



Proposed Changes in Delta Facilities and Suggestions to Reduce Predation Impacts

CALFED Predation Workshop

Ron Ott

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Skinner FF



Banks PP



Existing CCF Intake



Tracy PP



Proposed Tracy Fish Test Facility

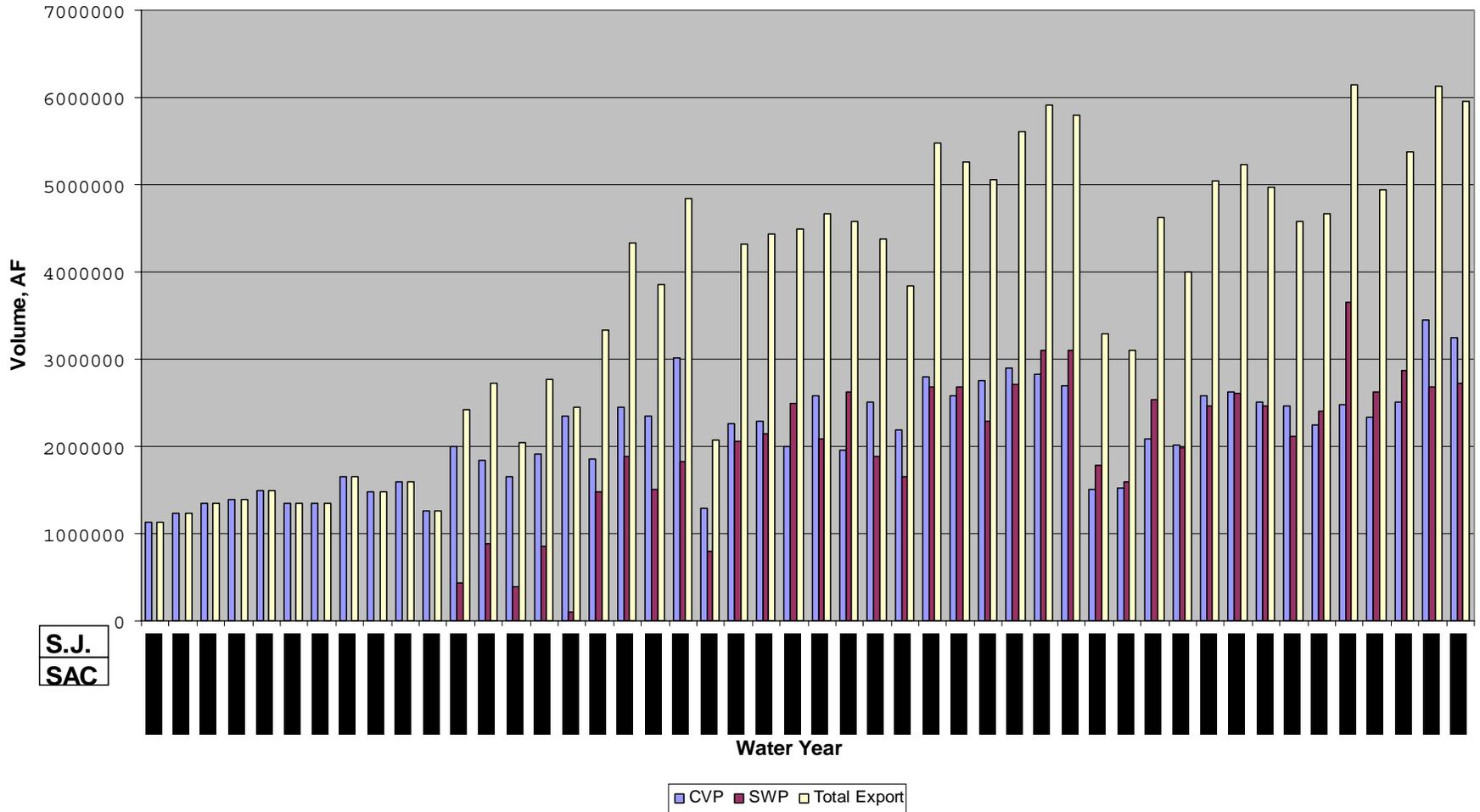


Tracy FF





CVP (Tracy PP) and SWP (Banks PP) Exports WY 1957 - 2004





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 / Labs



Collection, Handling, Transportation, and Release (CHTR)

◆ 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)
- Investigate release site impacts (DWR?)
- Develop new CHTR technologies (DWR, USBR)



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





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 trashracks*
 - *Replacement of secondary louvers and holding facilities*
- Research on predator movements in the Tracy Facility to assist in predator management



Fish Facility Improvements

Example Project:
Automate Debris
Removal Systems





Predation Research at Tracy

- ◆ "Quantification of Densities, Distributions, and Movements of Large Fish near the Tracy Fish Collection Facility Trash Rack Using Hydroacoustics"
- ◆ "Diet Analysis and Food Preference of Predatory Species in the Secondary Louver System at the Tracy Fish Collection Facility"
- ◆ "Evaluation of Alternative TFCF Predator Removal Techniques to Decrease In-Plant Predator Numbers and Improve Operations"
- ◆ "Sonic Tag and Tracking Studies of Striped Bass at the Tracy Fish Collection Facility"
- ◆ "Use of Dual Frequency Identification Sonar (DIDSON) for Underwater Observations of Fish Movement and Behavior near the Primary Bypass Entrances and Rotating Debris Screen at TFCF"



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
- “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*
- “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*

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

Skinner FF



Banks PP

Existing CCF Intake



**Proposed Tracy
Fish Test Facility**

Tracy PP

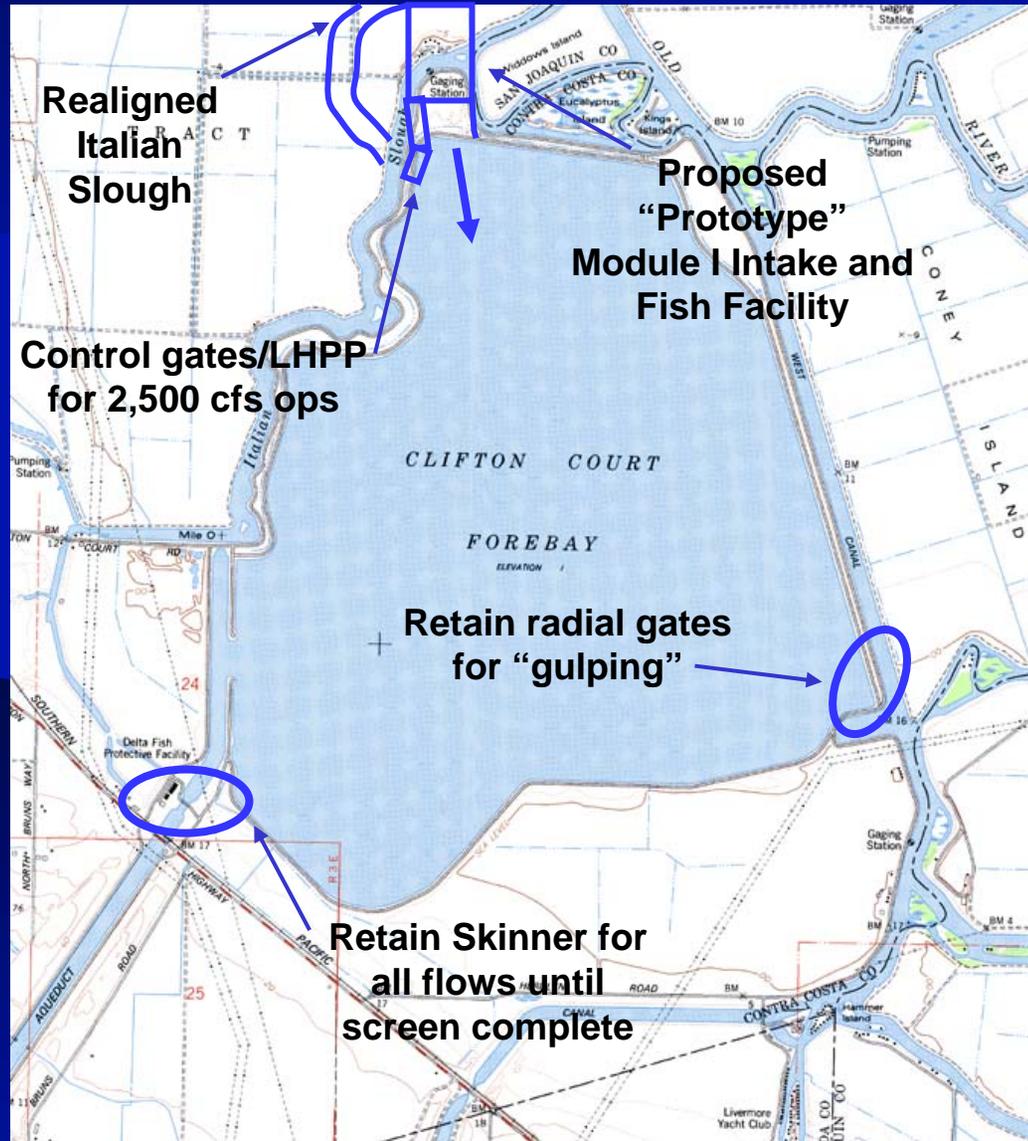


Tracy FF



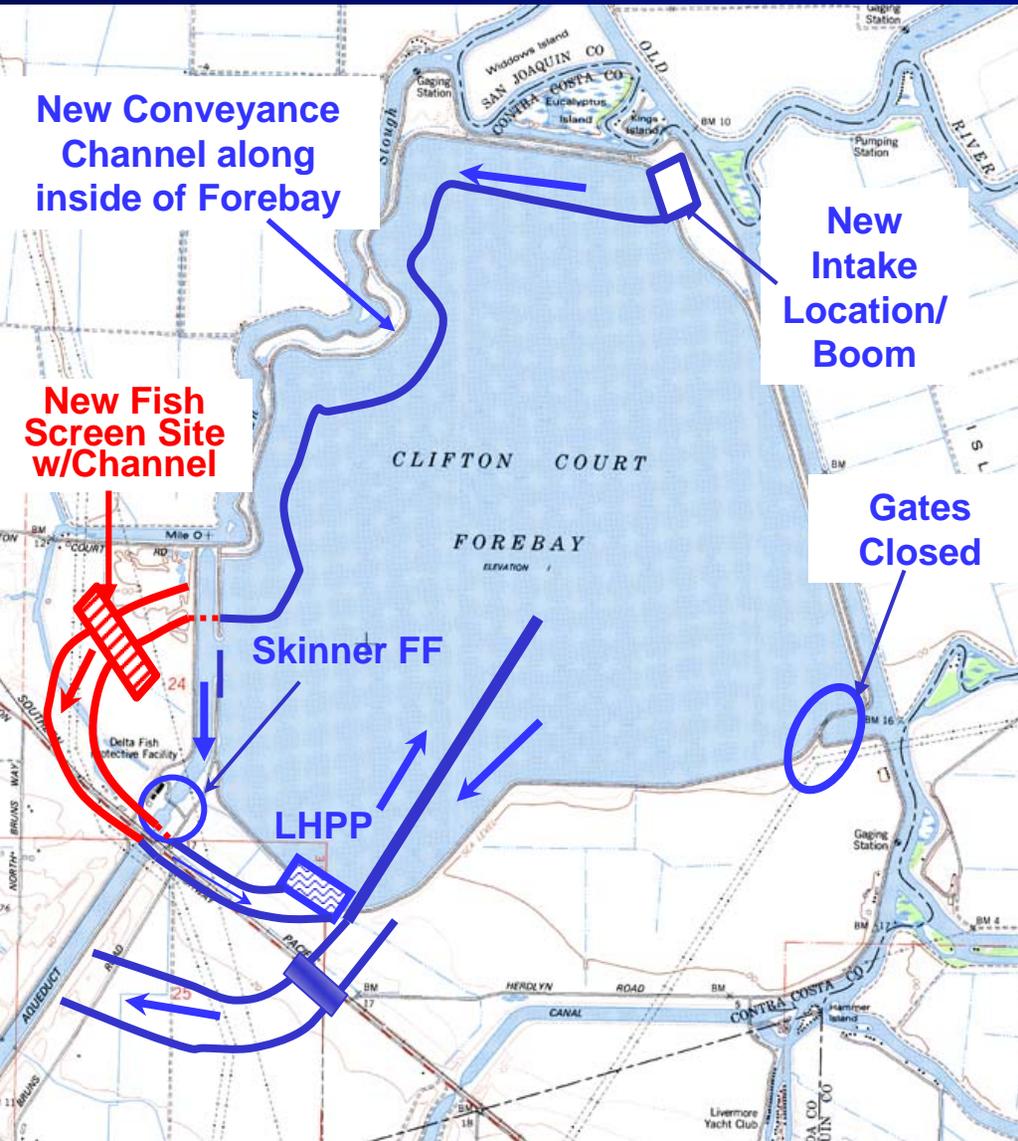


"Module" Approach Northwest Intake Site - Example





Alternatives Feasibility Study to Reduce Pre-Screen Predation Losses



- ◆ New Fish Screen to Replace Skinner Later



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

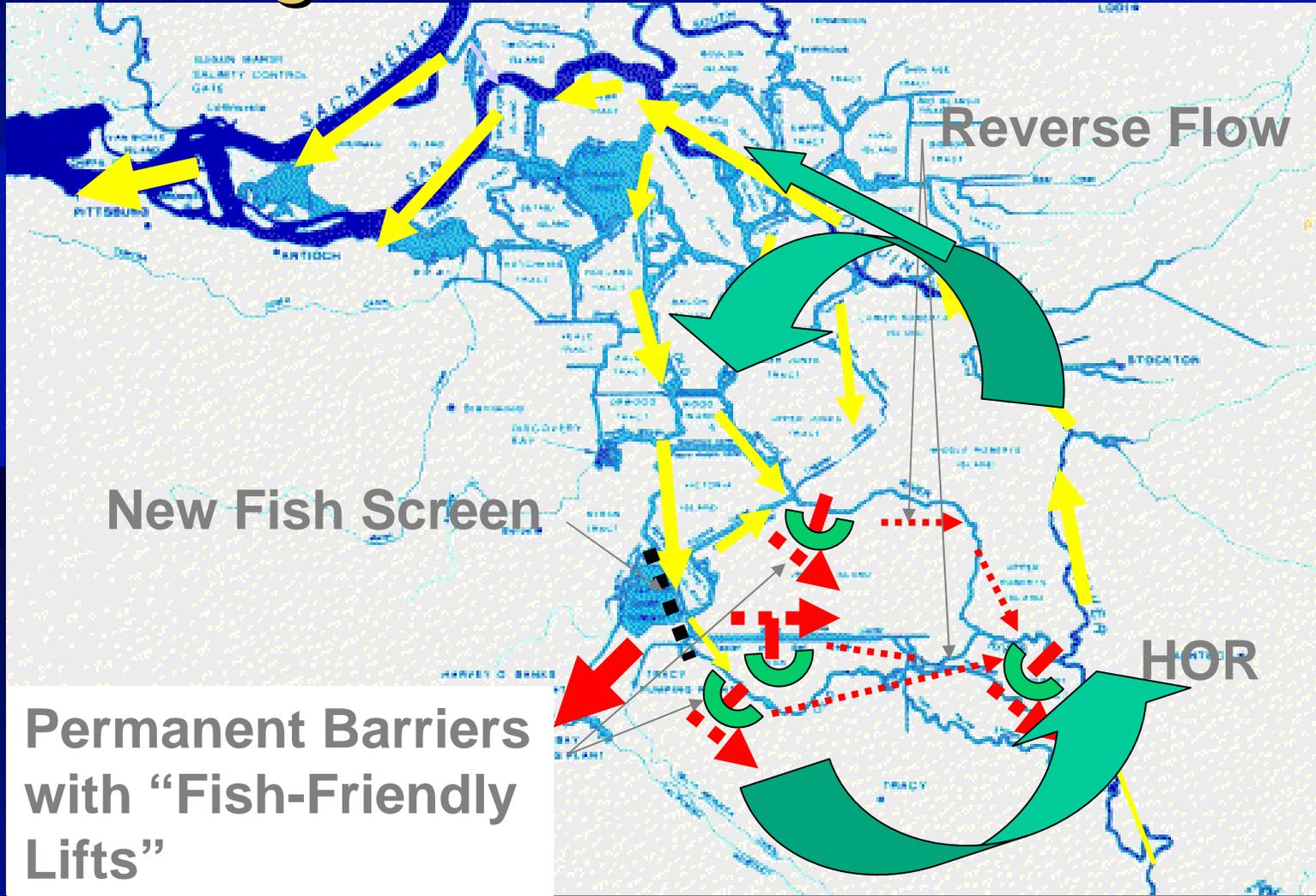
- Improve the dead end situation at the SWP/CVP pumps
- Reduce or eliminate fish handling losses
- Allow fish to move out of the South Delta on their own

◆ 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*



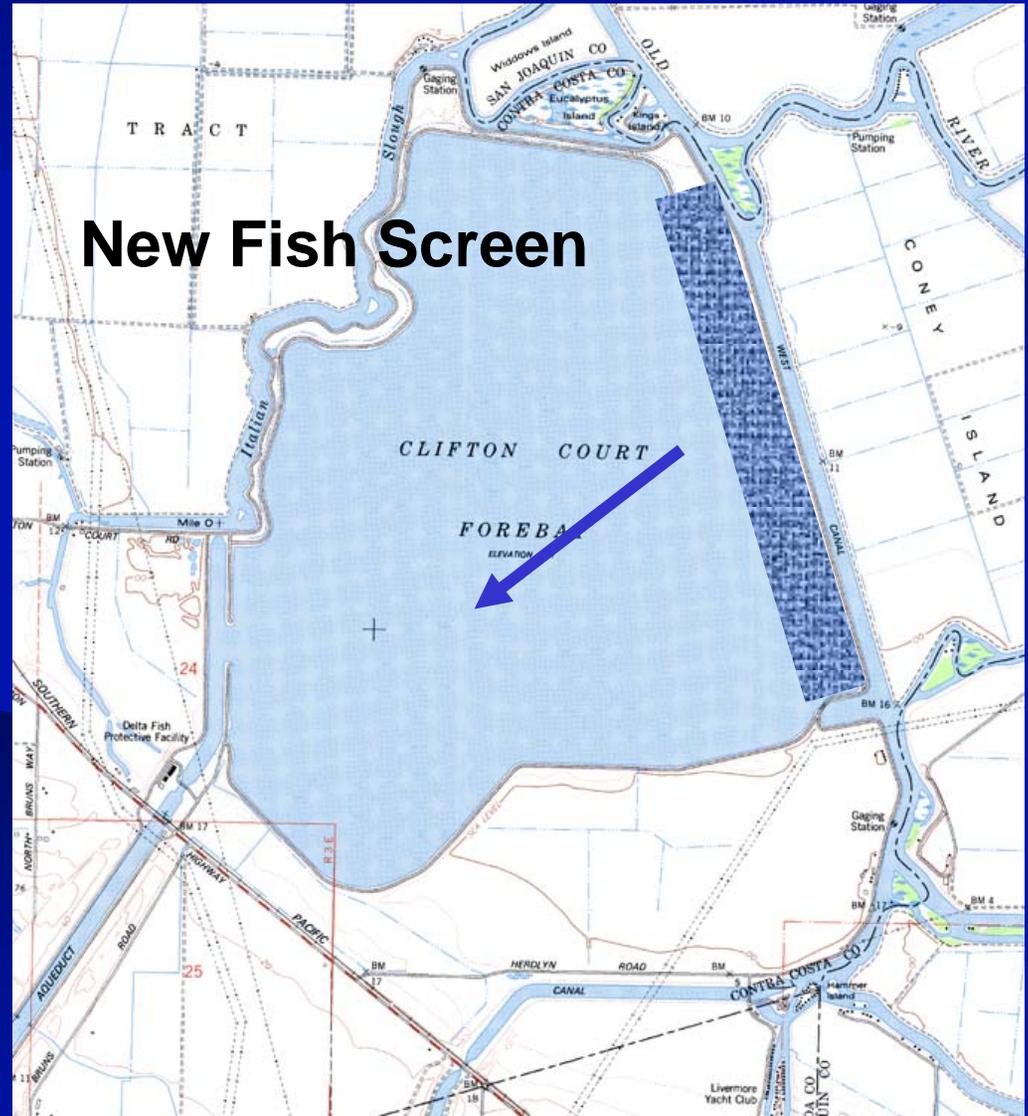
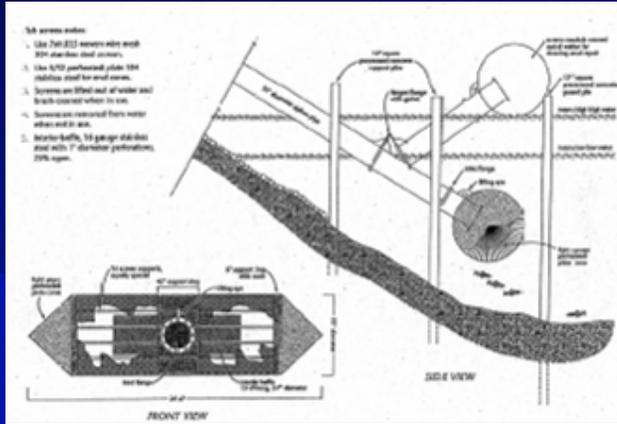
Alternative Fish Facility Concepts using Combinations of Non-Salvage and Recirculation



Permanent Barriers with "Fish-Friendly Lifts"

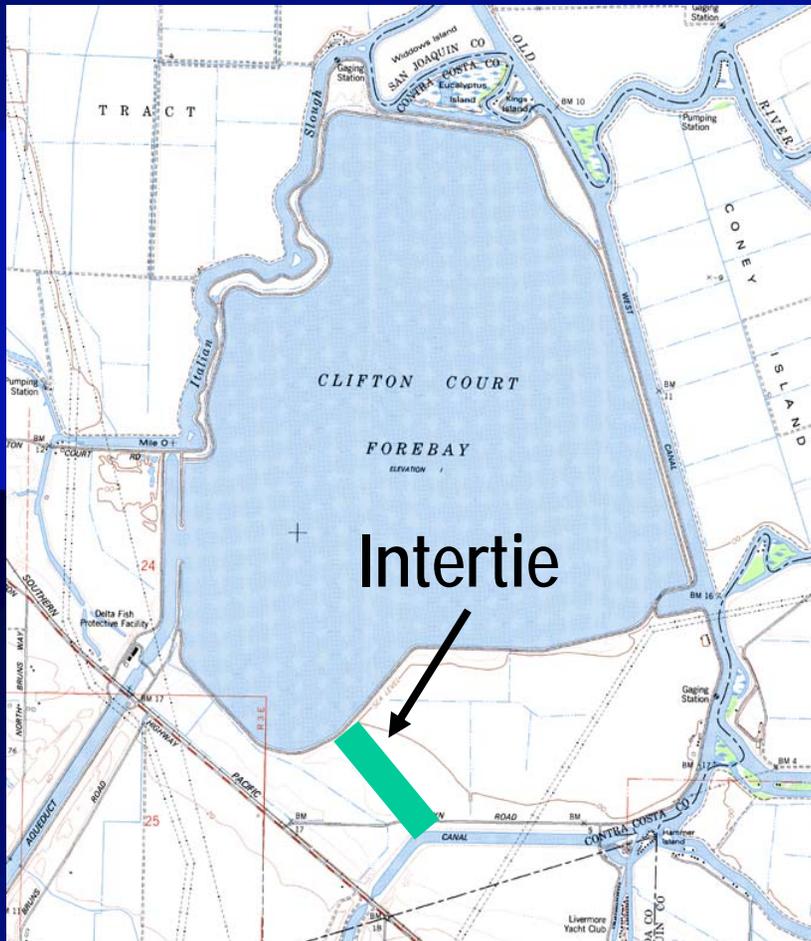


Non-Salvage Screens at CVP/SWP





CCF/Tracy Intertie



- ◆ Should we consolidate the CVP diversion facility with the SWP through CCF ?
- ◆ Is there an advantage for having two diversions for management of water quality and fish salvage?



Outlet Channel

Clifton Court Forebay

Trash Boom

Trash Rack

Louvers

Skinner Fish Salvage Facility (Holding Tanks Inside)

Secondary Screens/Louvers



Delta Improvements Package



Water Supply Reliability



Ecosystem restoration



Water Quality



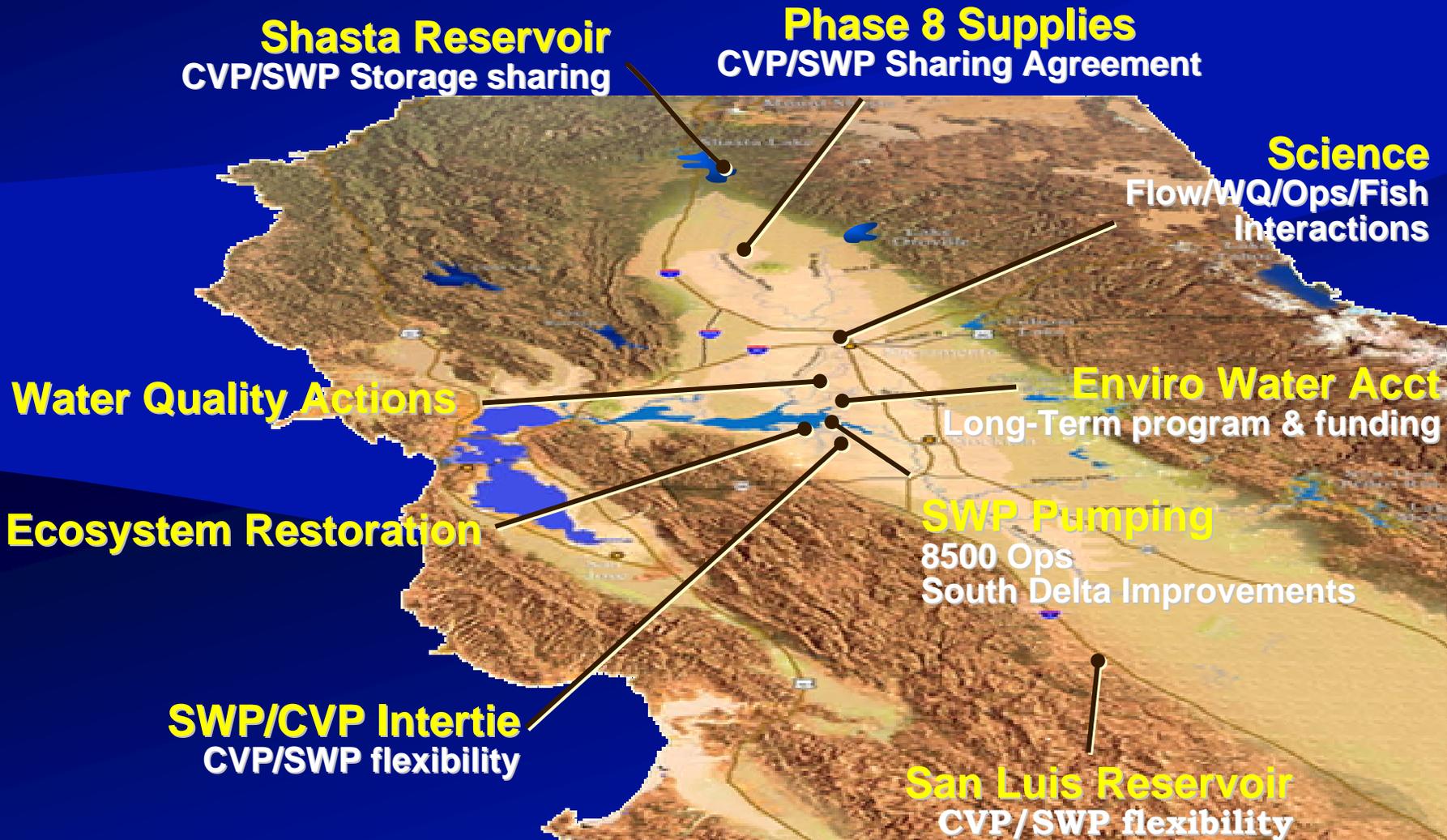
Science



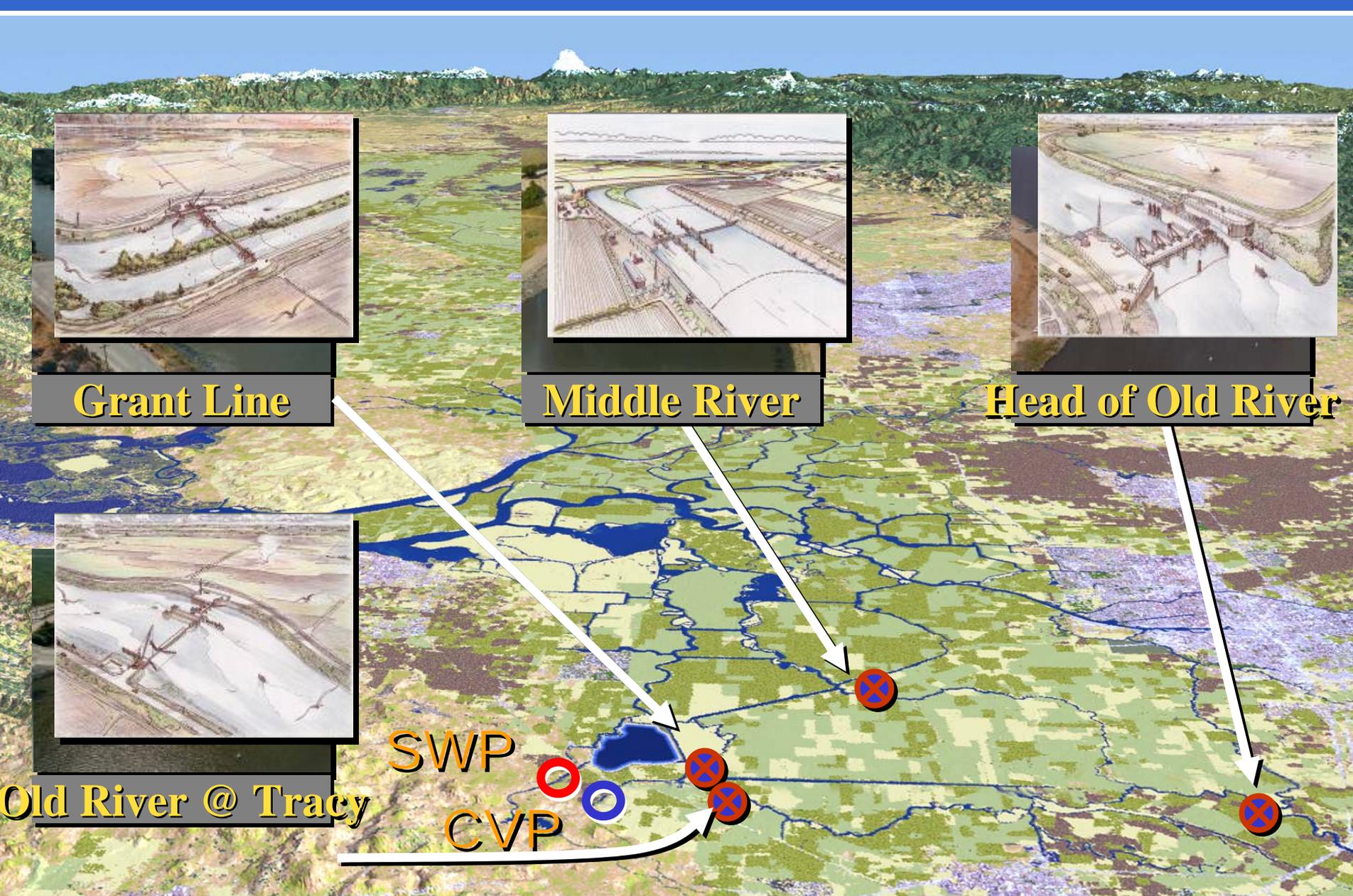
Levees



Key Elements



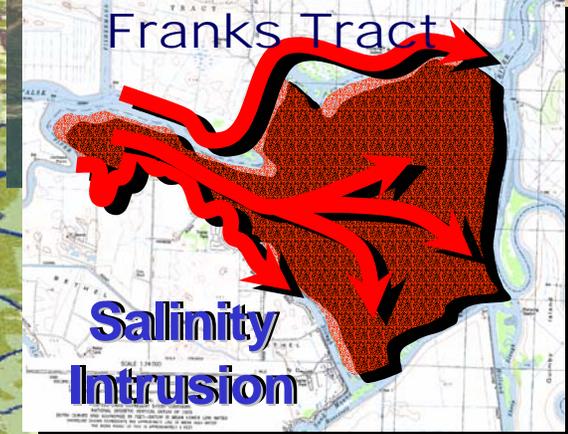
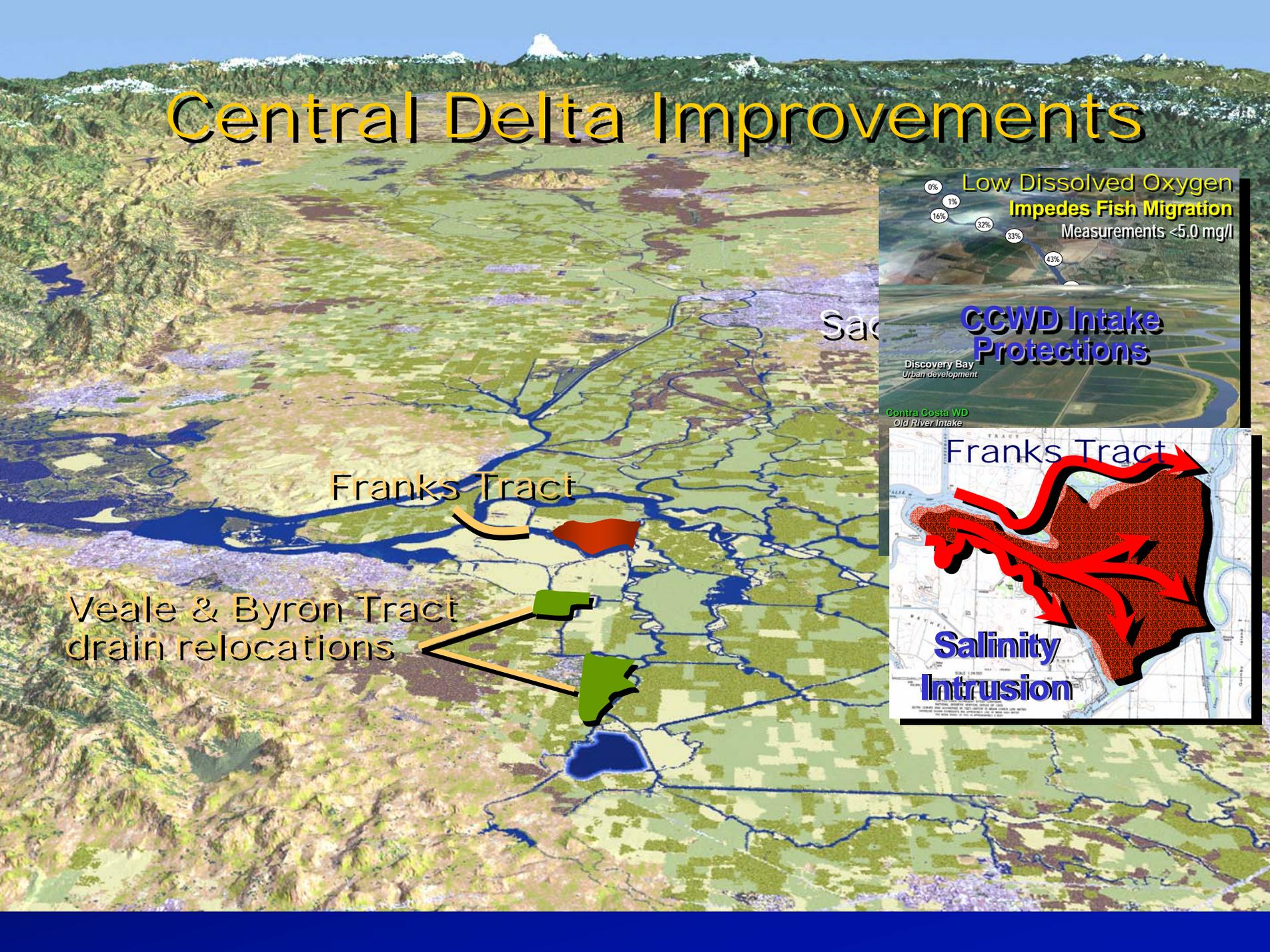
South Delta Improvements



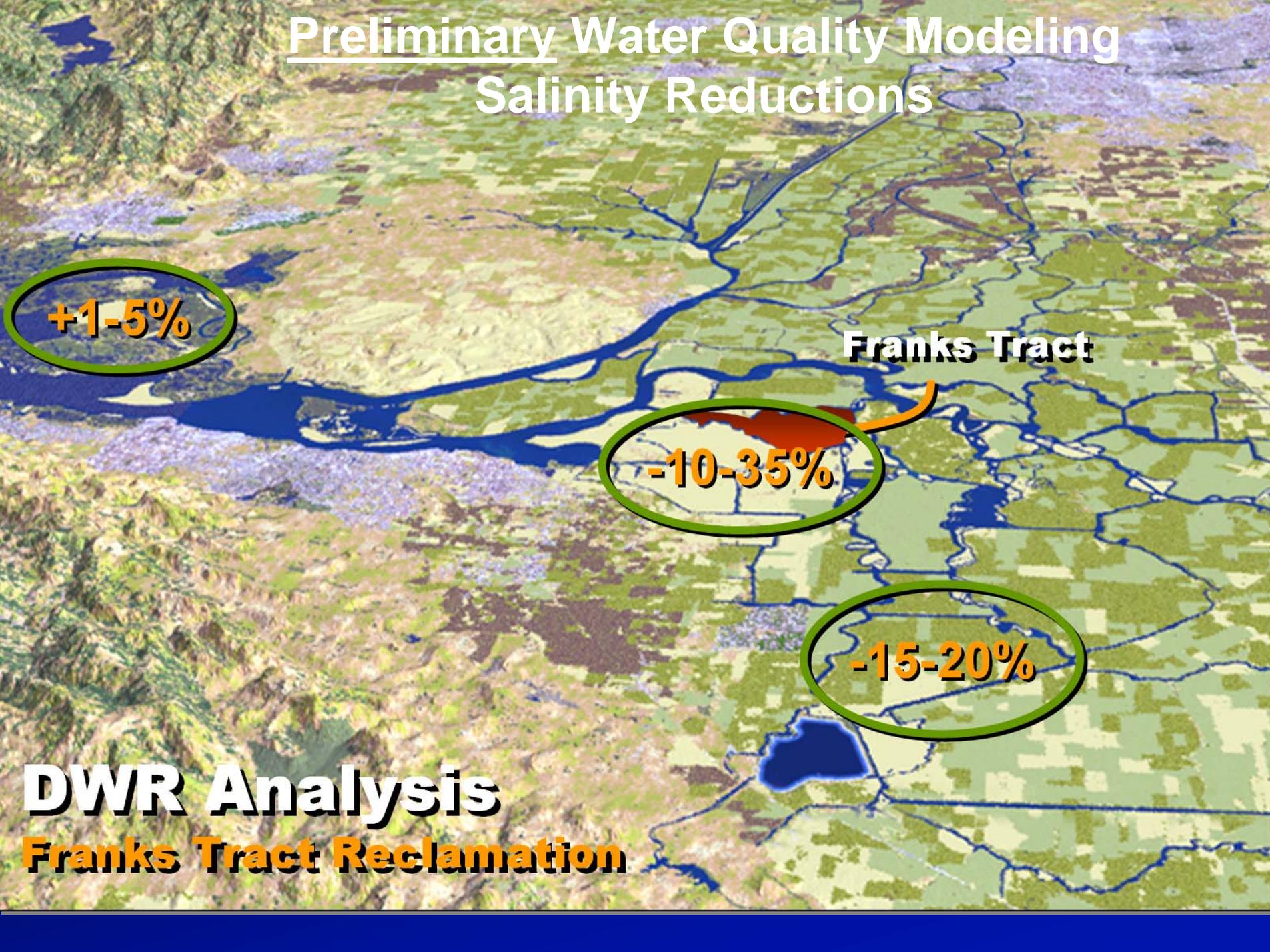
Central Delta Improvements

Franks Tract

Veale & Byron Tract
drain relocations



Preliminary Water Quality Modeling Salinity Reductions



+1-5%

Franks Tract

-10-35%

-15-20%

DWR Analysis
Franks Tract Reclamation



Sacramento

Stanislaus
River

San Joaquin River

Merced River

San Luis

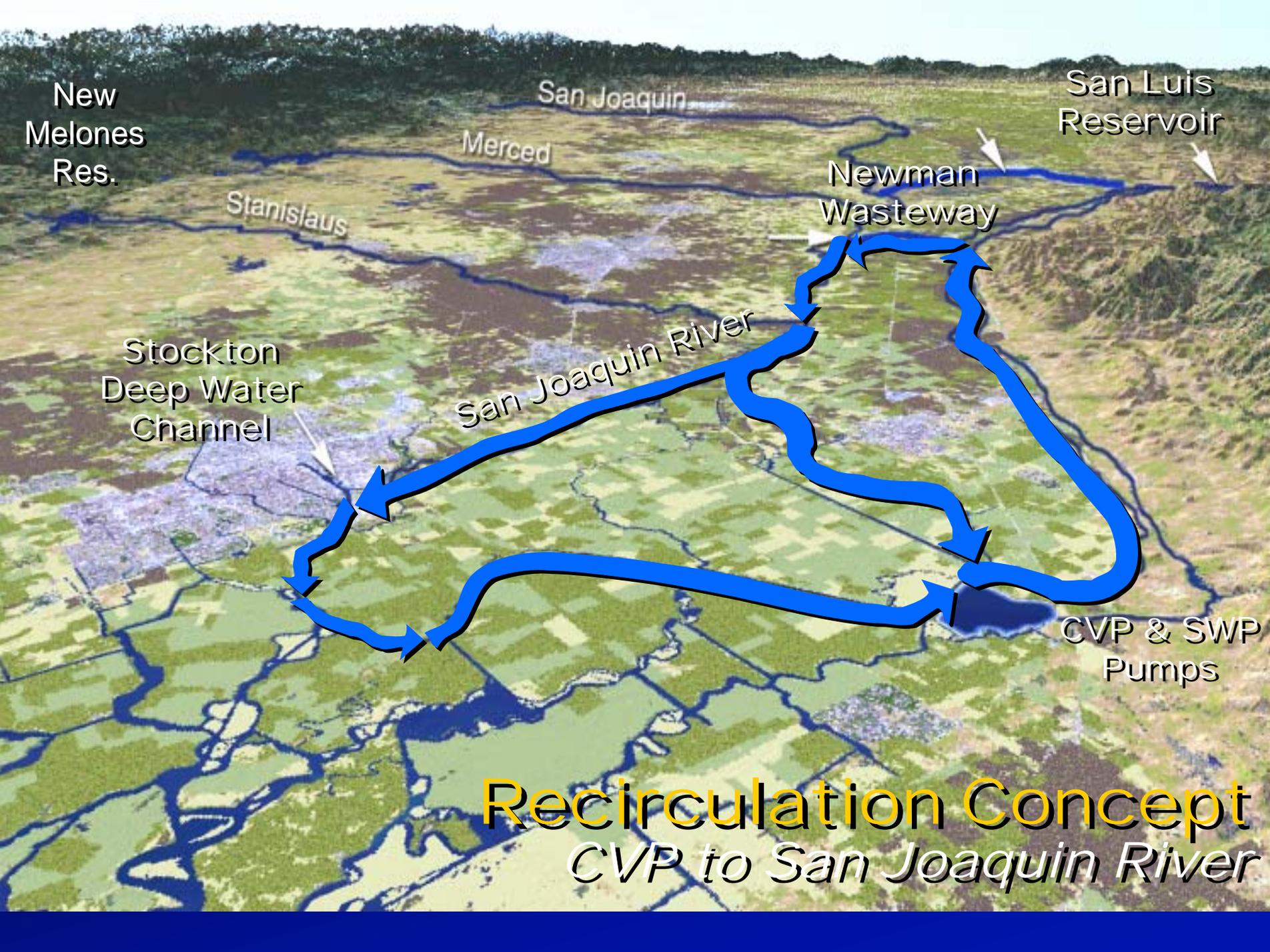
Ag Runoff
& Wildlife Refuges

Mud Sl.

San Joaquin
River

Salt Slough

Upstream Salt Load Reduction San Joaquin River



New
Melones
Res.

San Joaquin

San Luis
Reservoir

Merced

Newman
Wasteway

Stanislaus

Stockton
Deep Water
Channel

San Joaquin River

CVP & SWP
Pumps

Recirculation Concept
CVP to San Joaquin River