

SDIP Objectives/Purpose

South Delta
IMPROVEMENTS PROGRAM

Stage I

- Reduce the movement of San Joaquin River watershed Central Valley fall-/late fall–run juvenile Chinook salmon into the south Delta via Old River;
- Maintain adequate water levels and, through improved circulation, water quality available for agricultural diversions in the south Delta, downstream of the head of Old River; and

Stage II

- Increase water deliveries and delivery reliability for SWP and CVP water contractors south of the Delta and provide opportunities to convey water for fish and wildlife purposes by increasing the maximum permitted level of diversion through the existing intake gates at CCF to 8,500 cfs. (The planning and environmental process for Stage II is currently suspended.)

SDIP History

South Delta
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- 1982 South Delta Water Agency lawsuit against the Bureau of Reclamation and DWR. DWR's principle involvement is water levels.
- 2000 CALFED Record of Decision calls for construction of operable gates and dredging in the south Delta as well as increasing diversion limits
- 2004 DWR and Reclamation decouple increasing the permitted SWP diversion capacity to 8500 cfs from the operable gates and dredging construction
- November 2005 SDIP Draft EIS/EIR released
- December 2006 DWR certifies Final SDIP EIS/EIR
- 2007 Reclamation restarts Section 7 ESA for the Operations Criteria and Plan (OCAP); SDIP operations are linked to OCAP thus halting progress
- June 2009 National Marine Fisheries Service OCAP Biological Opinion

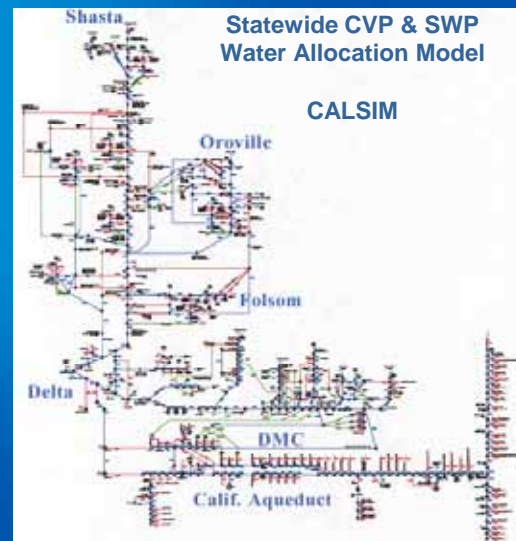
SDIP Planning CALSIM II

- Generalized Hydrologic Simulation Model
- Sacramento and San Joaquin River Systems
- Evaluate Water Operation Scenarios Including Delta Operations
- Used to Simulate Current and Future Operations
- Supply and Demands Evaluated

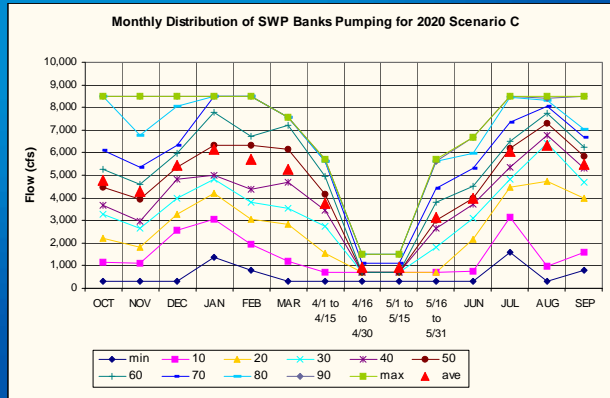
SDIP Planning CALSIM II



- State Water Project
- Central Valley Project (Federal)
- Local

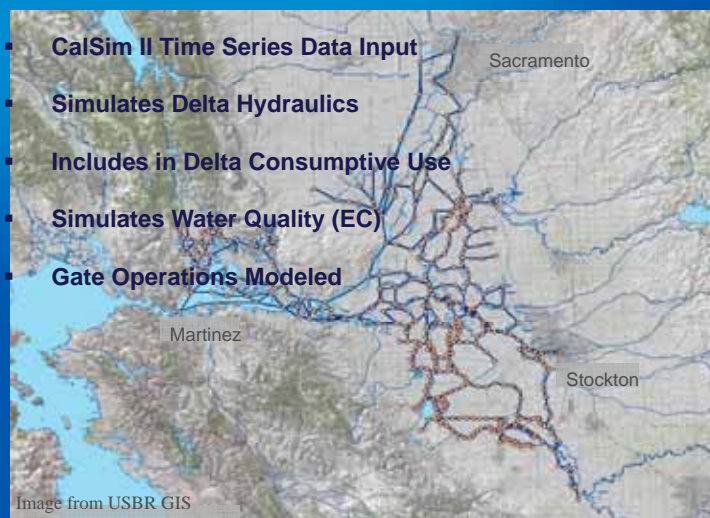


SDIP Planning CALSIM II

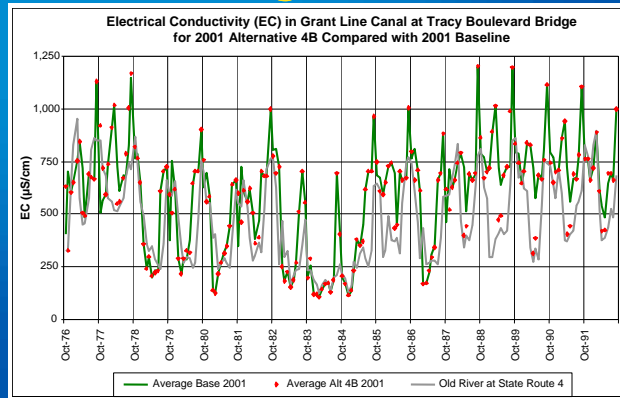


- Delta operations simulated based on supply, demand, and operational rules
- Exports determined for baseline, future without project conditions, and alternatives using current and future demands

SDIP Planning DSM2



SDIP Planning DSM2



- Delta Hydraulics
- Models Salinity
- Used for Planning and Water Operations

SDIP Physical Features

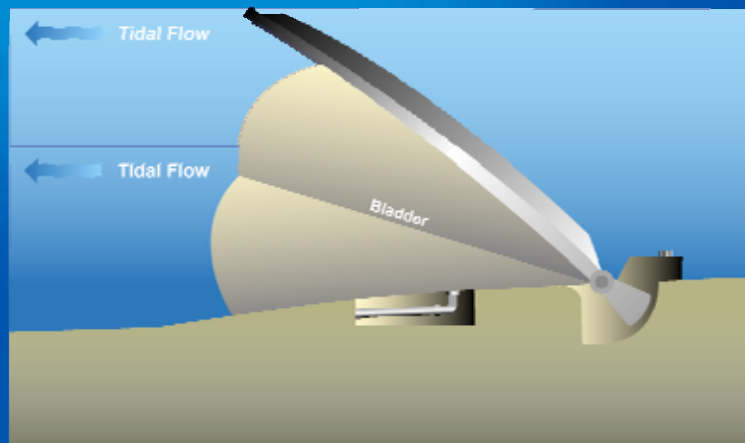


Permanent Gate Conceptual Drawing



OLD River near the DMC Flow Control Gate

Permanent Gate Operation



South Delta Water Flow

South Delta IMPROVEMENTS PROGRAM



South Delta Water Flow

South Delta IMPROVEMENTS PROGRAM



New Environmental Concerns Staged Decisions

- Issues associated with pelagic organism decline result in DWR postponing a decision on increasing permitted capacity to 8500 cfs
- Draft EIS/EIR only supports a decision on the physical and not operational components of the project.
- A new NEPA and CEQA document is required to make a decision on 8500.
- DWR continued planning and permitting activities
- 2004 NMFS Biological Opinion covering operation of the permanent gates invalidated and permitting work stops

Operations Criteria and Plan

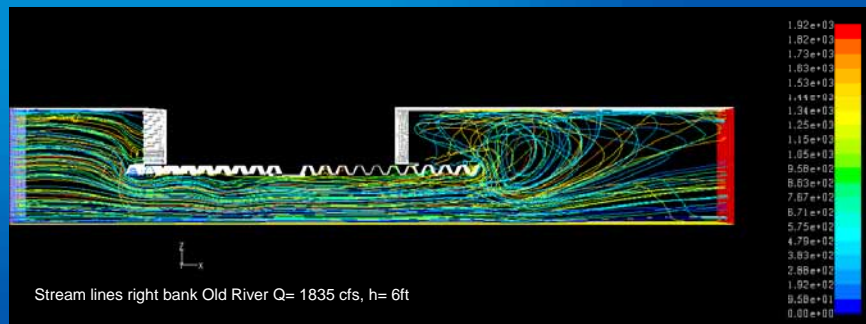
- Endangered Species Act (ESA) Consultation for the continued operation of the State Water Project and Central Valley Project
- Operation of SDIP permanent operable gates included
- USFWS and NMFS render Jeopardy Biological Opinions
- NMFS Biological Opinion does not include Reasonable and Prudent Alternatives to avoid jeopardy for SDIP
- NMFS raises concerns over predation and passage issues associated with the permanent operable gates
- Three years of detailed fish predation studies are required at temporary barriers prior to ESA consultation for SDIP

Permanent Gate Design Modifications



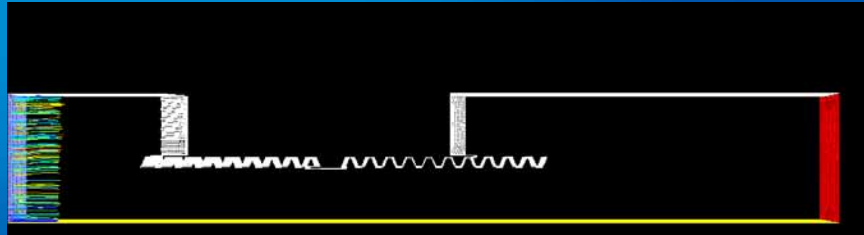
- Sturgeon passage ramps included
- Detailed modeling to determine changes in near field flow characteristics
- UC Davis Professor Dr. Younis is contracted to perform detailed multi-dimensional hydraulic modeling of the permanent gates.

3-D Hydraulic Modeling of Gates



- Determine near field changes in flows associated with permanent gates
- Use results to modify gates such that fisheries impacts are minimized
- Utilize results from the Head of Old River model to evaluate alternative fish protection options

3-D Hydraulic Modeling of Gates

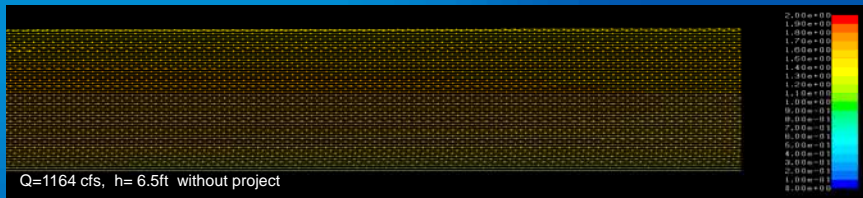


Stream Lines Right Bank Old River (Q=1835 cfs, h= 6ft)



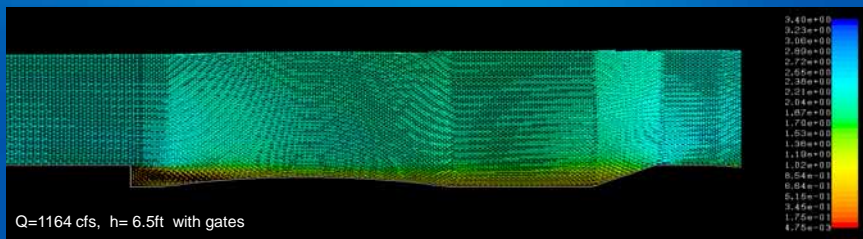
Stream Lines Left Bank Old River (Q=1835 cfs, h= 6ft)

3-D Hydraulic Modeling of Gates



Q=1164 cfs, h= 6.5ft without project

Fabian Bell Velocity Magnitude and Direction



Q=1164 cfs, h= 6.5ft with gates

Fabian Bell Velocity Magnitude and Direction

Interim South Delta Actions

- Temporary barriers continue to be seasonally constructed
- Evaluation of improvements in compliance from integrating components of SDIP along with modified temporary barriers
- Experimental non-physical barrier constructed at the Head of Old River during 2009 spring pulse flows
- Design of separable components including dredging and agricultural diversion extensions continues
- Modeling shows that water surface elevation and quality protection is still required with BDCP/DHCCP alternative conveyance

Lessons Learned

- Modeling limitations can require the use of numerous different models when planning and designing a project.
- Large complicated and/or controversial projects may require multiple reformulations.
- Endangered Species Act compliance in the Delta is an ever-changing process.
- As with OMR reverse flow limitations set forth by USFWS for Delta smelt and NMFS anadromous fish protection measures, protection of one species can impact another.
- “The only constant is change.” Heraclitus 500 B.C.

Thank You



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