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Managing Water in the West

Delta-Mendota Canal Recirculation Feasibility Study

Stakeholder Workshop
Baseline Assumptions
February 9, 2007



U.S. Department of the Interior
Bureau of Reclamation



State of California
Department of Water Resources

Agenda

- **Welcome & Introductions**
- **Purpose & Outcome**
- **Study Update**
- **Analytical Tools & Approach**
- **Water Supply, Water Quality, Fisheries**
 - **Baseline/Future without Conditions**
 - **Evaluation Criteria**
- **Next Steps**
- **Wrap-Up**

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Purpose and Outcome

- **Purpose**
 - Present Baseline Assumptions
 - Review Evaluation Approach
- **Outcome - Receive Input**
 - Technical Approach
 - Baseline and Common Assumptions
 - Evaluation Factors

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Study Update

- DWR CEQA Lead
- Cooperating Agency Letters
- NOI/NOP – February/March 2007
- Technical Work Group Sessions
- Public Scoping Meetings
 - Sacramento – March 19
 - Los Banos – March 19
 - Modesto – March 21
- Key Milestone Reports
 - Initial Alternatives Information Report – May 2007
 - Plan Formulation Report – December 2007
 - Draft EIS/EIR – 2008
 - Final EIS/EIR & Feasibility Report – 2008/2009

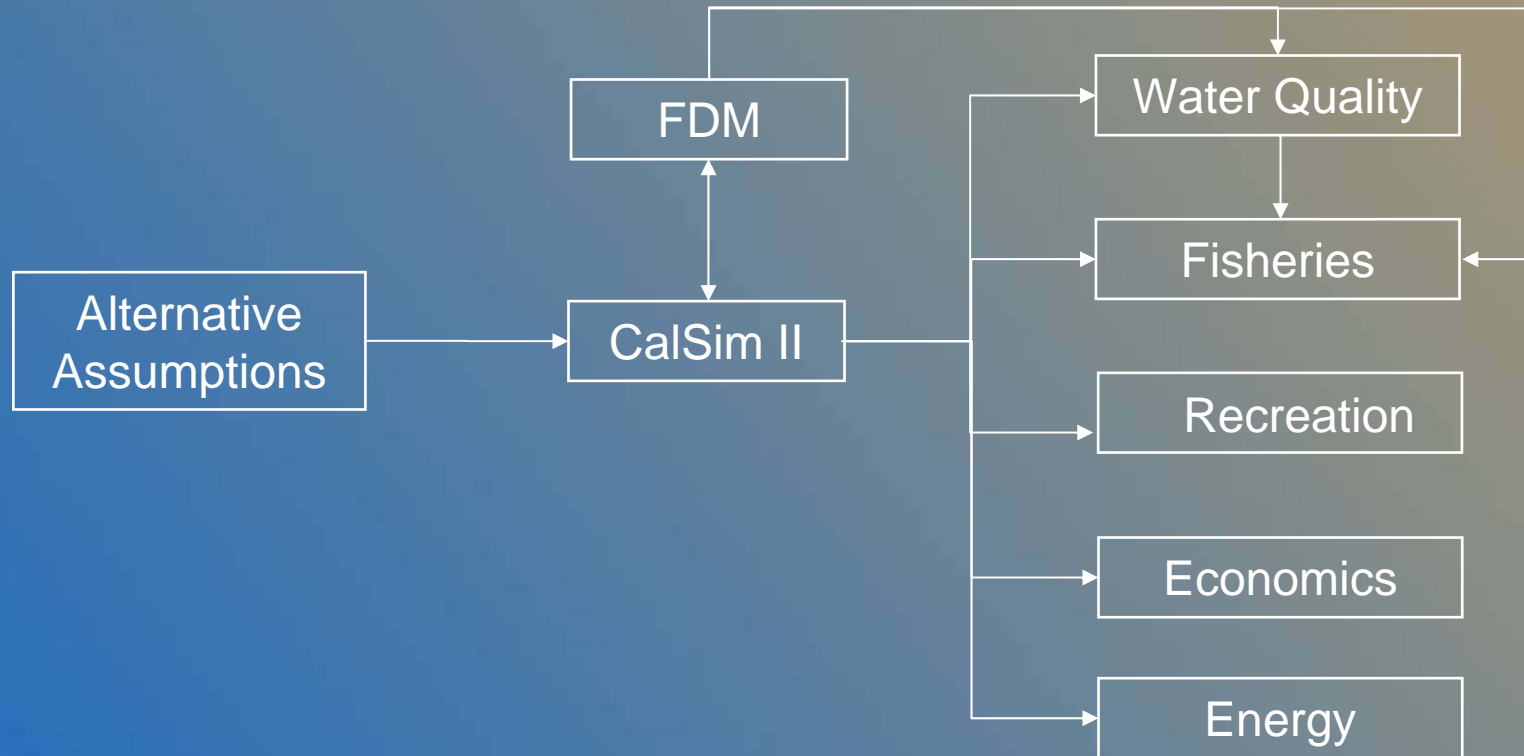
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Primary Analytical Tools

- **Water system operations/supply (CalSim II)**
 - New Melones Operations Spreadsheet Model
- **Delta Hydrodynamics and Fingerprinting (FDM)**
- **Water Quality**
 - CalSim II (EC)
 - Evaluate Dissolved Oxygen
 - Source Fraction Spreadsheet Model (toxics, others)
- **Energy (CalSim II Postprocessor)**

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Technical Analysis Linkage



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CalSim II Model Baseline

- **Definition**
 - Representation of environmental and water system without DMC Recirculation Project
 - Provides basis of comparison
- **Consistent with Common Assumptions**
 - Existing level of development
 - Depiction of existing environment and water system operations
 - 2030 level of development
 - Depiction of forecasted environmental conditions and water system operations
- **CEQA/NEPA No Project & Future No Action**

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CalSim II Model Baseline

- **Geographic extent of CalSim II is large**
- **Requires numerous simulation assumptions**
- **Sacramento River Basin**
 - Feather River
 - American River
 - Others
- **Trinity River**
- **Sacramento – San Joaquin River Delta**
- **San Joaquin River**
 - Merced River
 - Tuolumne River
 - Stanislaus River (New Melones)
 - Others

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CalSim II Modeling Assumptions

Existing Level of Development

- **CVP Full Contract South of Delta**
 - C.W. “Bill” Jones Pumping Plant* – 4,200 cfs plus deliveries upstream of DMC construction
- **SWP 3,000,000 – 4,100,000 Demand**
 - Banks Pumping Plant – 6,680 cfs
- **Sacramento River – San Joaquin River Delta**
 - SWRCB Decision 1641
 - CVPIA 3406(b)(2)
- **San Joaquin River**
 - SWRCB Decision 1641
 - VAMP

*Formerly the Tracy Pumping Plant

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CalSim II Modeling Assumptions

San Joaquin River Basin Tributaries

- **Stanislaus River**
 - Interim Plan of Operations
- **Tuolumne River**
 - Existing conditions with FERC 1995 Settlement Agreement
- **Merced River**
 - Existing conditions with FERC and Davis-Grunsky
- **Friant Division and San Joaquin River**
 - Existing conditions with current flow obligations

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CalSim II Modeling Assumptions

2030 Level of Development

- **CVP full contract demand south of the Delta**
 - C.W. “Bill” Jones Pumping Plant – 4,600 cfs (with implementation of Intertie)
- **SWP 3,000,000 – 4,100,000 Demand**
 - Banks Pumping Plant – 6,680 cfs
- **Sacramento River – San Joaquin River Delta**
 - SWRCB Decision 1641
 - CVPIA 3406(b)(2)
- **San Joaquin River**
 - SWRCB Decision 1641
 - VAMP

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CalSim II Modeling Assumptions

2030 Level of Development - Potential Near-Term Changes

- **TMDL and Water Quality Objective Actions**
 - Grasslands Bypass Project
 - Dissolved oxygen
 - Salt and boron
 - Salinity
- **VAMP Future**
- **Delta Conditions**
 - SDIP (8,500 cfs at Banks)
 - Intertie
 - Barrier operation
 - Franks Track
- **San Joaquin River Settlement**
- **Global Climate Change**

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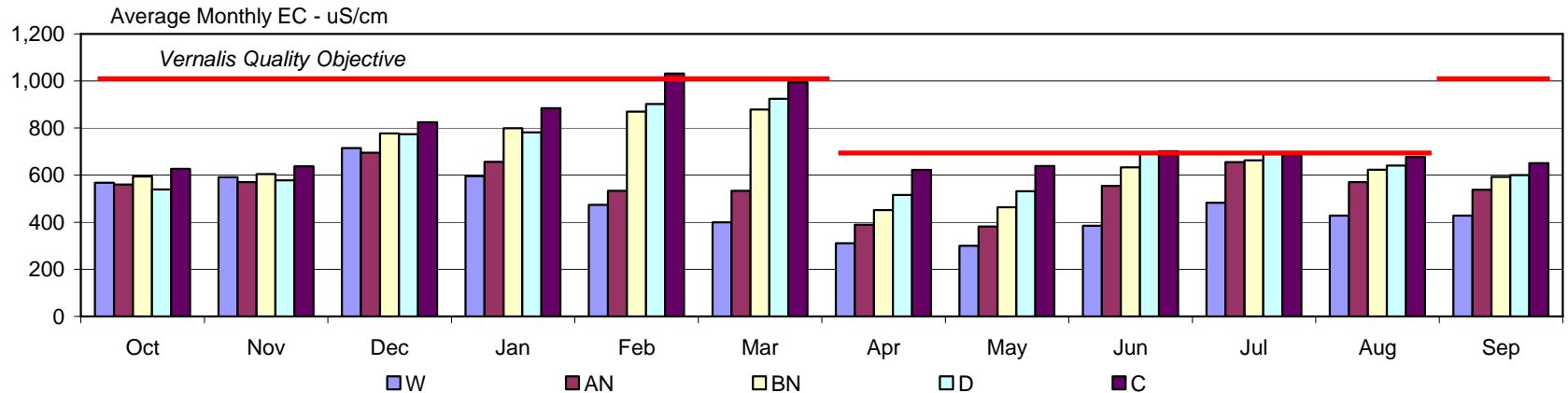
San Joaquin River Model Background

- San Joaquin River Baseline conditions significantly influences the quantification of potential effects of recirculation
- San Joaquin River representation in CalSim II is acceptable for use in this analysis
 - Extensive review
 - Best available tool

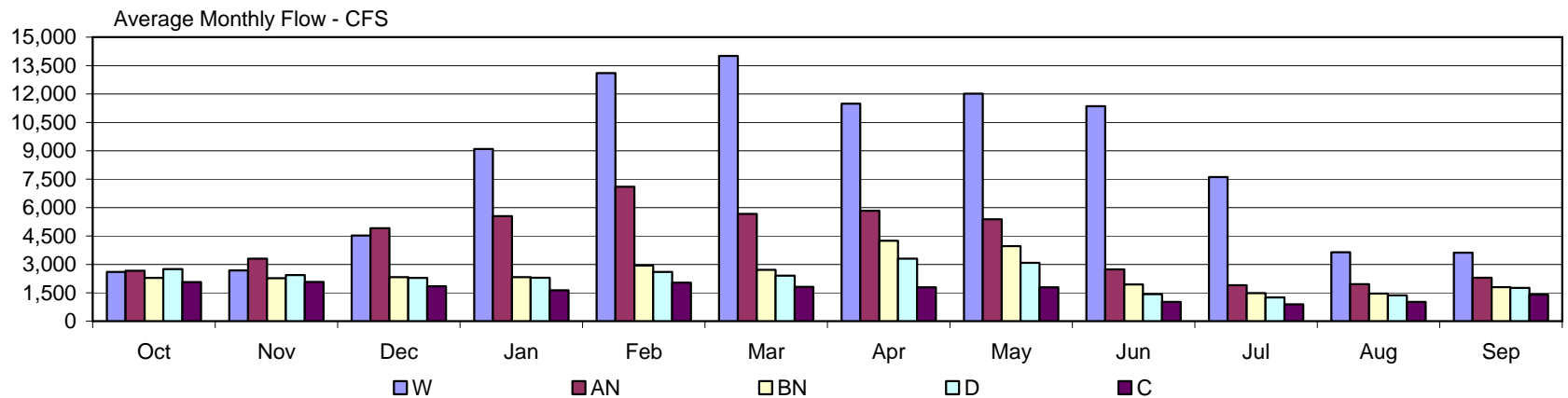
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CalSim II Representative Results

Average Water Quality of San Joaquin River at Vernalis by Year Type - Simulated



Average Flow of San Joaquin River at Vernalis by Year Type - Simulated



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Preliminary Project and Water Supply Evaluation Metrics

Achieving Project Goals		
Component	Geographic Area	Criteria
EC	SJR Vernalis	Compliance with D1641, D1422
Flow	SJR Vernalis	Compliance with D1641, D1422
Reliance on New Melones	New Melones	Compliance with D1641, D1422 and IPO (see table below)
DO	SJR @ Stockton Ship Channel	6.0 mg/l Sept1 - October 31
Water levels in South Delta	South Delta	Change in Water Level

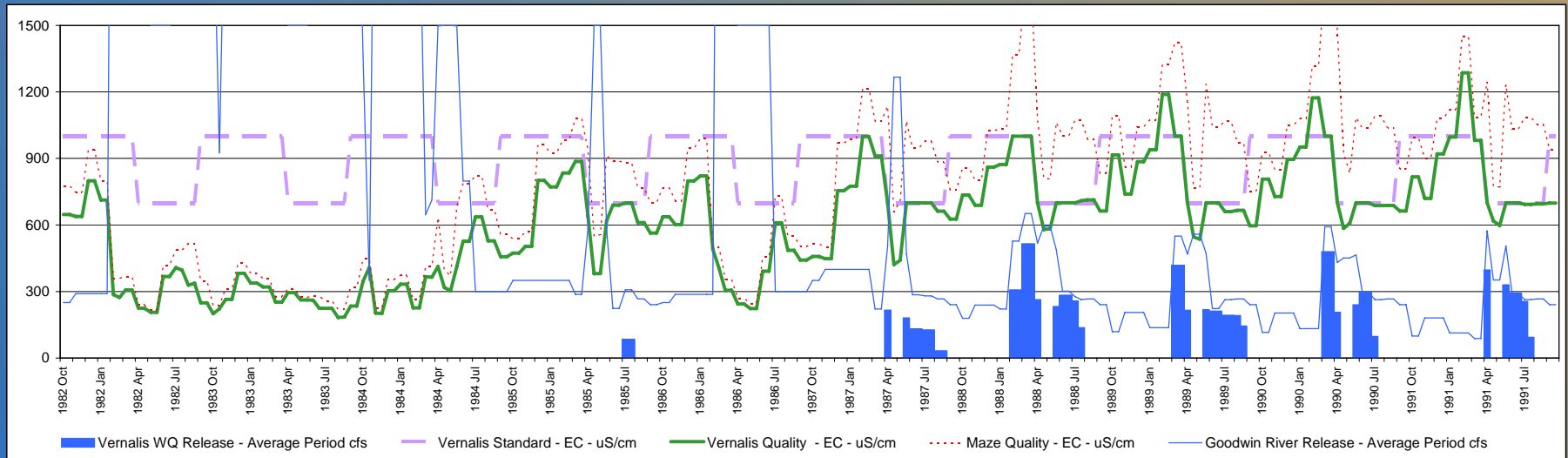
Water Supply		
Component	Geographic Area	Criteria
CVP contractors deliveries	Delta export area, Stanislaus Delivery Area	CVP Ag service contractor deliveries CVP M&I contractor deliveries
SJR tributary effects	Tributaries	Merced River Changes in VAMP releases and storage Tuolumne River Changes in VAMP Releases and storage
Storage level changes	SLR, Sac Basin	Changes in San Luis Reservoir storage Changes in San Luis low point Changes in Shasta and Folsom Reservoirs

Illustrative metric for Releases from New Melones - Annual Avg. (1000's Ac-Ft.)

Total OID & SSJID	SEWD / CSJWCD NM Water	Instream Fish	Dissolved Oxygen	Vernalis Water Quality Objective	Vernalis Flow Objective	Total Goodwin Release to River	Release Above Minimum	Missed Vernalis WQ Release	Missed Vernalis Flow Release
562	49	288	12	19	3	447	126	1	14

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Preliminary Water Supply Evaluation Metrics



Illustrative Metric – Water Quality Performance

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Water Quality

- **Fischer Delta Model (FDM)**
- **Source Fraction Mass Balance San Joaquin River Model**
- **Dissolved Oxygen Evaluation**
- **Baseline and Future Without Conditions**
- **Evaluation Criteria**

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FDM Model Description

- FDM models complex bay-estuary channel systems
- Long history of use for study of water management and operations, movement and dispersion of pollutants and salinity, water surface elevations within Delta, and effects of changes in hydrologic conditions
- Delta is represented by interconnected open water areas and one-dimensional channel segments

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FDM Approach & Baseline

- CalSim II model results (monthly or split month) will be used as FDM input for:
 - Flow rates of major flows into Delta
 - Exports and diversions from Delta
 - Water quality (salinity) of San Joaquin River inflows
- Historical water quality data for other inflows
- FDM results presented as:
 - Salinity
 - Source water fingerprinting (fraction of water from major sources)
 - Other water quality parameters will be estimated from fingerprinting results
 - Channel water direction and velocity
 - Water surface elevations

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Water Quality Future without Condition

- Grassland Bypass Project will comply with in-place TMDLs for Selenium
- Assume salt reductions concurrent with Selenium reductions
- Dilution Flow from San Joaquin River restoration action modeled for cumulative impacts analysis

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Evaluation Criteria – Water Quality

Component	Geographic Area	Criteria
DO	SJR, DWSC	5 mg/L (warm) 7 mg/L (cold)
Selenium	SJR	5 ug/L
EC	SJR, X2, other Delta/key locations	0.7 and 1.0 mS/cm
Toxics	SJR	various
Bromide	Delta M&I diversions	50 ug/L
DOC	Delta M&I diversions	3.0 mg/L

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Fisheries

- **Fisheries Technical Working Group**
 - Department of Fish and Game
 - Department of Water Resources
 - NOAA Fisheries
 - US Fish and Wildlife Service
 - Consultant Team
- **Periodic Meetings and Cross Review of Information**

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Baseline

- **Information Sources on Existing Species**
 - Bay Delta Assessment Team (BDAT)
 - Agency Personnel
 - Literature

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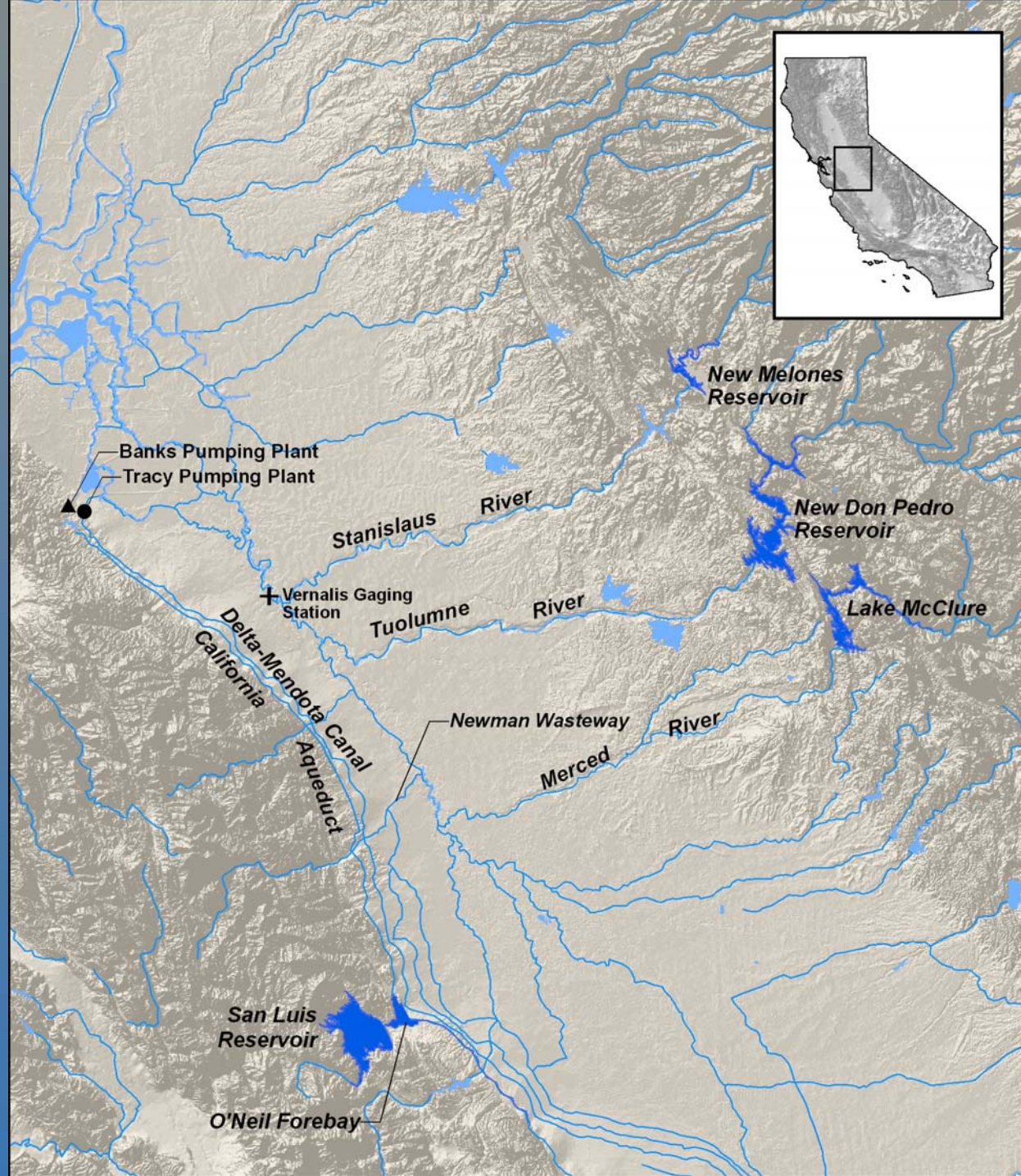
Future without Project

- **Modeling Assumptions**
- **Existing Species as of 2007**

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Evaluation Structure

- Geographic Areas
- Species, Lifestages, and Timing
- Habitat factors

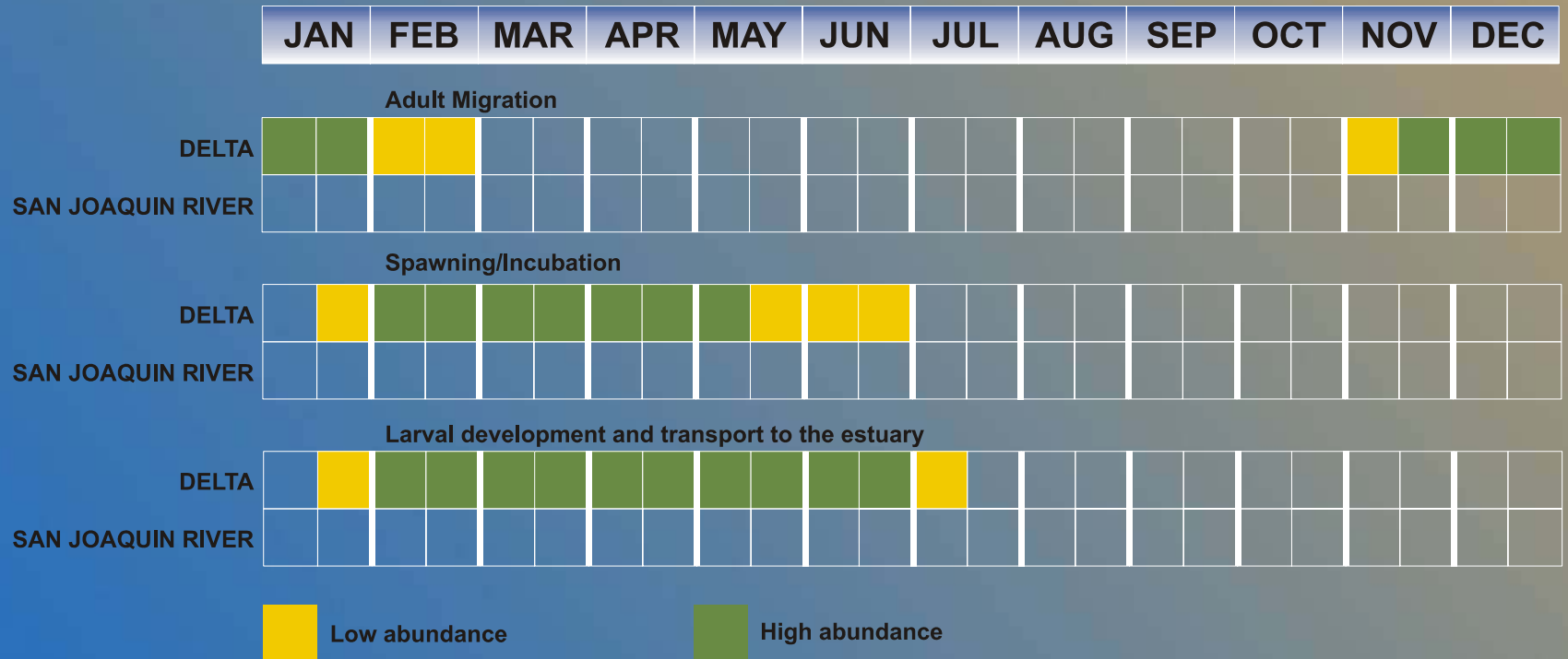


Species

- Chinook salmon (all runs)
- Central Valley steelhead
- Delta smelt
- Splittail
- Green and white sturgeon
- American shad
- Striped bass
- POD considerations

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Location, Lifestage, and Timing Summary Table



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Habitat Factors

- **Delta**
 - Delta Channel hydraulics
 - Source water
 - Entrainment/salvage
- **San Joaquin River**
 - Flow
 - Source water
 - Temperature
 - Dissolved oxygen concentrations
 - Salinity
 - Turbidity
 - Toxics

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Criteria

- **Develop criteria for various habitat factors based on:**
 - Literature values
 - Discussion with agency personnel
 - Availability of adequate models to simulate these parameters

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Next Steps

- Please submit comments by February 26
- Public Scoping Meetings – March 2007
- IAIR – May 2007
- Stakeholder Workshop: Screening Alternatives – Summer 2007

PLEASE NOTE

**The Public Scoping meetings have been rescheduled for April 2007
Not as previously indicated above**

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Wrap-up

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