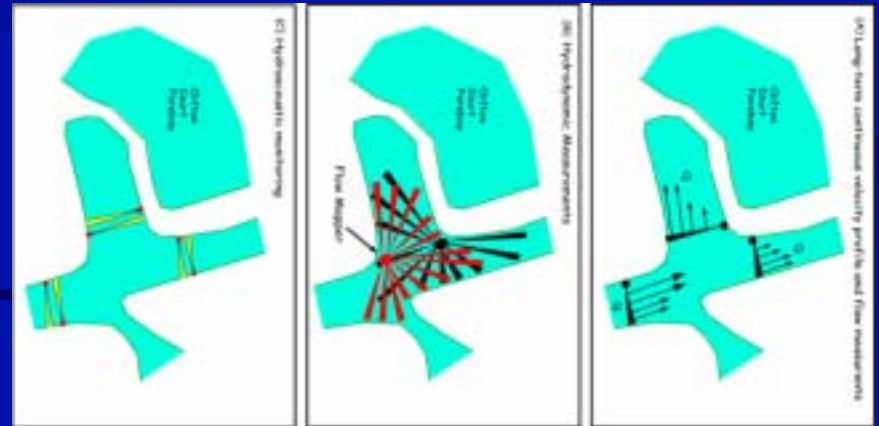
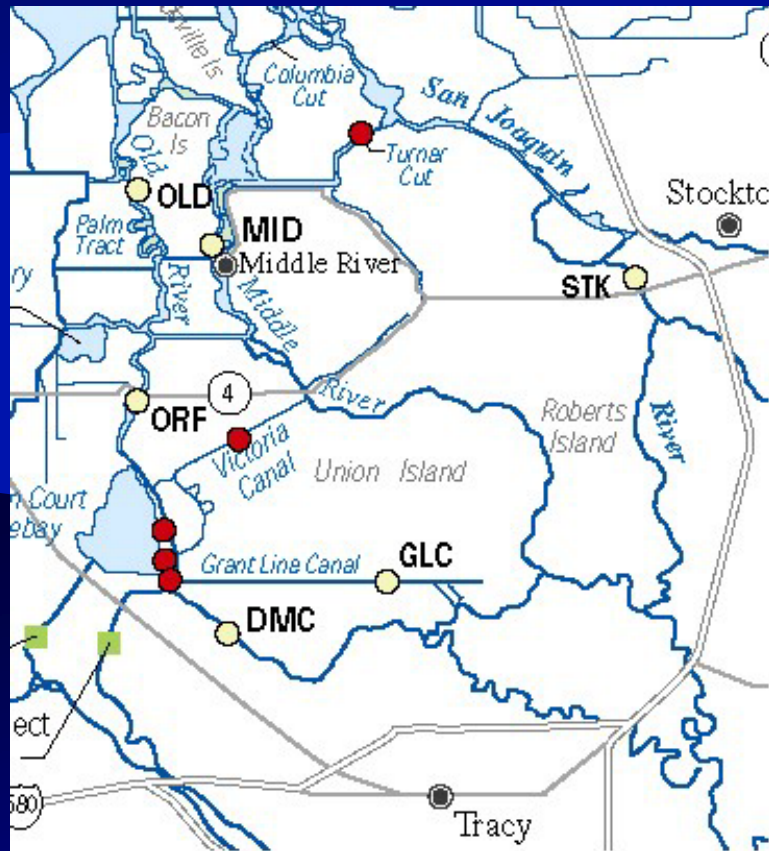
Proposed Study

◆ Description

- Conduct fisheries monitoring/sampling in South and Central Delta
- Install new flow stations in South Delta near CCF and Tracy
- Conduct hydroacoustic monitoring with fisheries testing
- Construct 3-D hydrodynamic model
- Integrate fisheries data into hydraulic model to predict movements
- 2-Year study (\$1million 1st year, \$1million 2nd year?)



Proposed Flow and Hydroacoustic Stations





Collection, Handling, Transportation, and Release (CHTR) Studies



Collection, Handling, Transportation, and Release (CHTR)

Proposed and On-Going Studies

◆ Objective

- Determine what factors influence delta smelt survival in the salvage process and determine if it is cost effective to design facilities around this species

◆ Study Description

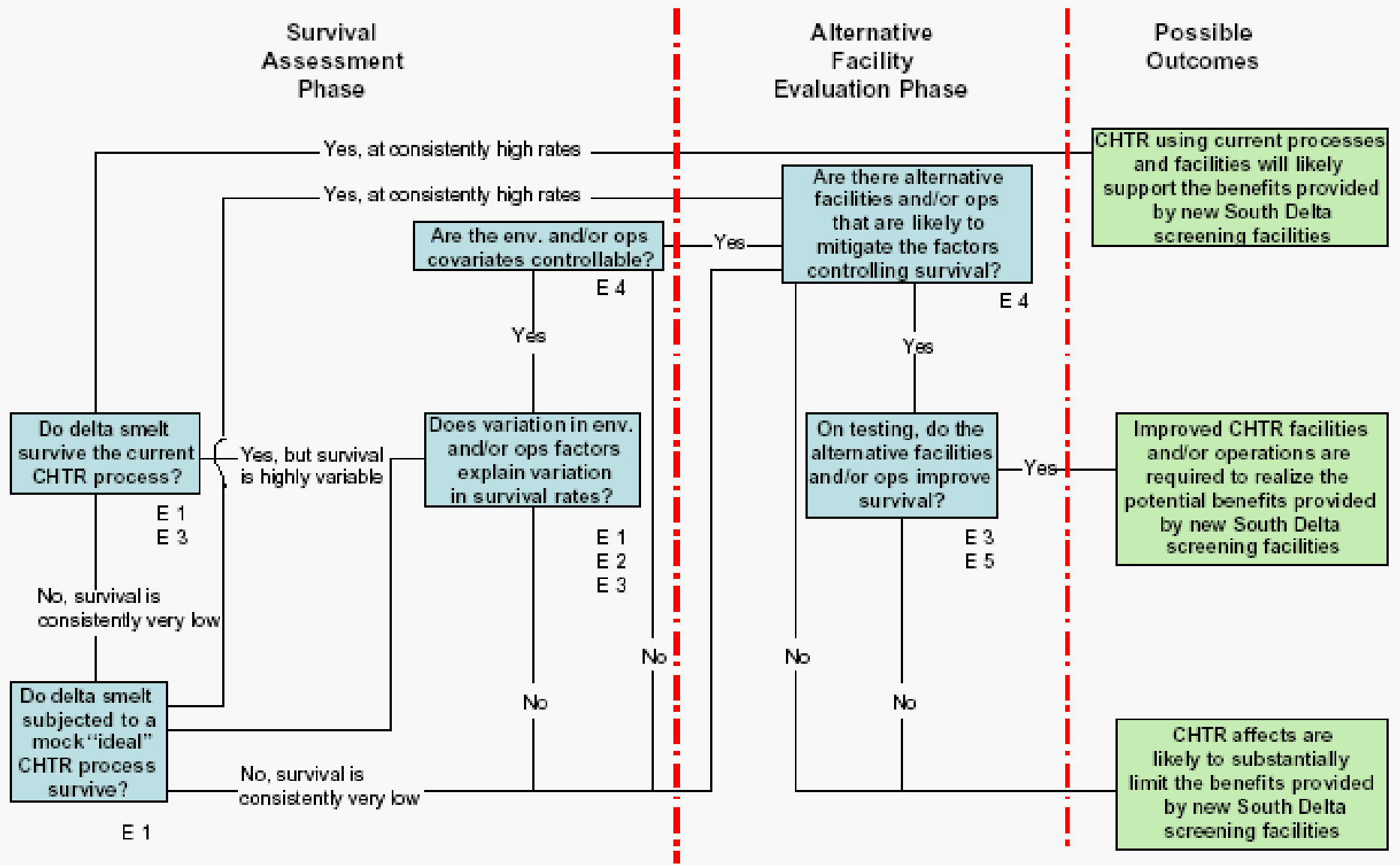
- Investigate acute mortality, chronic effects, and predation in the CHTR process (DFG)
 - ~\$3 million
- Investigate release site impacts (DWR?)
 - Cost ?
- Develop new CHTR technologies (DWR, USBR)
 - ~\$5 million by DWR
 - Cost by USBR included in CVPIA, ~\$1 million/year
- 3 year study



Collection, Handling, Transport, and Release Studies (CHTR)



Figure 2. CHTR Decision Pathways and the Role of CHTR Evaluation Program Elements in Decision Making



E1 – Acute M & I E4 – Alternatives Identification
 E2 – Predation E5 – Facility Pilot Testing
 E3 – Diagnostic Ind. & Sub Lethal Effects



South Delta Fish Facility Improvements





South Delta Fish Facility Improvements *On-going as needed*

◆ Objectives

- Keep the existing fish facilities operating as efficiently as possible
- Improve to meet increasing delivery requirements
- Satisfy regulatory responsibilities
 - *CVPIA for Tracy*
 - *State Board*
 - *CVP/SWP Biological Opinions*
- Respond to a changing aquatic community
- Replace aging facility components to improve safety and reliability



South Delta Fish Facility Improvements *On-going as needed*

◆ Description

- Existing facility repairs conducted as needed to bring fish salvage to original function
- Improve facility components and operations to reduce maintenance and debris
 - *Crab screen*
 - *Automated operating systems*
 - *New trashrakes*
- Annual funding from CVP/SWP project budgets and CVPIA



Fish Facility Improvements



Example Project:
Automate Debris
Removal Systems





Clifton Court Forebay Diversion Facility Location Options



Clifton Court Forebay Diversion Facility Location Options *Proposed Alternatives Analysis*

◆ Objectives

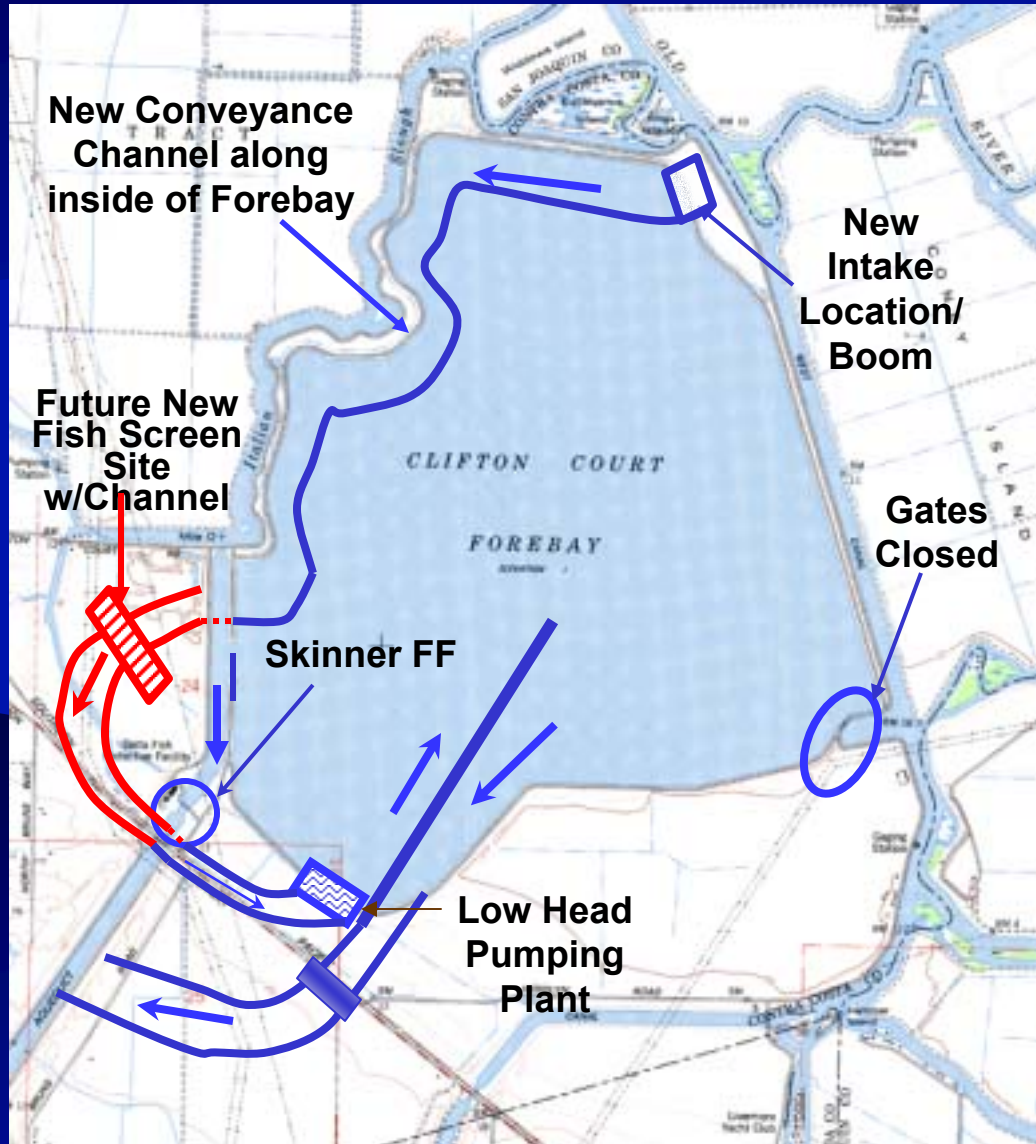
- Reduce CCF predation losses

◆ Alternatives Description

- Continue fish salvage operations
- Place diversion screens upstream of CCF
- “Short Circuit” Approach
 - *“Replumb” conveyance channel to **existing** fish facility*
 - *Install low head pumping plant behind Skinner FF for pumping into CCF*
 - *Future fish facility replacement as necessary*
- “Module” Approach
 - *Construct **new** fish facility at U/S end of CCF in 2500 cfs modules*
 - *Evaluate facility function and modify design for facility buildout*
 - *Remove Skinner FF when all modules completed*
- ~\$1-2 million for pre-feasibility study

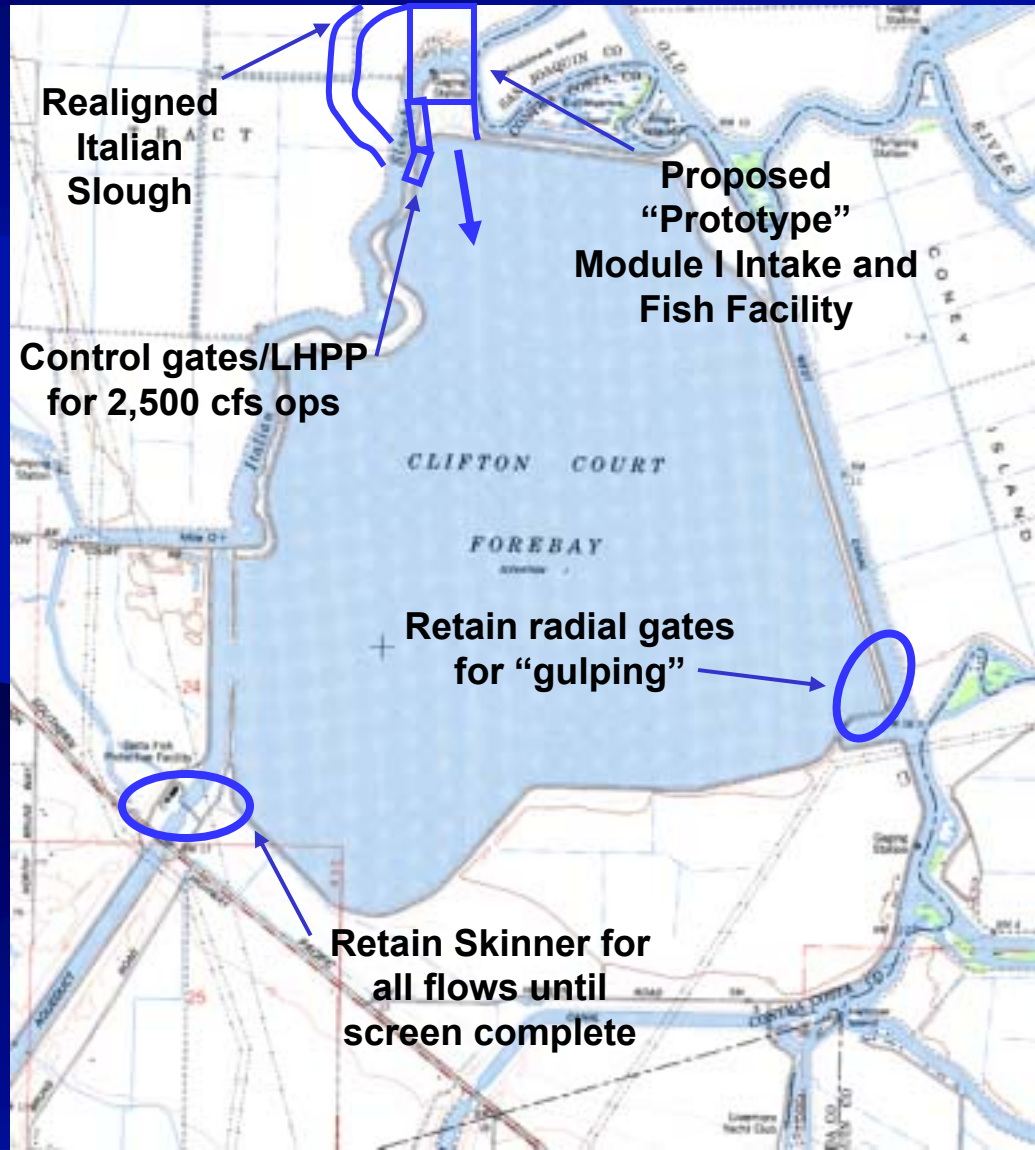


“Short Circuit” Approach - Example





“Module” Approach Northwest Intake Site - Example





Alternative Fish Facility Concepts using Combinations of Non-Salvage Screens and Flow Recirculation



Alternative Fish Facility Concepts using Combinations of Non-Salvage Screens and Flow Recirculation

Proposed Alternatives Analysis

◆ Objective

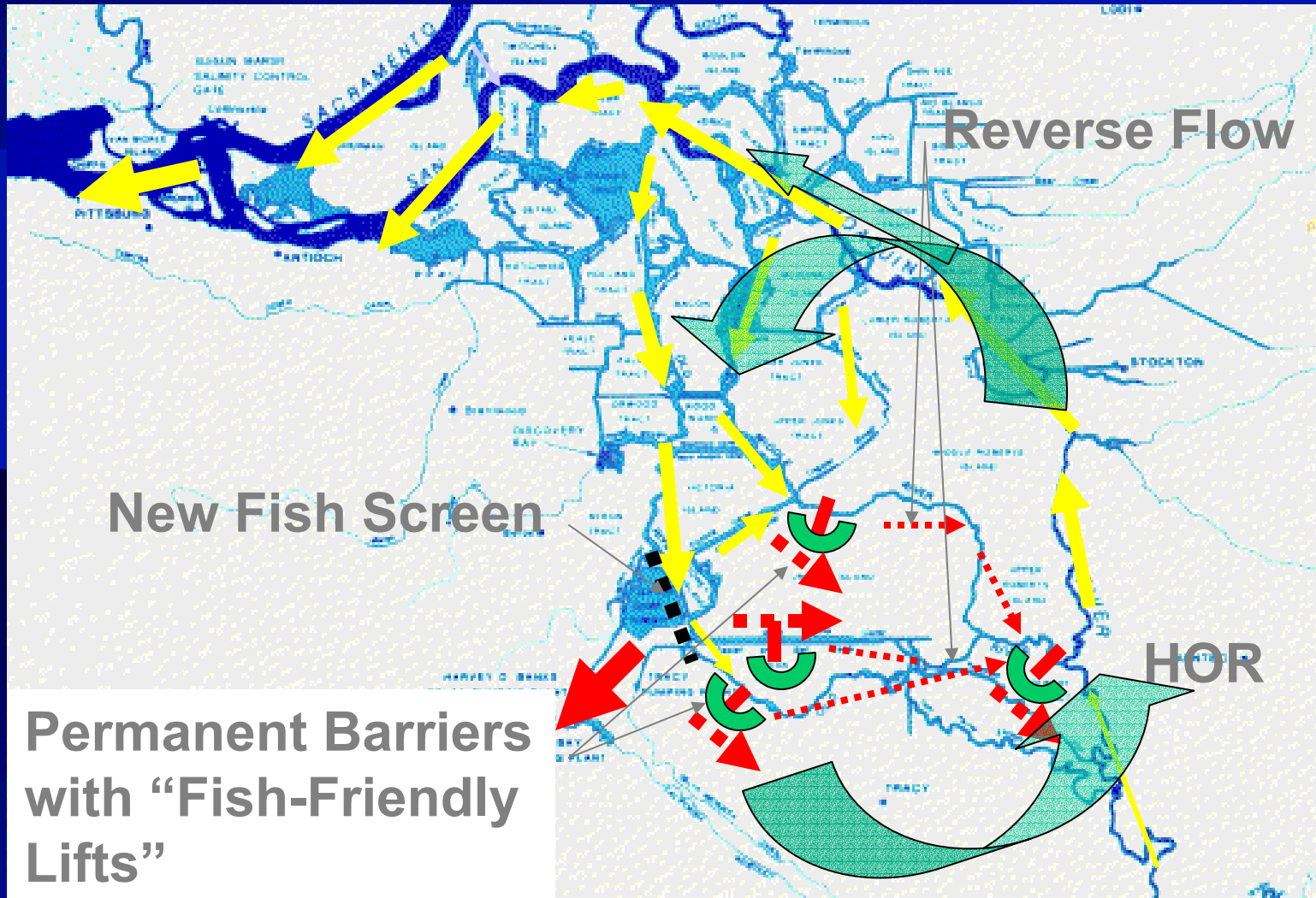
- Improve the dead end situation at the SWP/CVP pumps
- Reduce or eliminate fish handling losses
- Allow fish to move out of the South Delta on their own

◆ Alternatives Descriptions

- Alex Hildebrand Idea
 - *Place exclusion screens on CCF and bypass fish over permanent barriers by using “fish friendly” pumps*
- John Winther Idea
 - *Place exclusion screens around CCF and allow fish to move out on their own*

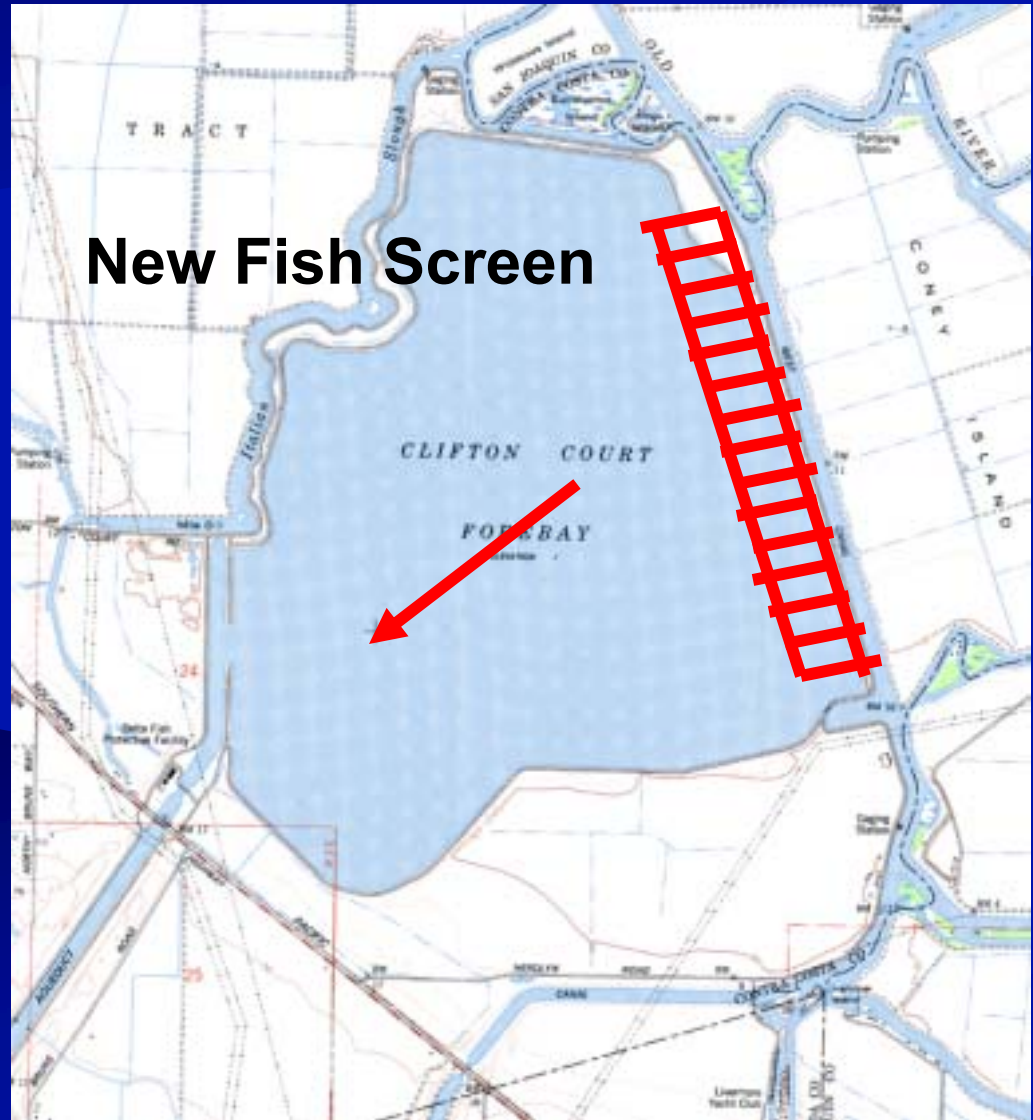
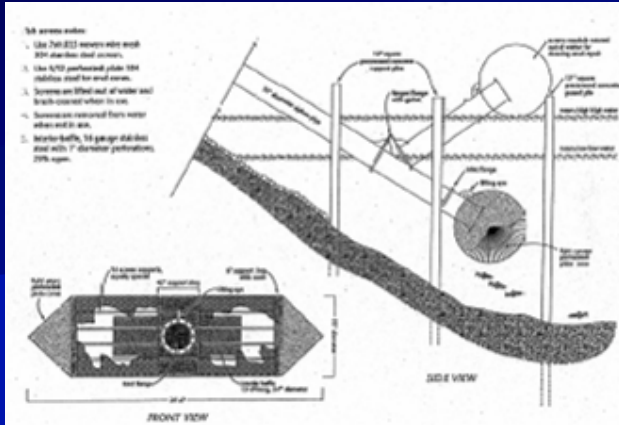


Alternative Fish Facility Concepts using Combinations of Non-Salvage and Recirculation





Non-Salvage Screens at CVP/SWP





Fish Facility Technology Development

**Tracy Fish Test Facility
/ Tracy Demonstration Fish Facility**

***(i.e. various facility sizes,
configurations, operations, costs)***



Fish Facility Technology Development

Tracy Fish Test Facility

Proposed Study

◆ Objectives

- Demonstrate new fish screen and collection technologies in a complete system in Delta environment
 - Test agency criteria standards for new fish screens
 - Establish criteria or justify variances as applicable for “salvage” facilities
- Provide scientific information on fish facility effectiveness
- Improve facility reliability
- Reduce operating and maintenance costs
- Provide design and biological information on alternative facilities
- Determine future facility components, costs, and benefits
- Agency acceptance on new technology and processes



Fish Facility Technology Development

Tracy Fish Test Facility

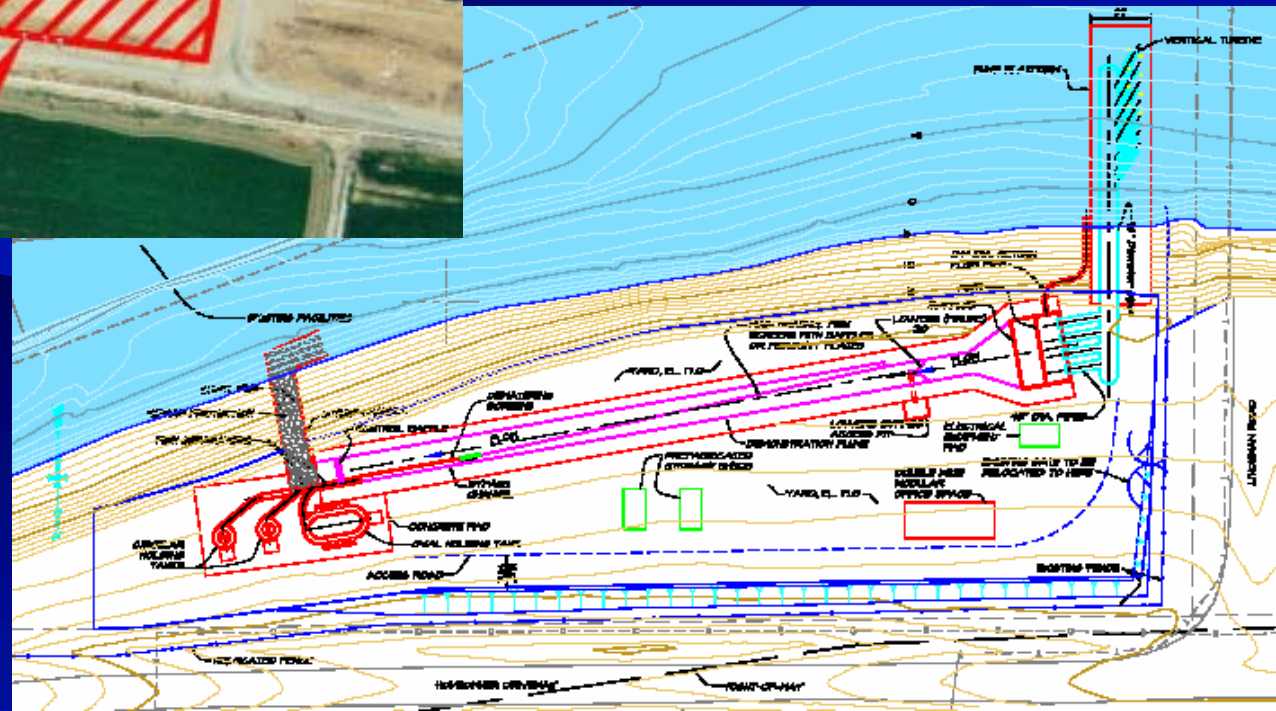
Proposed Study

◆ Description

- Construct demonstration facility adjacent to Tracy Fish Facility
- Operate test facility independent of CVP pumping operations
- 3 year testing program once operational
- ~ \$20 million for smaller facility (incl. testing)



Tracy Demonstration Fish Facility



**Proposed SWP
"Module Approach"
Intake Location**

Skinner FF



Banks PP

Existing CCF Intake



**Proposed Tracy
Fish Test Facility**

Tracy PP



Tracy FF





Outlet Channel

Clifton Court Forebay

Trash Boom

Trash Rack

Louvers

Skinner Fish Salvage Facility (Holding Tanks Inside)

Secondary Screens/Louvers