July 14, 2021

Delta Conveyance Project

State Water Project Overview and Delta Operations

Delta Conveyance Project Operations and Modeling

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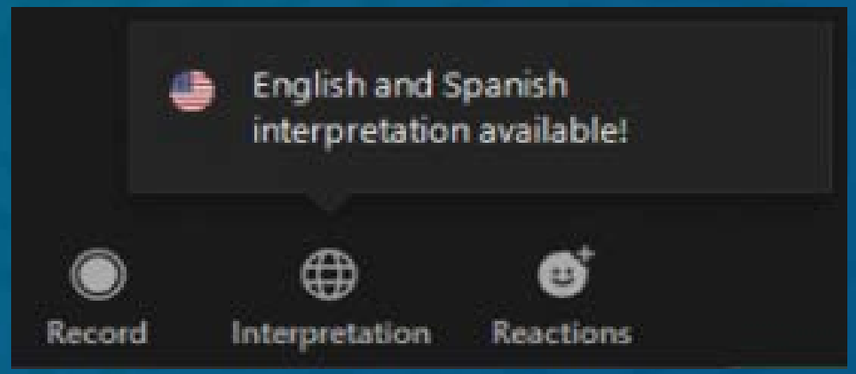
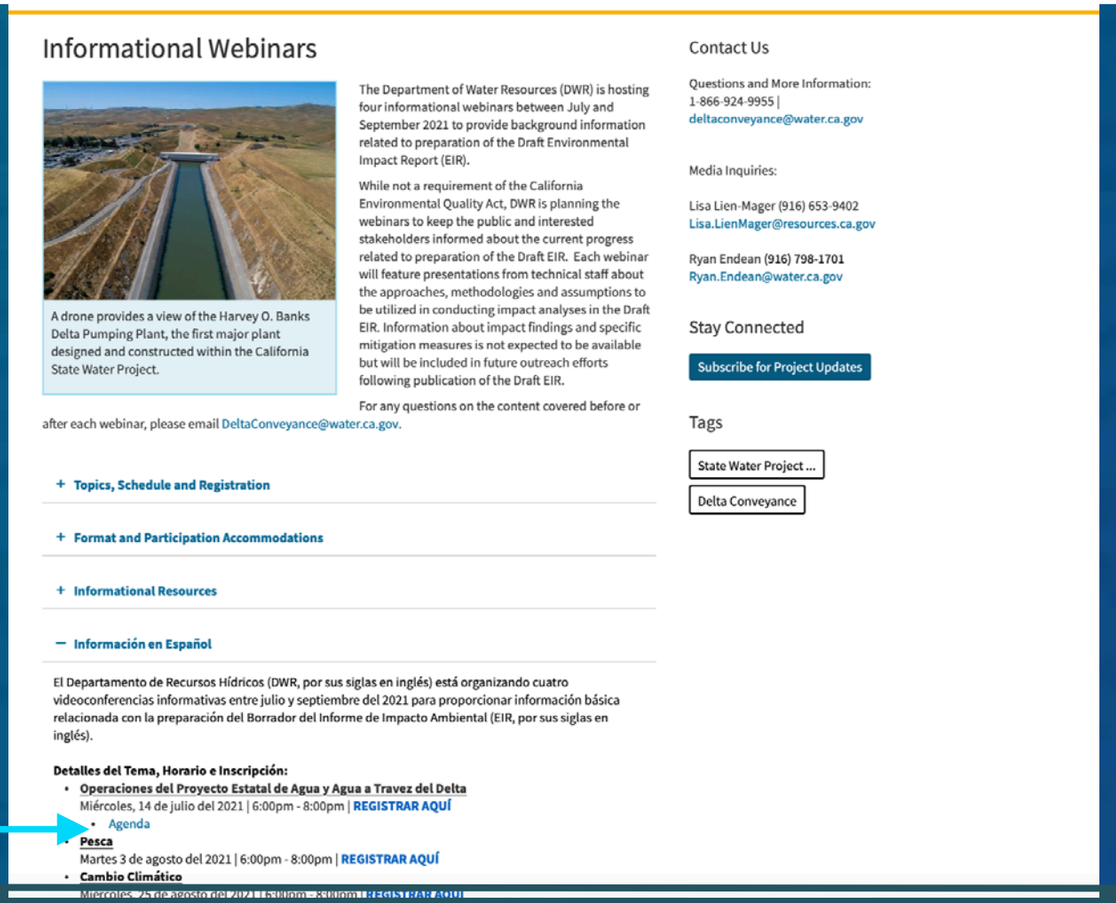


Spanish Resources

- Call-in Information:
  - Número de Teléfono: (602) 580-9659
  - Código de Acceso: 8833787, seguido por el signo de tecla (#)

- View or download the translated presentation:
  - https://water.ca.gov/Programs/State-Water-Project/Delta-Conveyance/DCP-Informational-Webinars



Informational Webinars

A drone provides a view of the Harvey O. Banks Delta Pumping Plant, the first major plant designed and constructed within the California State Water Project.

The Department of Water Resources (DWR) is hosting four informational webinars between July and September 2021 to provide background information related to preparation of the Draft Environmental Impact Report (EIR).

While not a requirement of the California Environmental Quality Act, DWR is planning the webinars to keep the public and interested stakeholders informed about the current progress related to preparation of the Draft EIR. Each webinar will feature presentations from technical staff about the approaches, methodologies and assumptions to be utilized in conducting impact analyses in the Draft EIR. Information about impact findings and specific mitigation measures is not expected to be available but will be included in future outreach efforts following publication of the Draft EIR.

For any questions on the content covered before or after each webinar, please email DeltaConveyance@water.ca.gov.

+ Topics, Schedule and Registration

+ Format and Participation Accommodations

+ Informational Resources

− Información en Español

El Departamento de Recursos Hídricos (DWR, por sus siglas en inglés) está organizando cuatro videoconferencias informativas entre julio y septiembre del 2021 para proporcionar información básica relacionada con la preparación del Borrador del Informe de Impacto Ambiental (EIR, por sus siglas en inglés).

Detalles del Tema, Horario e Inscripción:

- **Operaciones del Proyecto Estatal de Agua y Agua a Travez del Delta**
  Miércoles, 14 de julio del 2021 | 6:00pm - 8:00pm | **REGISTRAR AQUÍ**
  - Agenda
- **Pesca**
  Martes 3 de agosto del 2021 | 6:00pm - 8:00pm | **REGISTRAR AQUÍ**
- **Cambio Climático**
  Miércoles, 25 de agosto del 2021 | 6:00pm - 8:00pm | **REGISTRAR AQUÍ**

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Webinar Overview

Presentation

- State Water Project (SWP) overview
- Delta operations, proposed project operations
- Models used in analysis

Question/Answer session

- Via Zoom: Use **Q&A** and **Raise Hand** features in Zoom
- Via Phone: Press ***9** to raise hand and ask question

How to Ask Written Questions in Zoom

To ask a question, click on the **"Q&A"** icon on the bottom of your screen and type your question into the box during the presentation portions of the webinar.

How to ask Verbal Questions in Zoom

To ask a verbal question, click on the **“Raise Hand”** icon on the bottom of your screen. When you are called on your mic will be unmuted, and you will have two minutes to ask your question.

Delta Conveyance Project

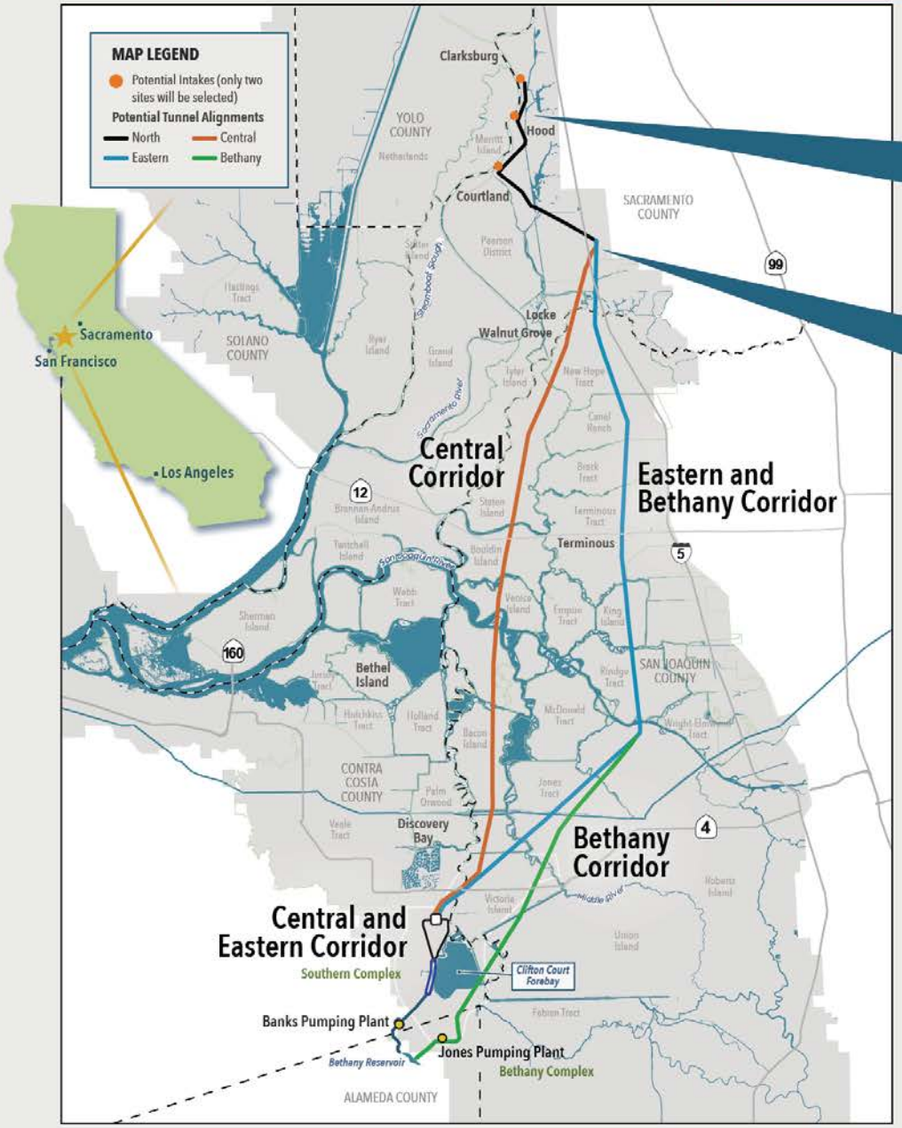
Purpose

Modernize the aging SWP infrastructure in the Delta to restore and protect the reliability of State Water Project (SWP) water deliveries in a cost-effective manner, consistent with the State's Water Resilience Portfolio.

Objectives

- **Address** sea level rise and climate change
- **Minimize** water supply disruption due to seismic risk
- **Protect** water supply reliability
- **Provide** operational flexibility to improve aquatic conditions

PROJECT DETAILS



Proposed Facilities*

Two new intakes in the north Delta, each with 3,000 cubic feet per second (cfs) capacity.

One below ground tunnel, following an eastern or central corridor, designed to protect California's water supplies from sea level rise, earthquakes, subsidence and levee failure.

Operational Flexibility

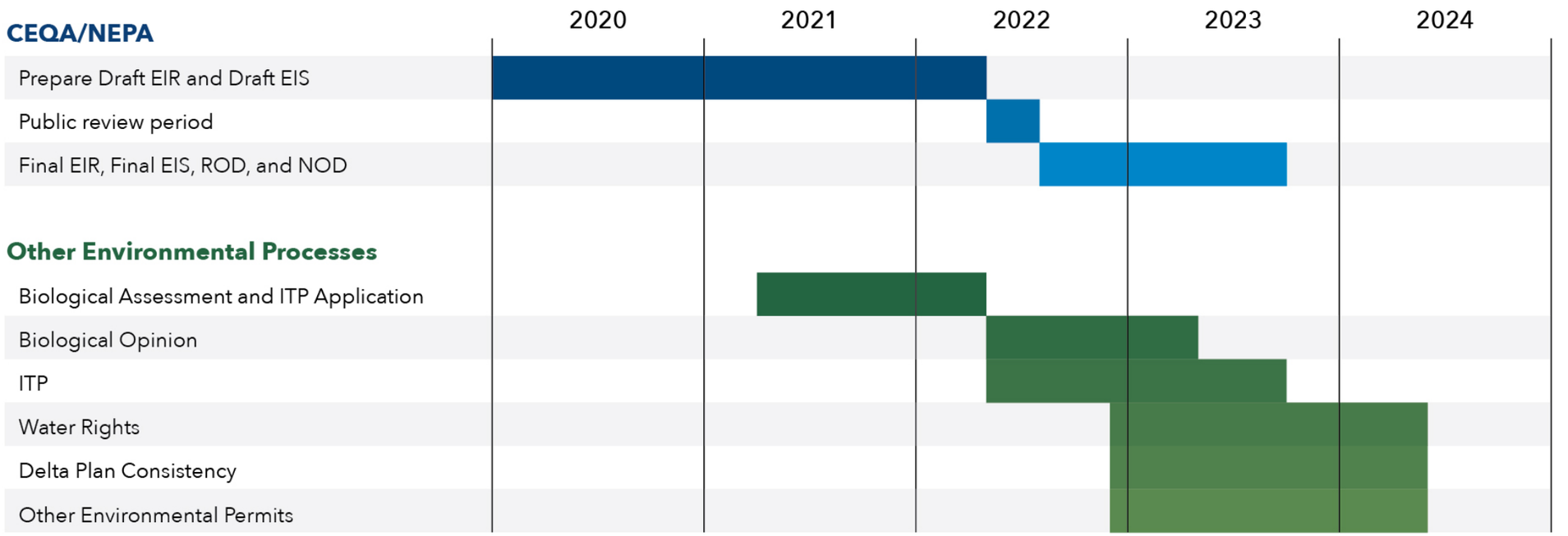
A new diversion facility would be operated together with existing South Delta pumping facilities

Operations would increase DWR's ability to capture water during high flow events

**All proposed project details are subject to refinement. No final decisions will be made until the conclusion of the environmental review process.*

Current Project Schedule

Delta Conveyance Project Schedule



Overview of the CEQA Process

Objectives of the California Environmental Quality Act (CEQA)

Disclose: Potential significant environmental effects

Identify: Ways to avoid or reduce significant environmental impacts

Prevent: Environmental damage by requiring implementation of alternatives or mitigation measures

Foster: Interagency coordination and public participation

Show: That the agency is considering environmental implications of actions prior to making decisions

Environmental Impact Report Purpose

Inform: About a project's potential significant environmental impacts and ways to avoid, minimize, reduce, or compensate for them

Demonstrate: That environment is being considered prior to approving the project and that the agency has considered the environmental implications of its actions

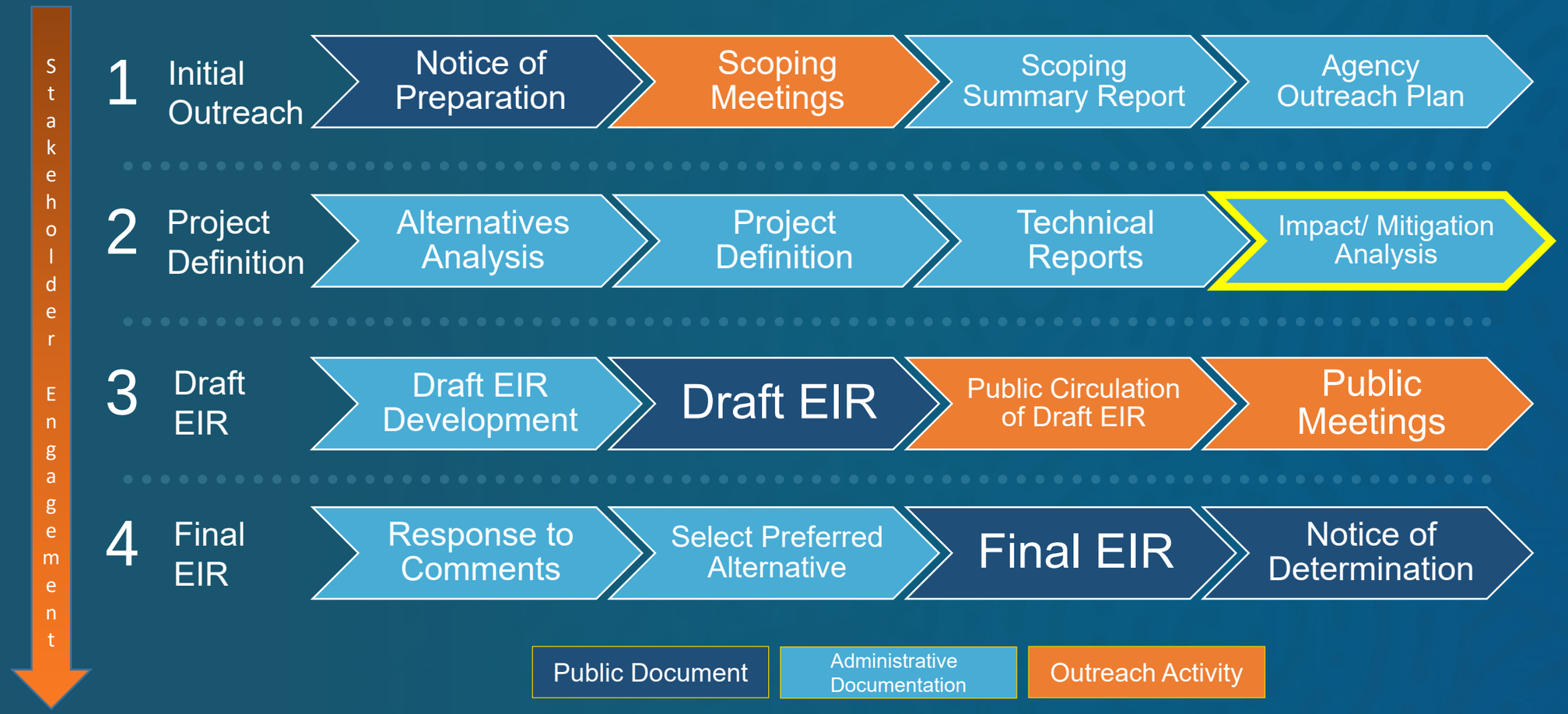
Ensure: Prevention of environmental damage by requiring implementation of feasible alternatives or mitigation measures

Key Contents of an EIR

- Project description
- Environmental setting / baseline
- Discussion of significant environmental impacts
  - *Direct, indirect and cumulative*
- Mitigation measures
- Growth-inducing impacts
- Alternatives (reasonable range compared in meaningful detail)
- Organizations / persons consulted

Delta Conveyance Project CEQA Process

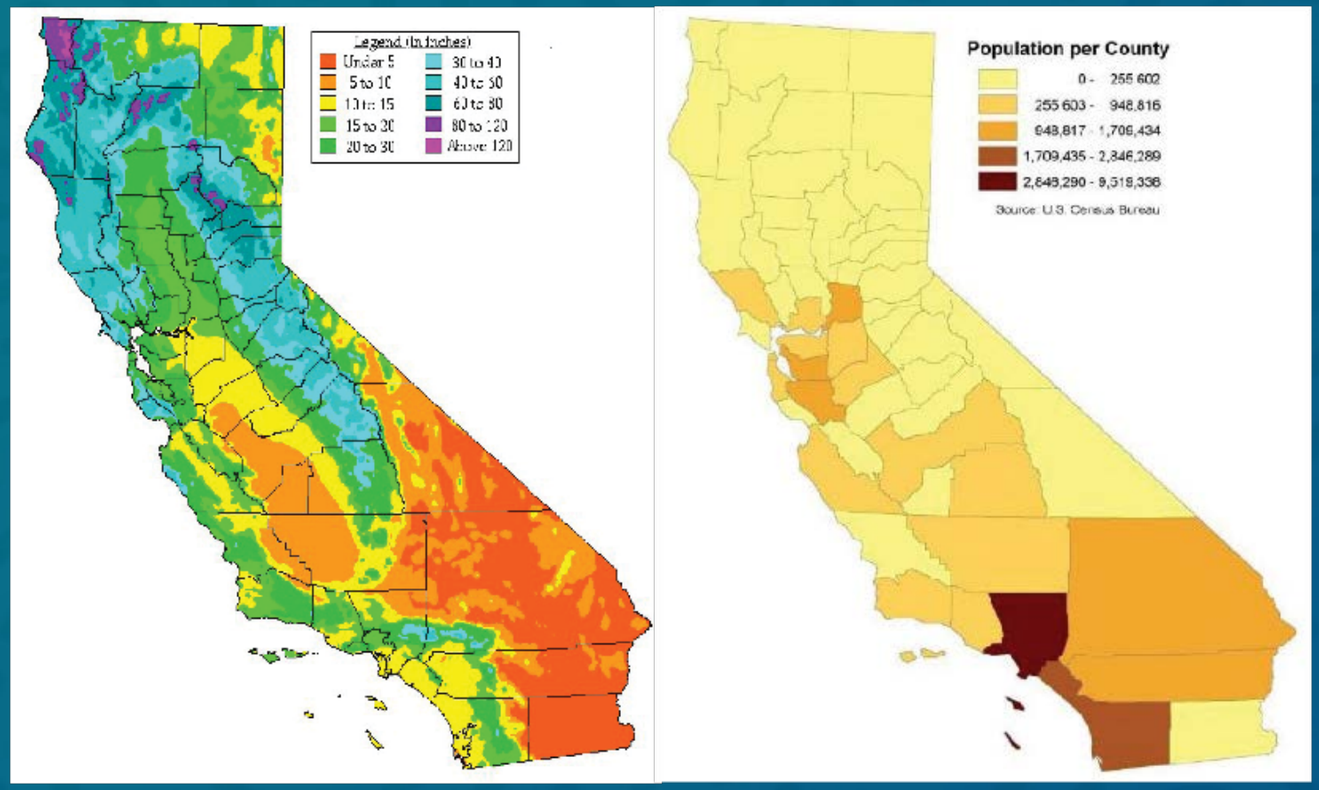
DWR will identify, analyze and disclose the potential significant adverse environmental impacts of the project, and assess feasible mitigation measures and alternatives to avoid or reduce such effects.



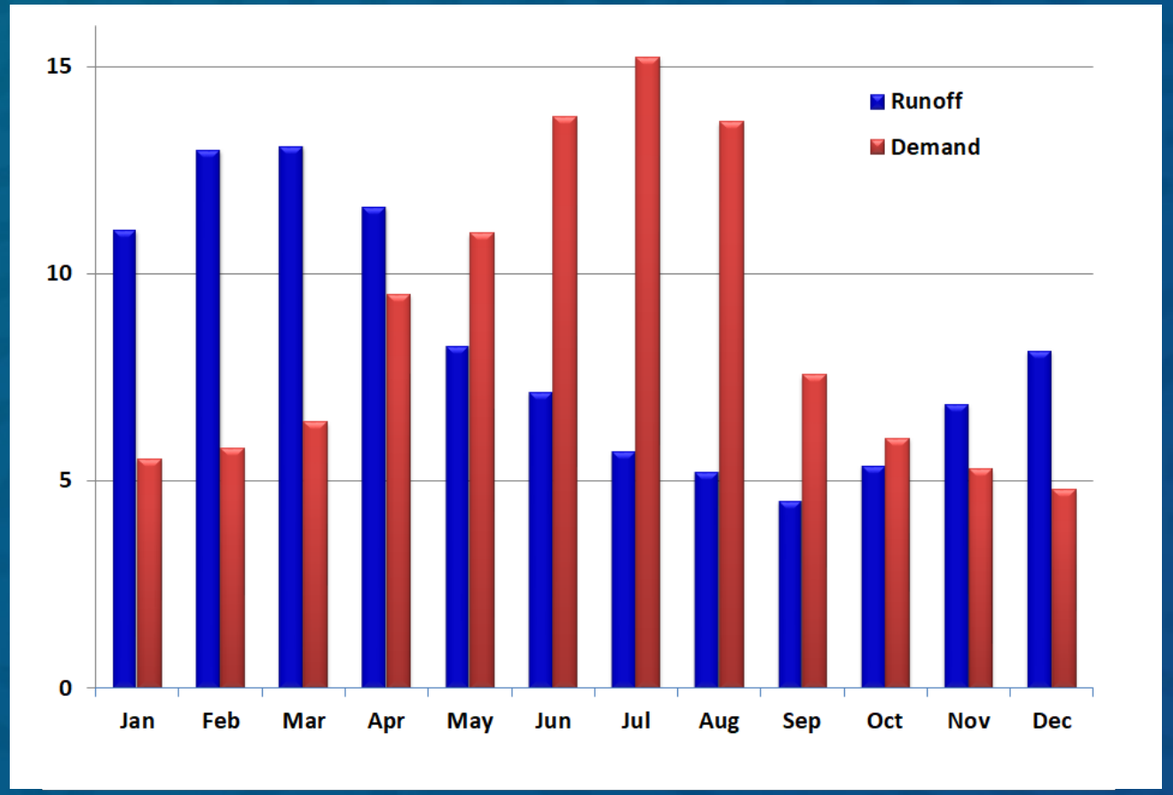
Overview of the State Water Project

Unique California Hydrology Presents Challenges

Rain and snow fall in the north, but the major population centers are in the south

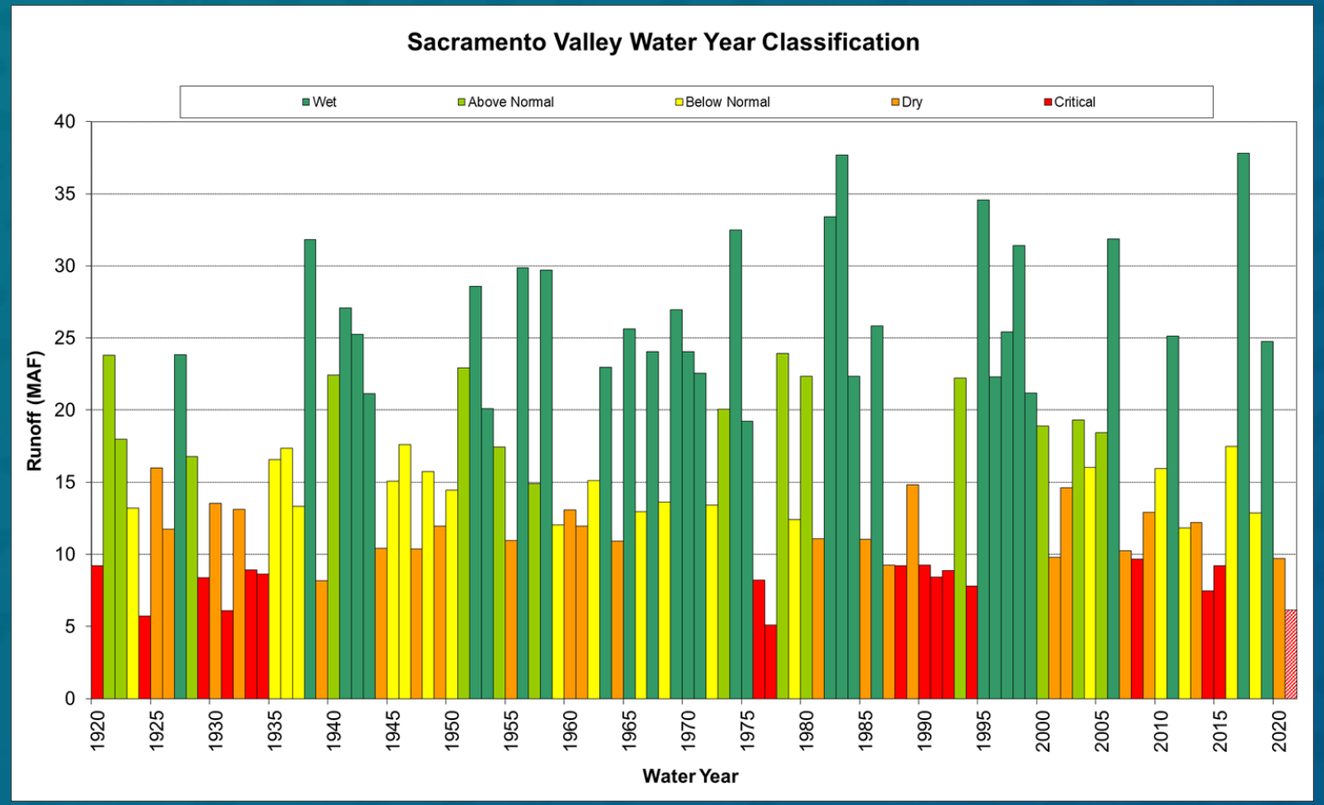


Mismatched seasonal variability between supply and demand

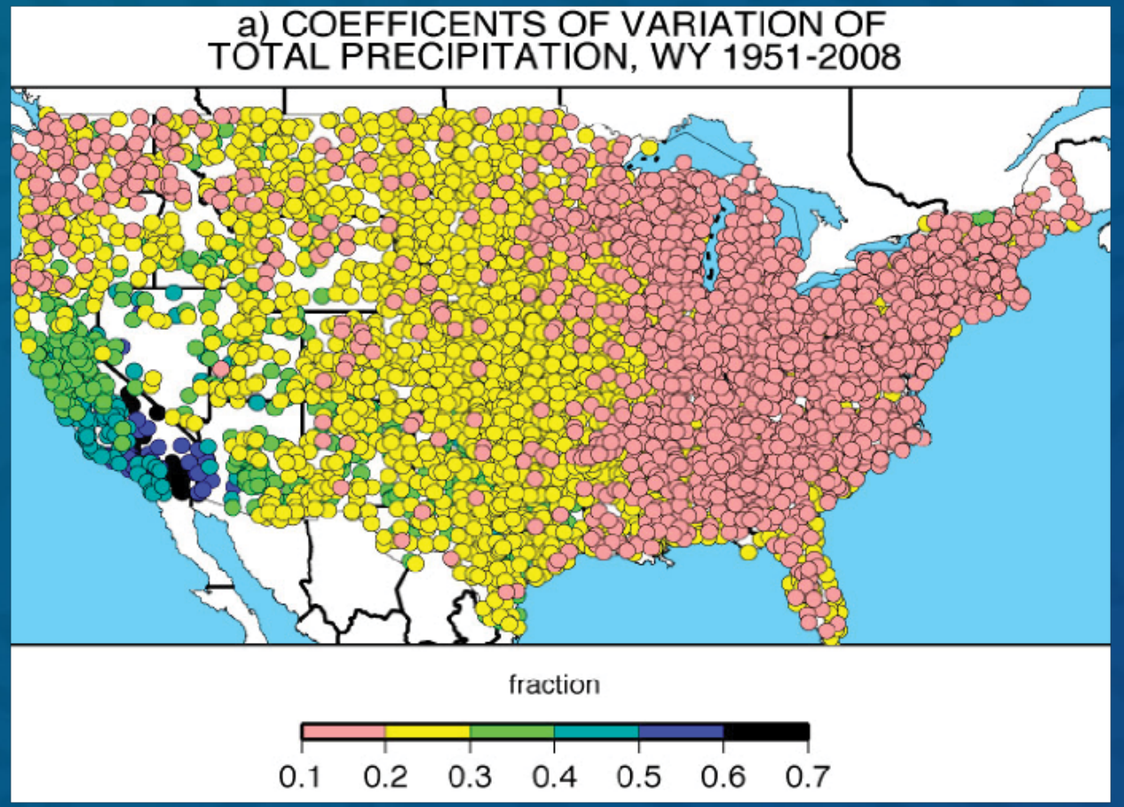


Unique California Hydrology Presents Challenges

Extreme annual variability



No other state in the nation faces such extreme variability in precipitation



State Water Project

Water storage and delivery system for California's water	
2/3	of California's water originates in the Sierra Nevada mountains
50%	of California's water supply flows through the Delta
29	State Water Contractors purchase and distribute water through the SWP
27m	people receive clean, affordable water from the SWP
Millions	of people in disadvantaged communities depend on the SWP as an affordable water supply
750k	acres of farmland are irrigated with SWP water
Trillions	of dollars making up California's economy is sustained by a reliable water supply

State Water Project

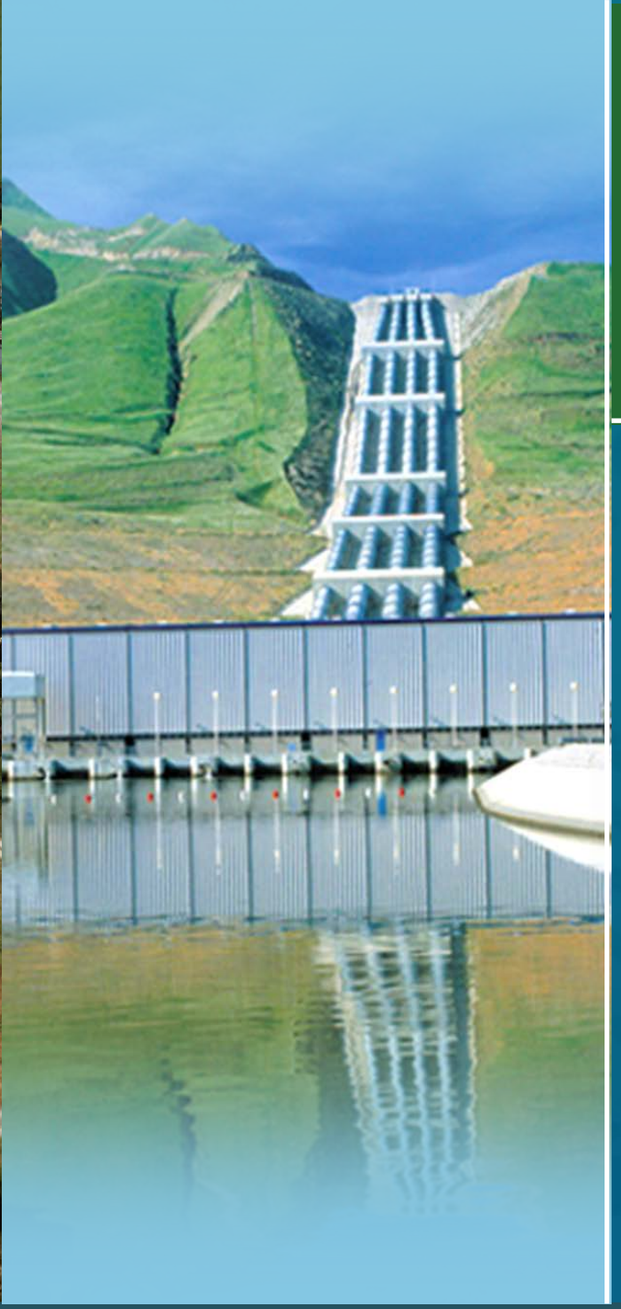
- Backbone of state's surface water supply delivery system

20 reservoirs
1 aqueducts, 5 branch aqueducts
36 storage facilities
21 pumping plants
5 hydroelectric power plants
4 pumping generating plants
700 miles of canals, tunnels and pipelines

- Diverts water from the southern portion of the Delta for use in the South Bay Area, Central Coast, San Joaquin Valley, and Southern California

State Water Project

- Planned, constructed, and operated by DWR
- User funded project with long-term contracts
  - Contracted to deliver up to 4.2 million acre-feet (MAF) of water per year to 29 long-term Water Supply Contractors (Table A supplies)
  - High-quality and affordable supply
  - Augments contractors' local supplies
  - Lessen groundwater overdraft
  - Funded by public water agencies, not through state taxes



Local Water Resiliency Depends on a Reliable SWP

A reliable SWP is important in supporting an entire suite of water supply and resiliency programs implemented by local water agencies, including:

- Local storage
- Recycling
- Conservation
- Groundwater recharge
- Water quality management

Continued stability of the SWP helps agencies develop and maintain these important programs and provides a high-quality source for blending with local sources.

SWP Water Reaches Taps and Farms from North to South

Water supplied by the SWP through the Delta is a primary source of water security for regions throughout California

Percentage of Total Water Supplies Provided by the SWP	
11%	North Bay
33%	South Bay
25-33%	San Joaquin Valley
47%	Santa Barbara County
28%	Inland Empire
30%	Southern California
30%	Desert Regions

State Water Project

Public benefits include:

- Flood control
- Source of renewable power generation
- Recreation
- Fish and wildlife habitat

SWP Water Availability

- Current SWP allocation for 2021 is 5% of contract supplies
- Table A allocations differ each year and may change over the course of the year
    - Can change over winter and through spring to reflect actual and forecast water supply
    - Begins with an initial allocation based primarily on:
        - Current storages
        - Conservative estimate of precipitation for the remainder of the year (dry hydrology)
        - Projected releases to be made through the year to meet contractual and regulatory obligations

SWP Operations and the Delta

SWP Excess Water Development

Winter/Spring: SWP reservoirs capture excess storm flows

- Excess flows from the upper Feather River basin are diverted to storage in Lake Oroville for later release
- Banks PP diverts excess flows from the Delta and stores them in San Luis Reservoir for later release to meet high demand period deliveries

SWP Stored Water Conveyance

Summer/Fall: Release of previously stored water for delivery

- Previously stored water in Oroville is released and conveyed through the Delta for re-diversion at Banks Pumping Plant for delivery
- Previously stored water in San Luis Reservoir is released for delivery

The Delta

- Inland estuary located at confluence of Sacramento and San Joaquin rivers before flowing to San Francisco Bay and Pacific Ocean
- Network of islands, channels and wetlands
- Location were the riverine and tidal environments intersect
- Largest estuary on west coast of both North and South America

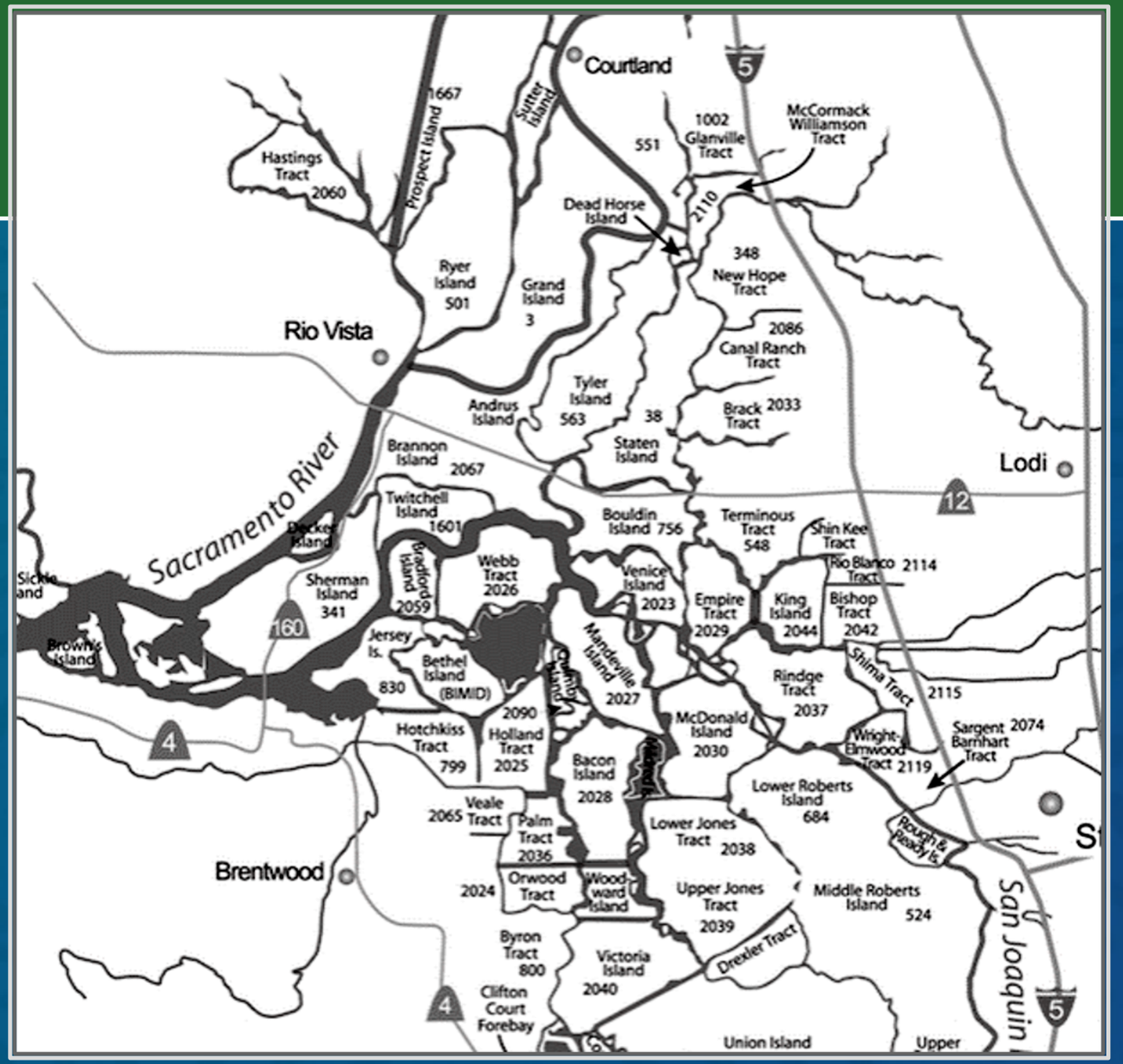
The Delta

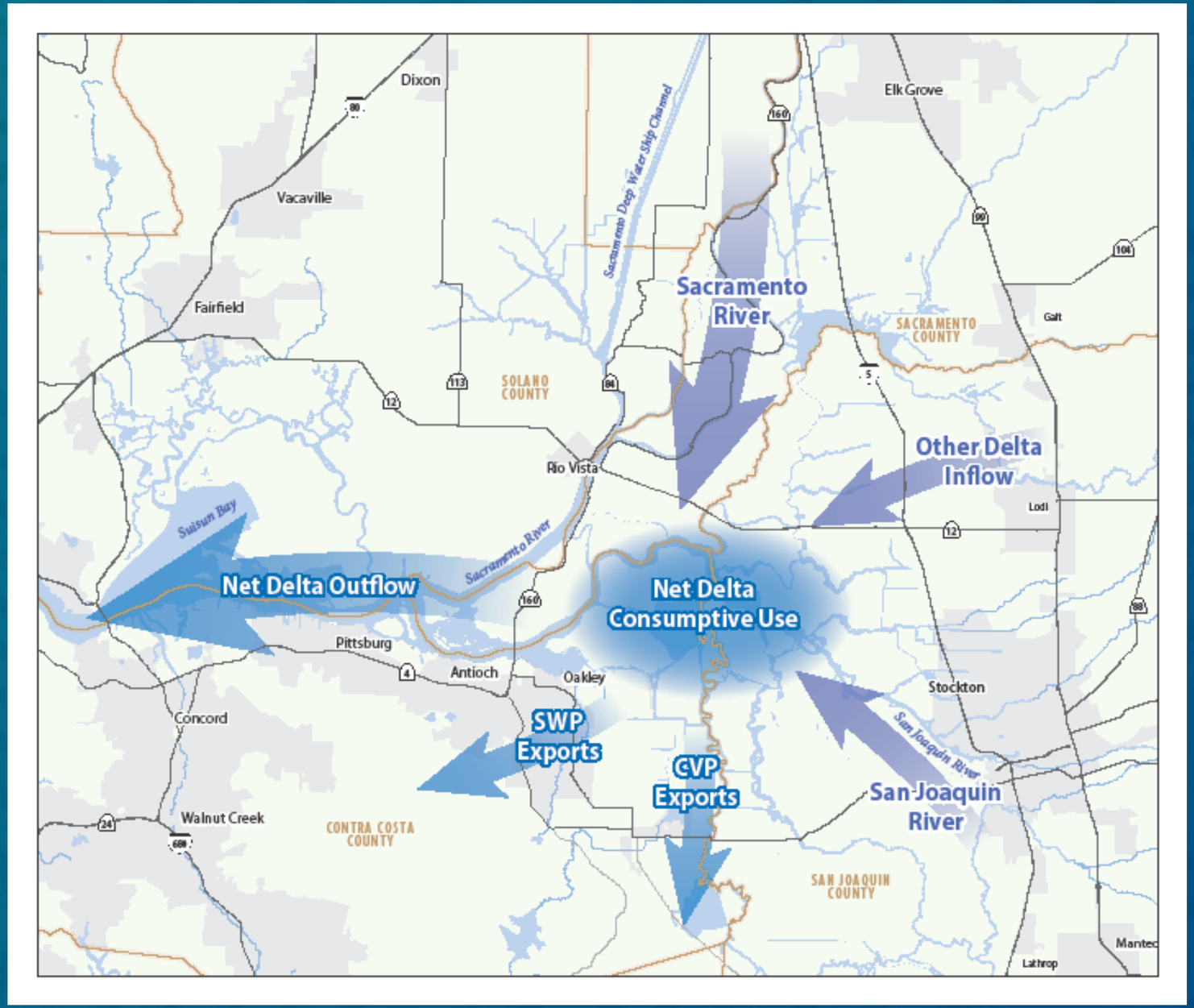
The Hub of California's Water Management System

- Rain and snowmelt from the Central Valley and the Sierra Nevada mountains runoff into the Delta
- The SWP's main water infrastructure is located in the Delta
- SWP and the federal CVP divert water from the southern portion of the Delta to export water for use in the Bay Area, Central Coast, San Joaquin Valley, and Southern California

Delta Hydraulics

- The Delta is a complex network of over 700 miles of tidally influenced channels and sloughs
- Strong forcing mechanisms drive circulation, transport, and mixing of water in the Delta:
  - Freshwater river flows from drainages to the Delta
  - Tides from the west propagate from the Pacific Ocean through San Francisco Bay
  - Collective effects of in-Delta agricultural diversions
  - SWP/CVP water supply facilities operate in the Delta

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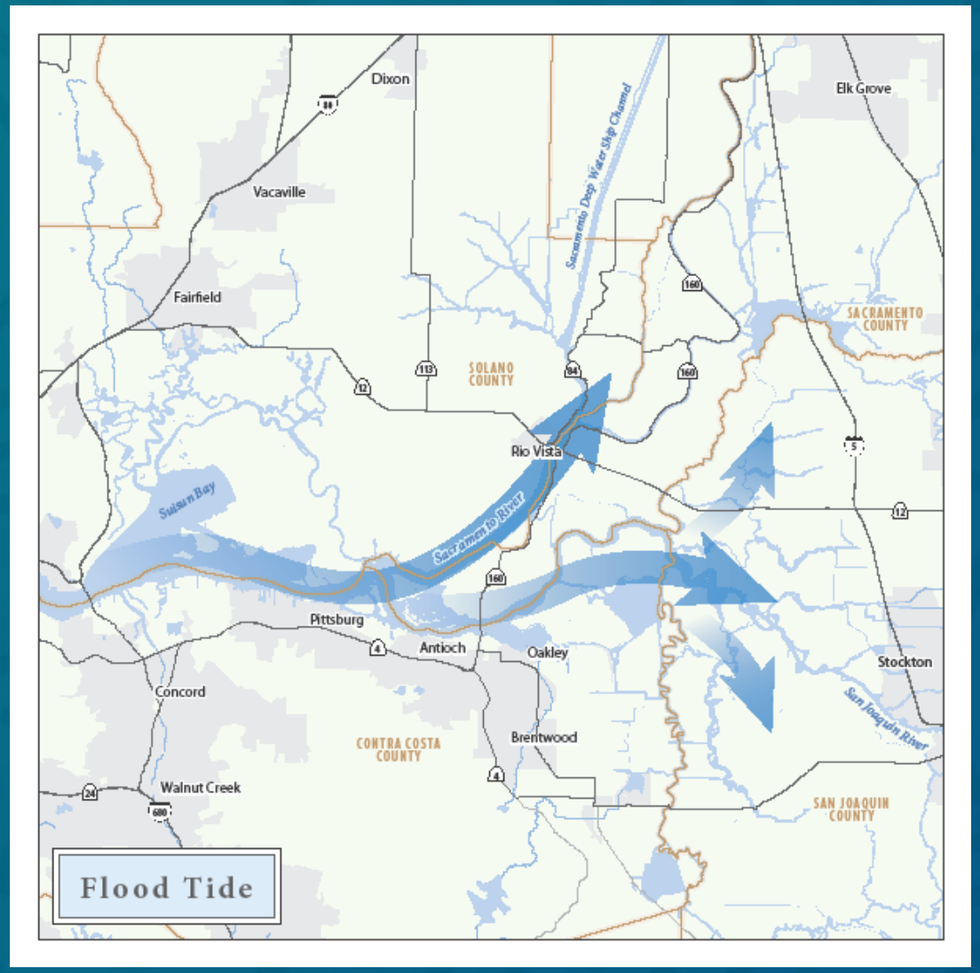
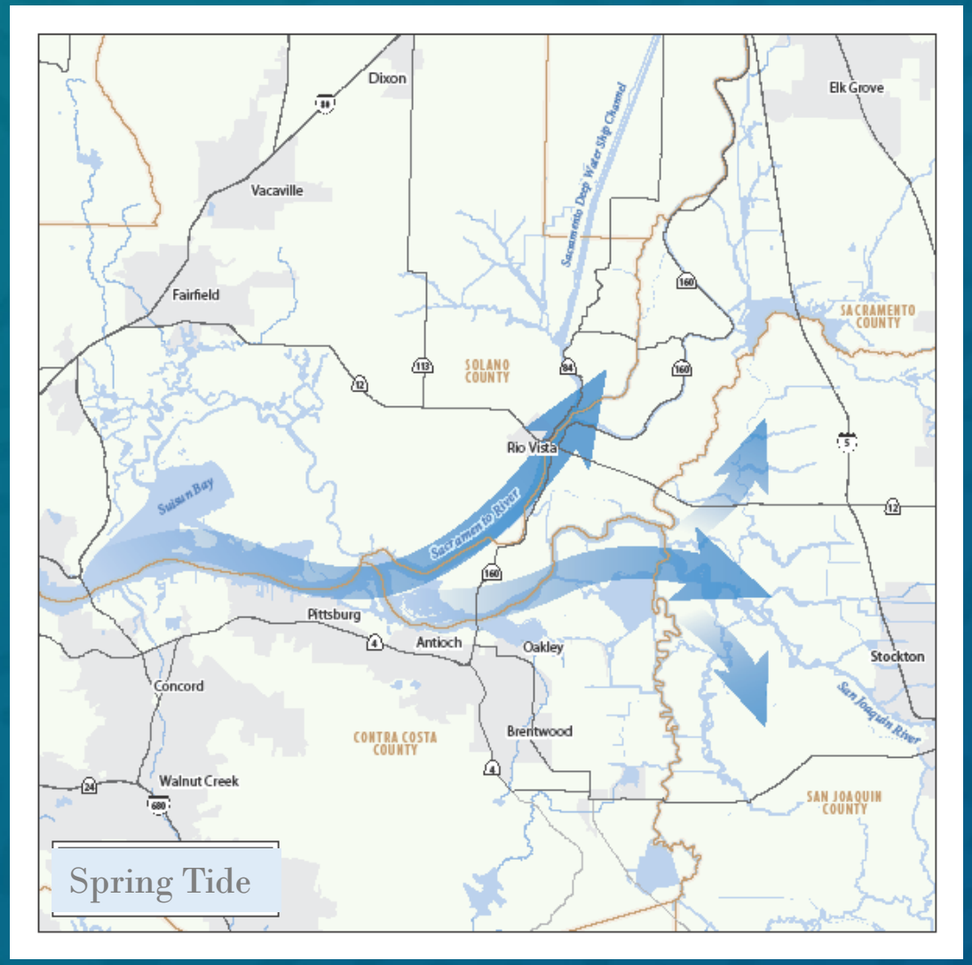
Vacaville
Fairfield
Elk Grove
Galt
Lodi
Rio Vista
Pittsburg
Antioch
Oakley
Concord
Walnut Creek
Stockton
Lathrop
Manteca
SOLANO COUNTY
SACRAMENTO COUNTY
CONTRA COSTA COUNTY
SAN JOAQUIN COUNTY
Sacramento Deep Water Ship Channel
Suisun Bay
Sacramento River
San Joaquin River
Sacramento River
Other Delta Inflow
Net Delta Outflow
Net Delta Consumptive Use
SWP Exports
CVP Exports
San Joaquin River

Salt Water/Fresh Water Daily Interaction



Salt Water/Fresh Water Monthly Interaction

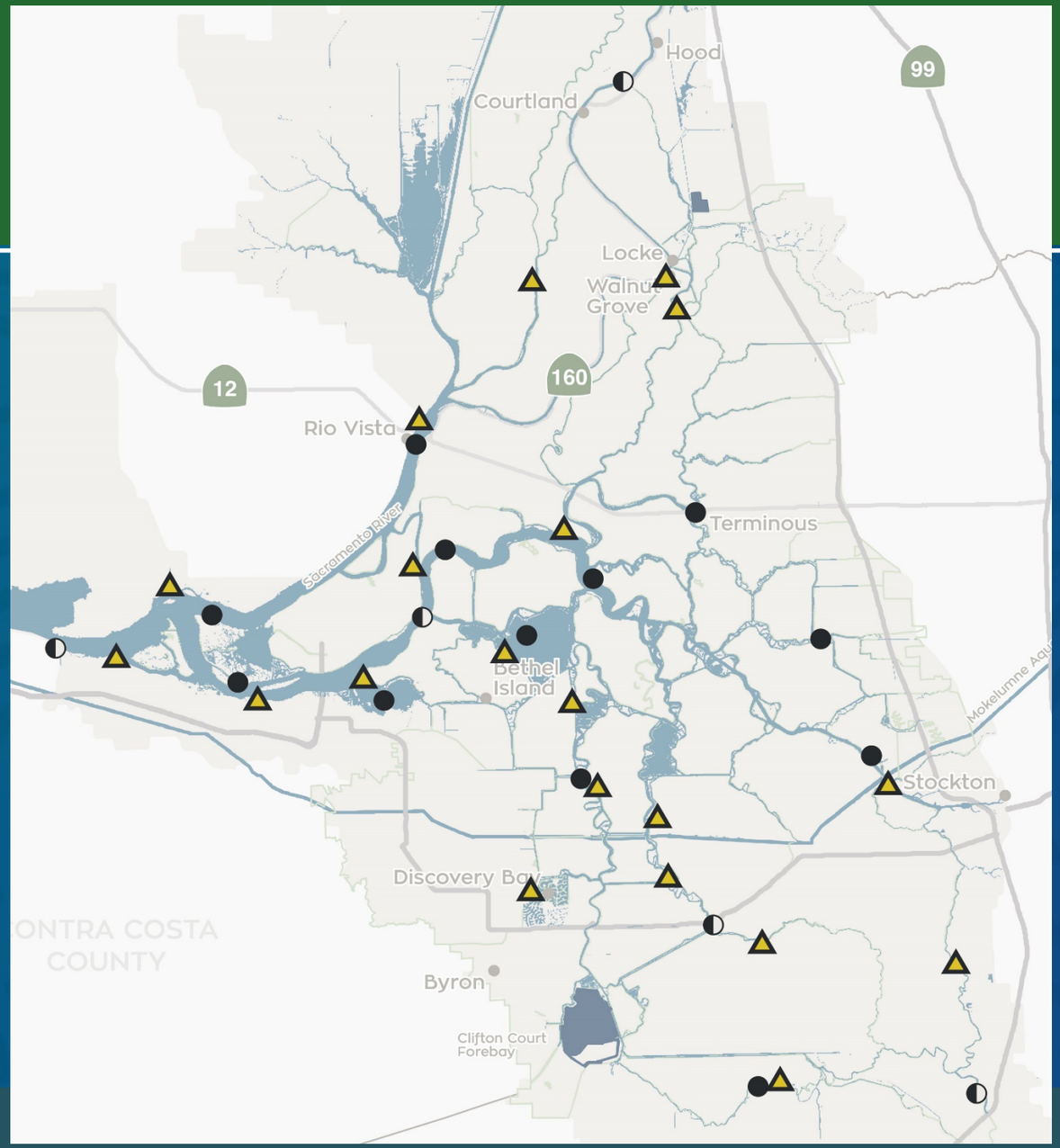


Key Water Quality Monitoring Stations

Water Quality Sampling site

Salinity Sampling Site
(Electrical Conductivity Measurement)

Continuous Salinity Recording Site
(Electrical Conductivity Measurement)



Priorities for Water System Operations in the Sacramento Valley and Delta

Higher priority needs must be met first:

- In-Basin requirements
  - Bay-Delta D-1641 water quality control plan objectives
  - Other legal users of water (including settlement contractors)
- Other regulatory requirements
  - Endangered Species Act requirements
  - Other state and federal permits
- SWP/CVP developed supply and conveyance is secondary

Overview of Water System Operations

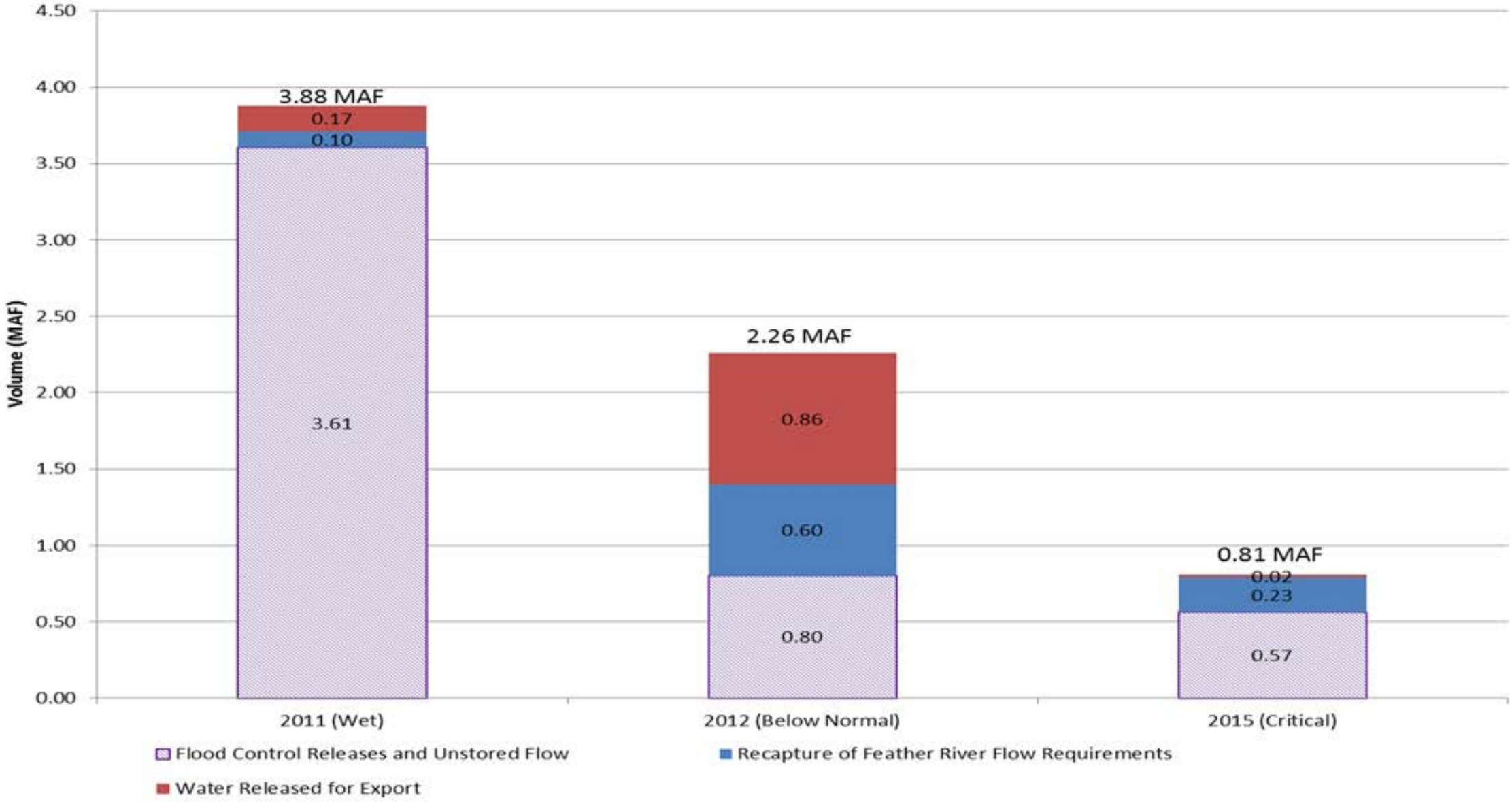
Excess conditions

- The period when the SWP/CVP are developing their supply
- Capturing and storing mountain runoff in SWP/CVP upstream reservoirs
- Capturing excess valley runoff at the south Delta export facilities and storing them in San Luis Reservoir

Balanced conditions

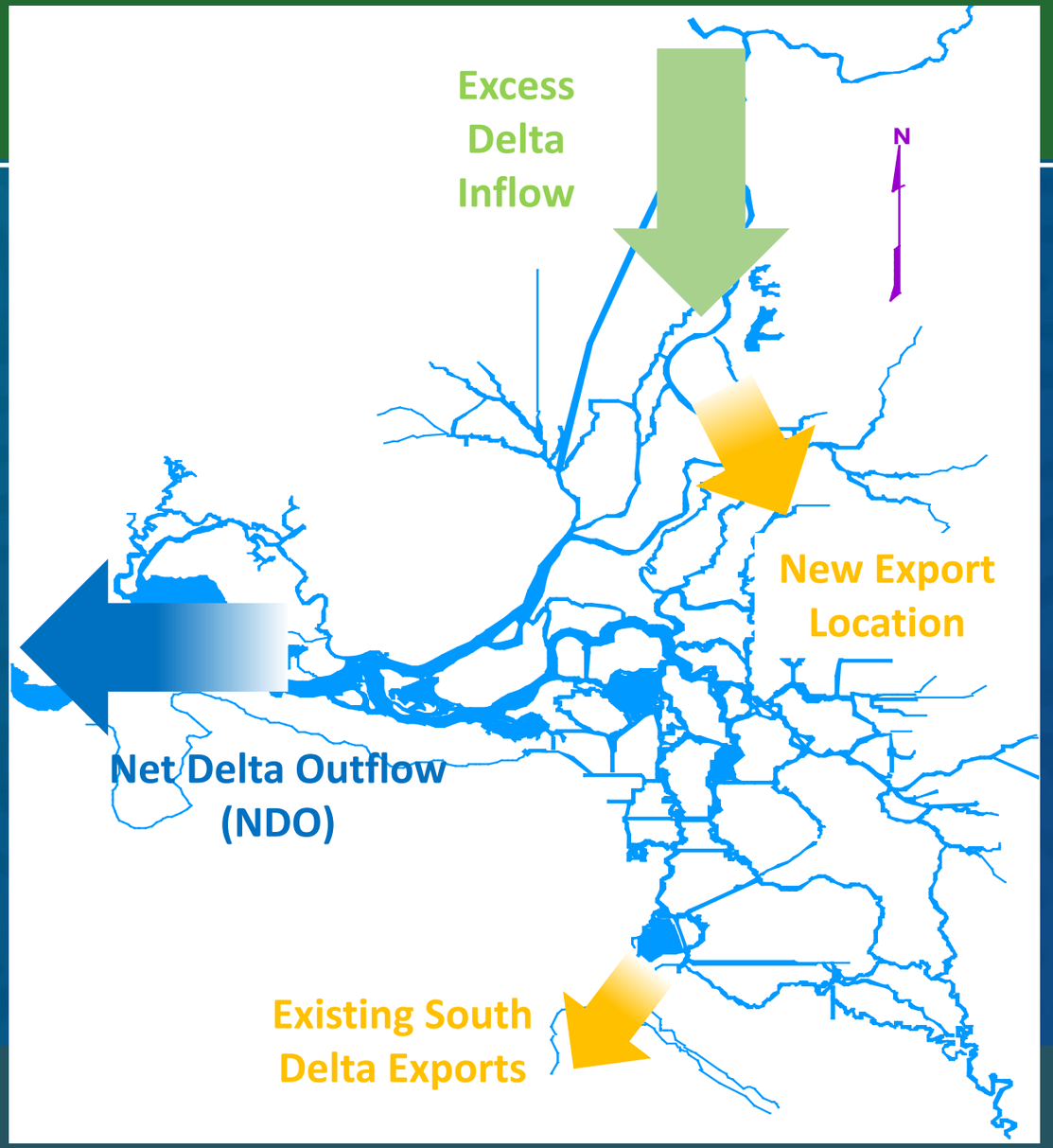
- SWP/CVP are actively managing the system to meet in-basin demands and D-1641 Delta water quality and flow standards
- SWP/CVP releasing previously stored water from upstream reservoirs and conveying this storage across the Delta for export.

Primary Sources of Water for SWP Exports (Historical Operations)



Increased Capture of Large Storm Flows with the Proposed Project

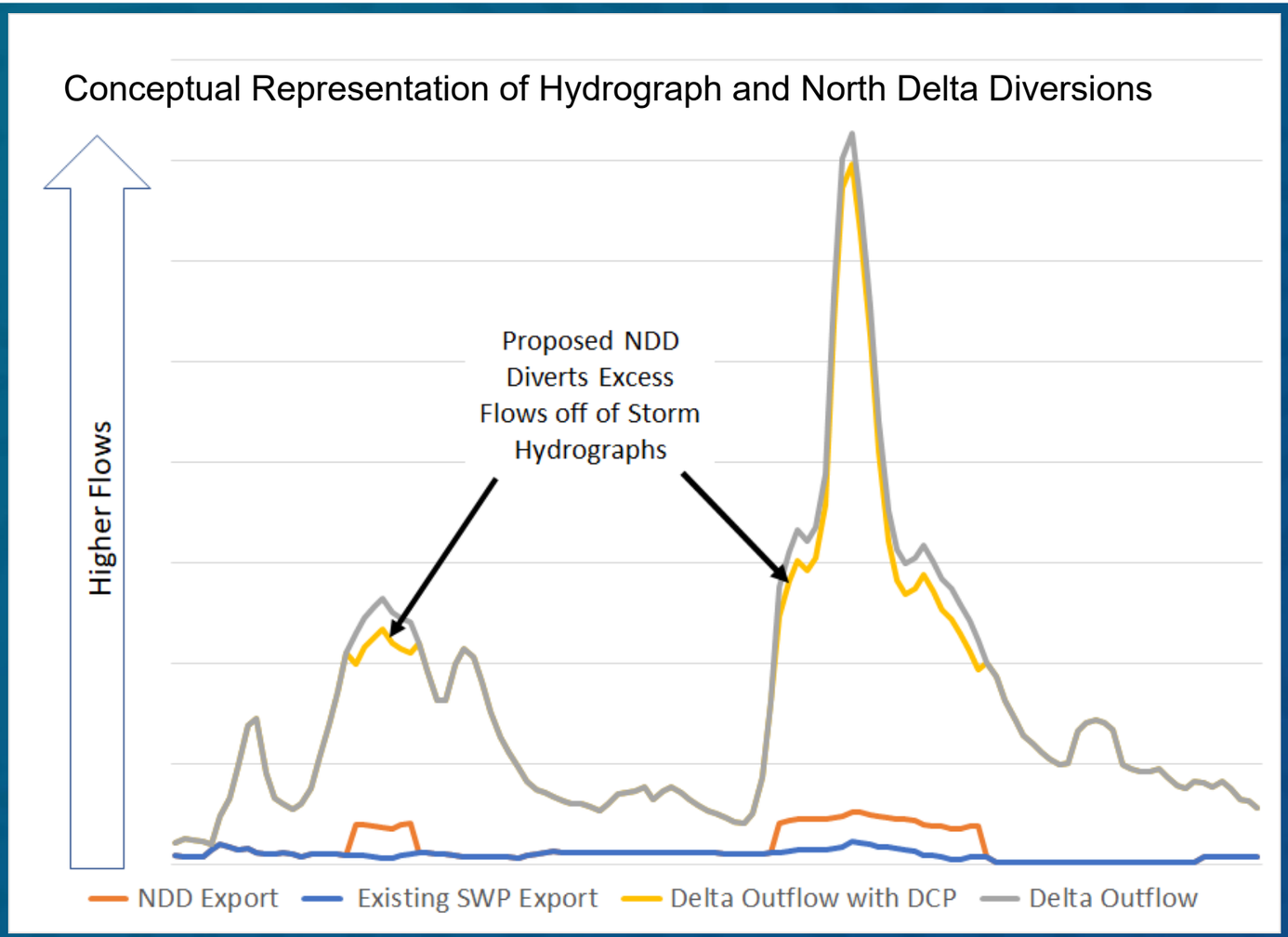
- Same Delta water quality requirements
- Same south Delta operating rules apply for fishery protections
- New operating rules apply to the proposed north Delta diversion location for fishery protections
- No change to SWP/CVP water right permits (except new point of diversion)
- Increased operational flexibility with two diversion options (North and South locations)
- Augment ability to capture excess flows



Increased Capture of Large Storm Flows

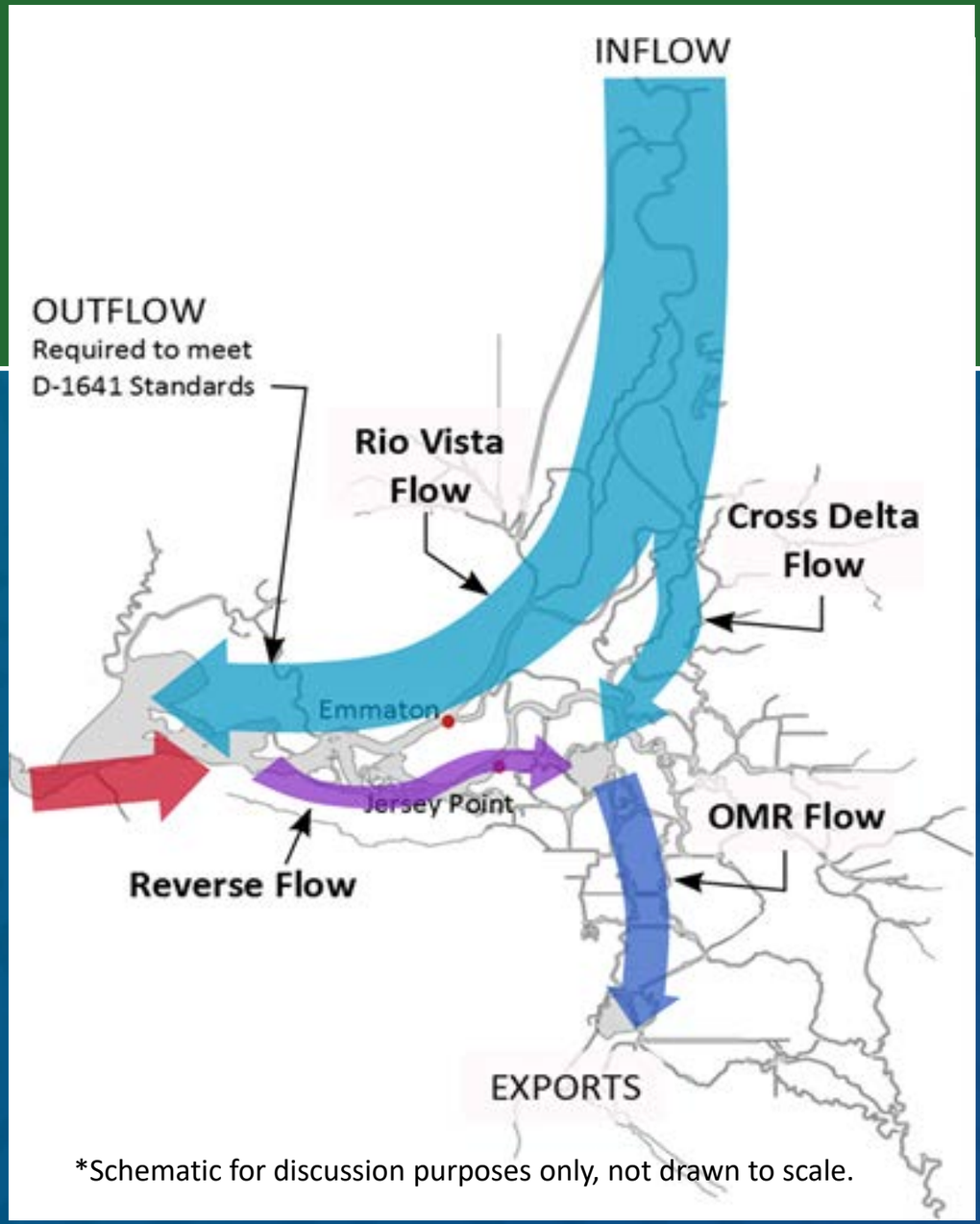
Winter/Spring: Increased Capture of Excess Storm Flows

- New North Delta Diversion may provide opportunities to safely capture additional excess flows during high flow events
- Banks PP captures excess flows in the Delta and stores them in San Luis Reservoir for later release to meet high demand period deliveries



Conveyance of Previously Stored Water Under Balanced Conditions

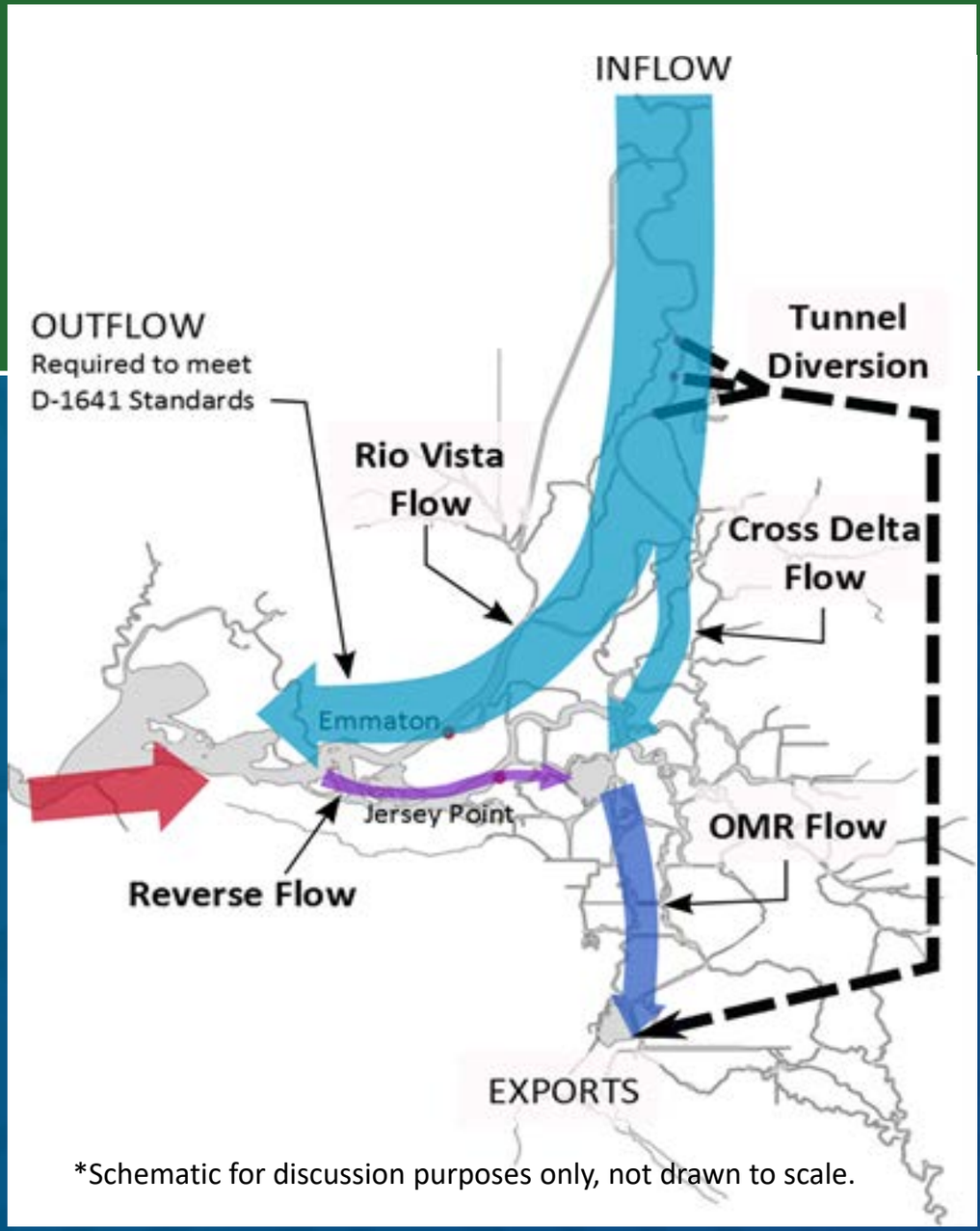
- Primarily in the summer, previously stored water in Oroville is released as inflow into the Delta
- Some of the flow passes through cross channels to the central and south Delta export locations
- When south Delta pumping is high reverse flow could bring saline water into the Delta interior.
- Higher Delta outflow is needed to offset this reverse draw of saline water



*Schematic for discussion purposes only, not drawn to scale.

Conveyance of Previously Stored Water with the Proposed Project

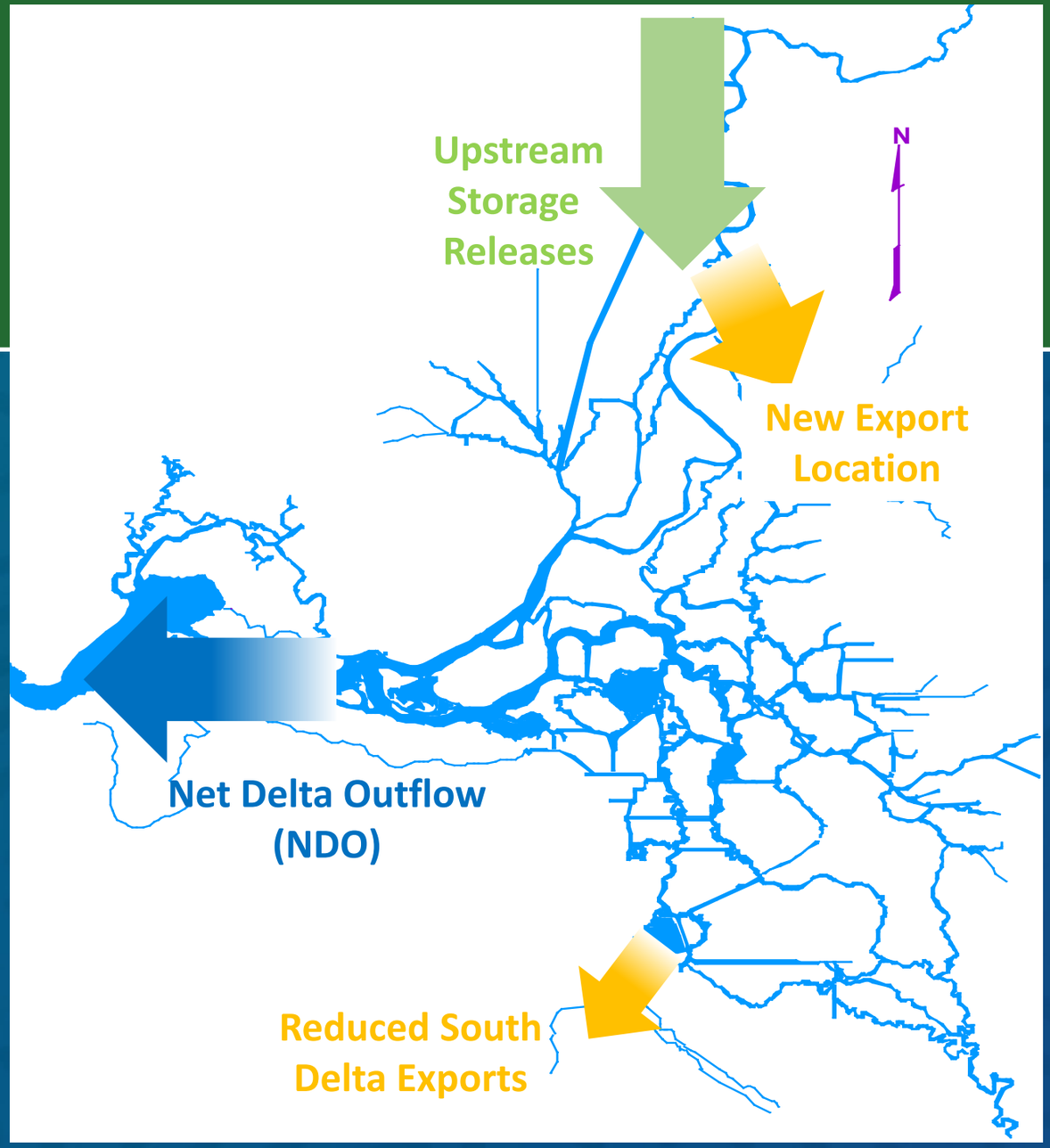
- Primarily in the summer, previously stored water in Oroville is released as inflow into the Delta
- Some of the flow passes through cross channels to the central and south Delta export locations and some would be diverted through the tunnel.
- This alternative path to the exports would lessen the saline ocean water entering into the Delta interior and lessen the need for additional water for Delta outflow.



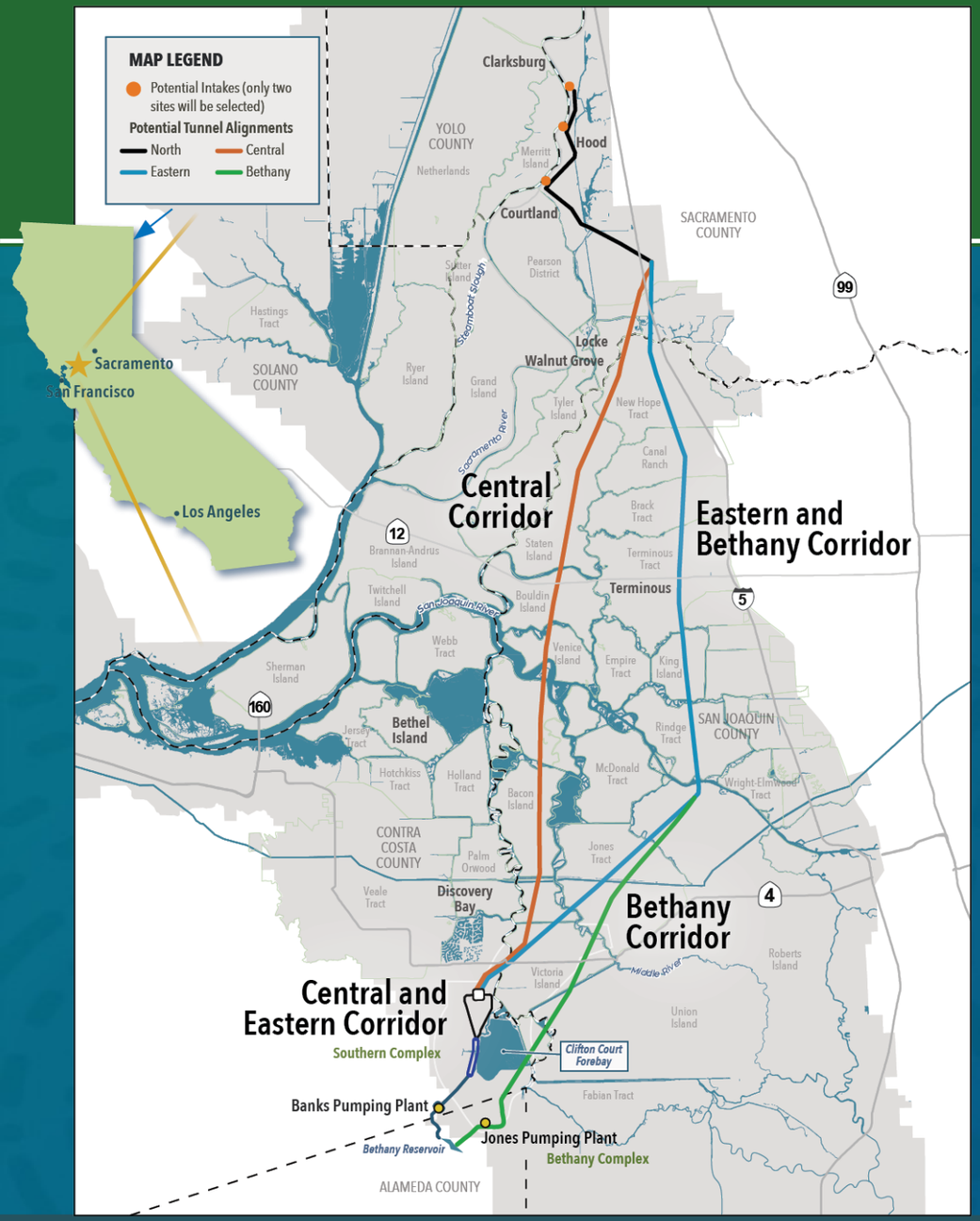
*Schematic for discussion purposes only, not drawn to scale.

Dual Conveyance with Proposed Project

- Same Delta water quality and flow requirements
- No change to SWP/CVP water rights permits (except for new point of diversion)
- Improved flexibility of SWP operations to meet D-1641 Delta salinity requirements

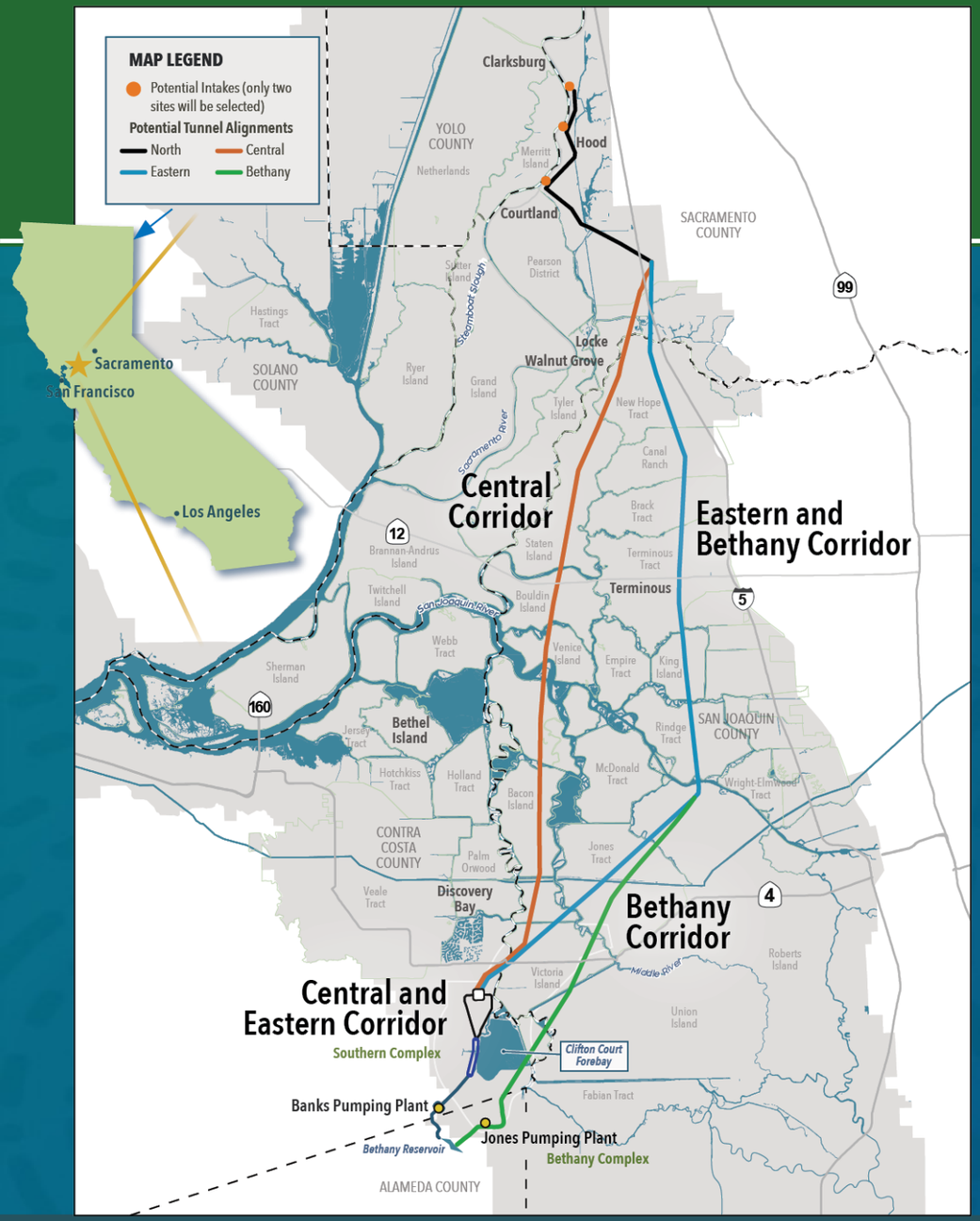


Proposed Operations



- Operate in conjunction with existing South Delta intakes
- Augment ability to capture excess flows and improve flexibility of SWP operations to meet D-1641 salinity requirements
- Would not change operational criteria of upstream reservoirs
- Operations of existing facilities governed by applicable regulatory requirements under State Water Board D-1641, 2019 federal Biological Opinions, and 2020 Incidental Take Permit for SWP

Proposed Operations



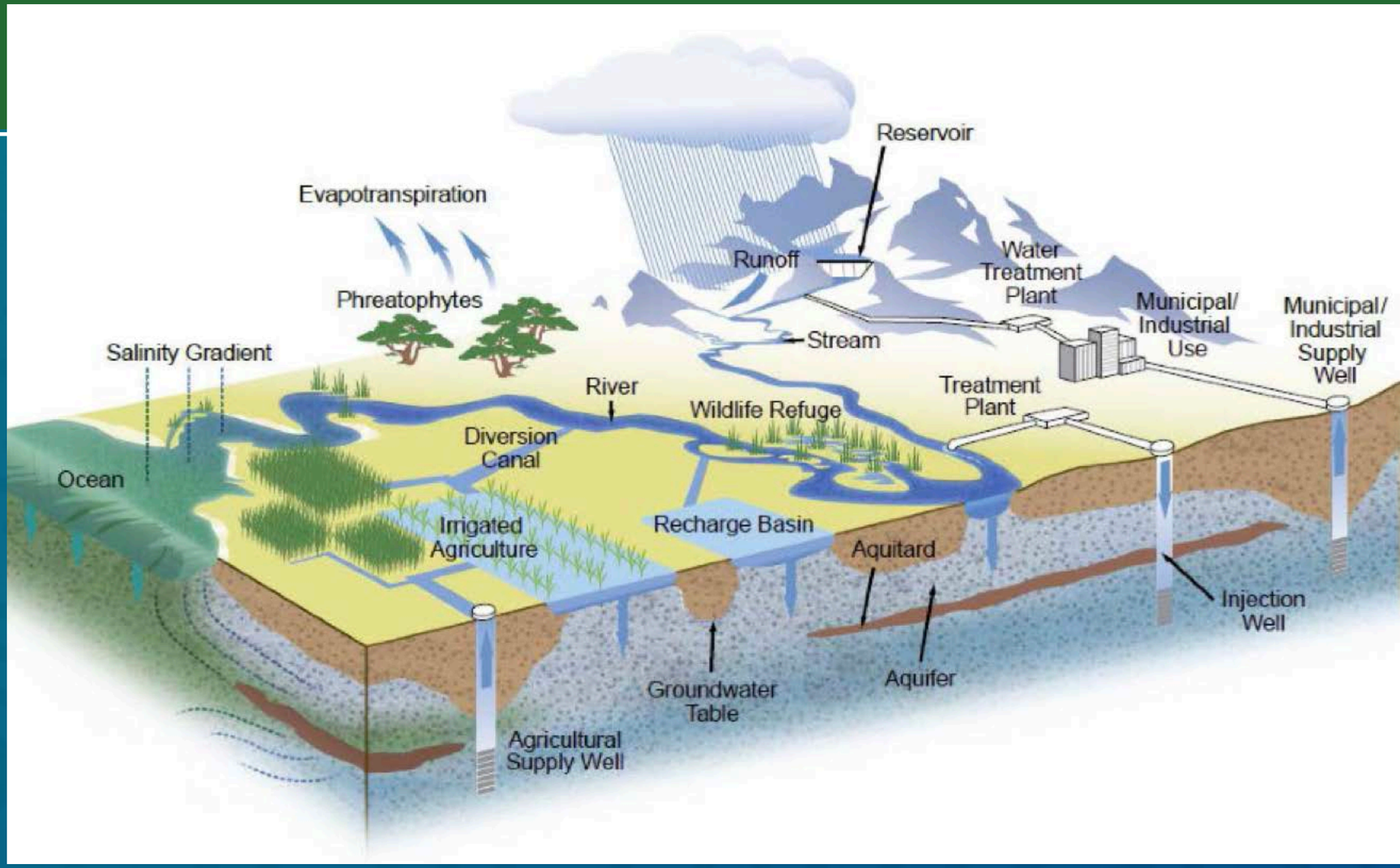
North Delta diversion intake operations remain consistent with regulatory requirements:

- Old and Middle River flows
- Delta Cross Channel gate operations criteria
- Rio Vista minimum instream flow criteria
- Delta outflow criteria
- Export to Inflow ratio

Questions

Methods to Model the Operations

An Intensely Integrated Water System



Water Resources Models

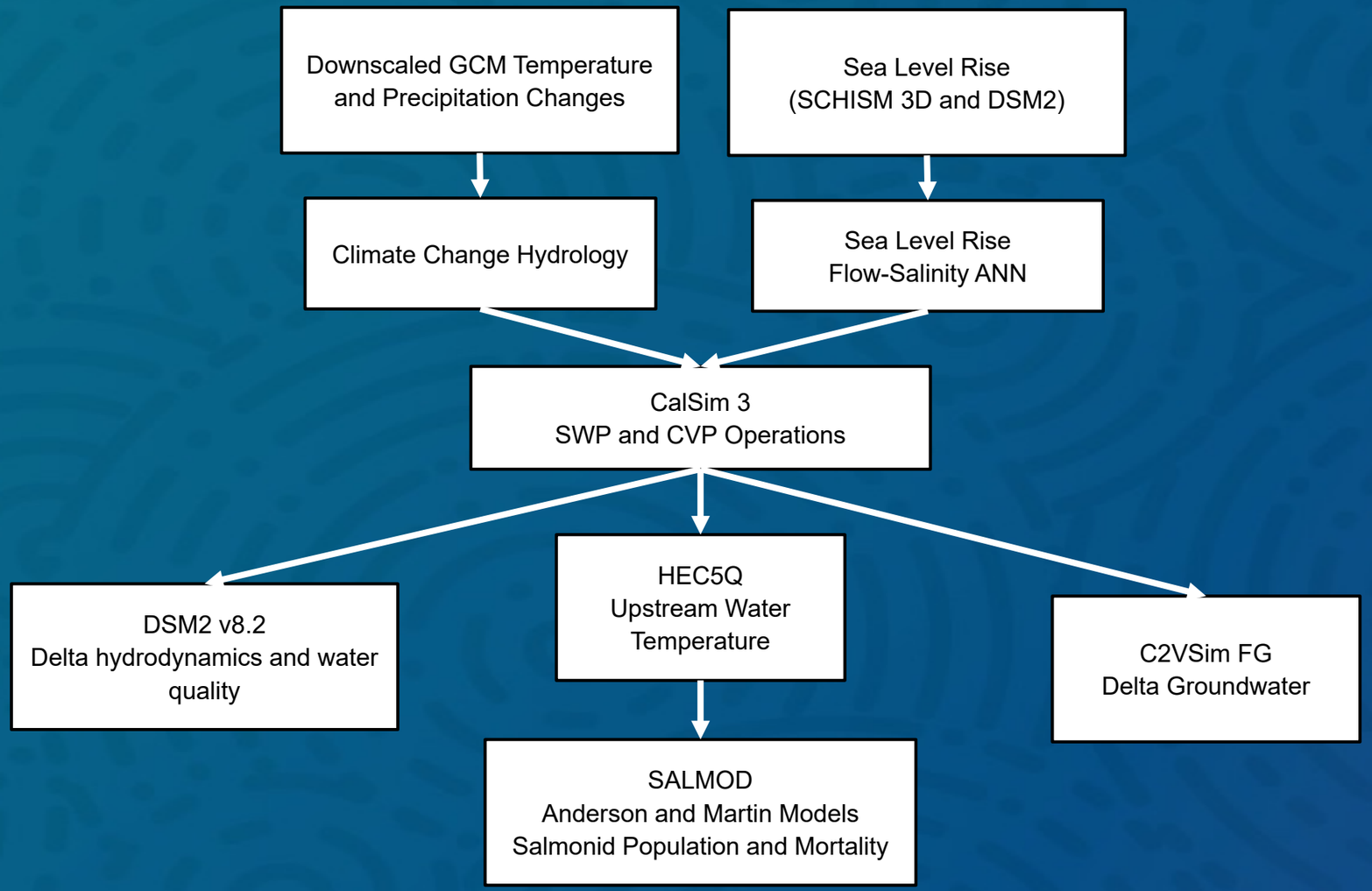
- Models represent the real world through mathematical relationships based on specific inputs, channel configuration, regulations and operational policy
- Management models (such as CalSim) include simulation of managers'/operators' decisions

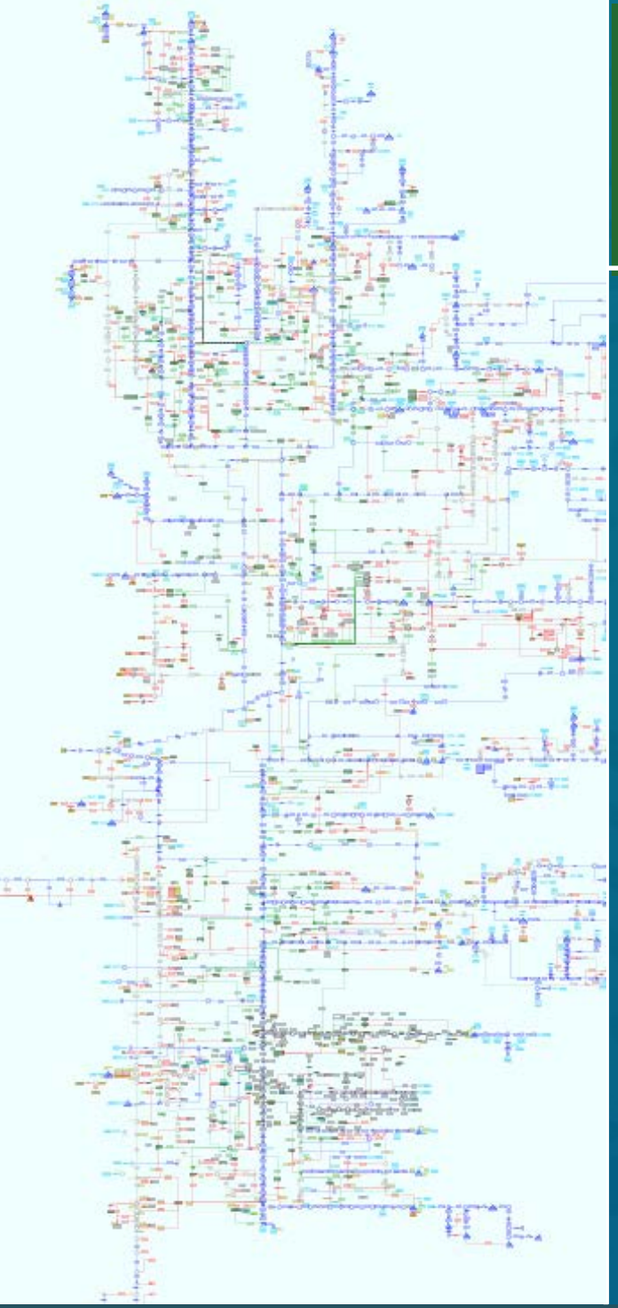
DCP Draft EIR Modeling Framework

Input Data

Simulation of proposed North Delta Diversion Operations

'Downstream' models

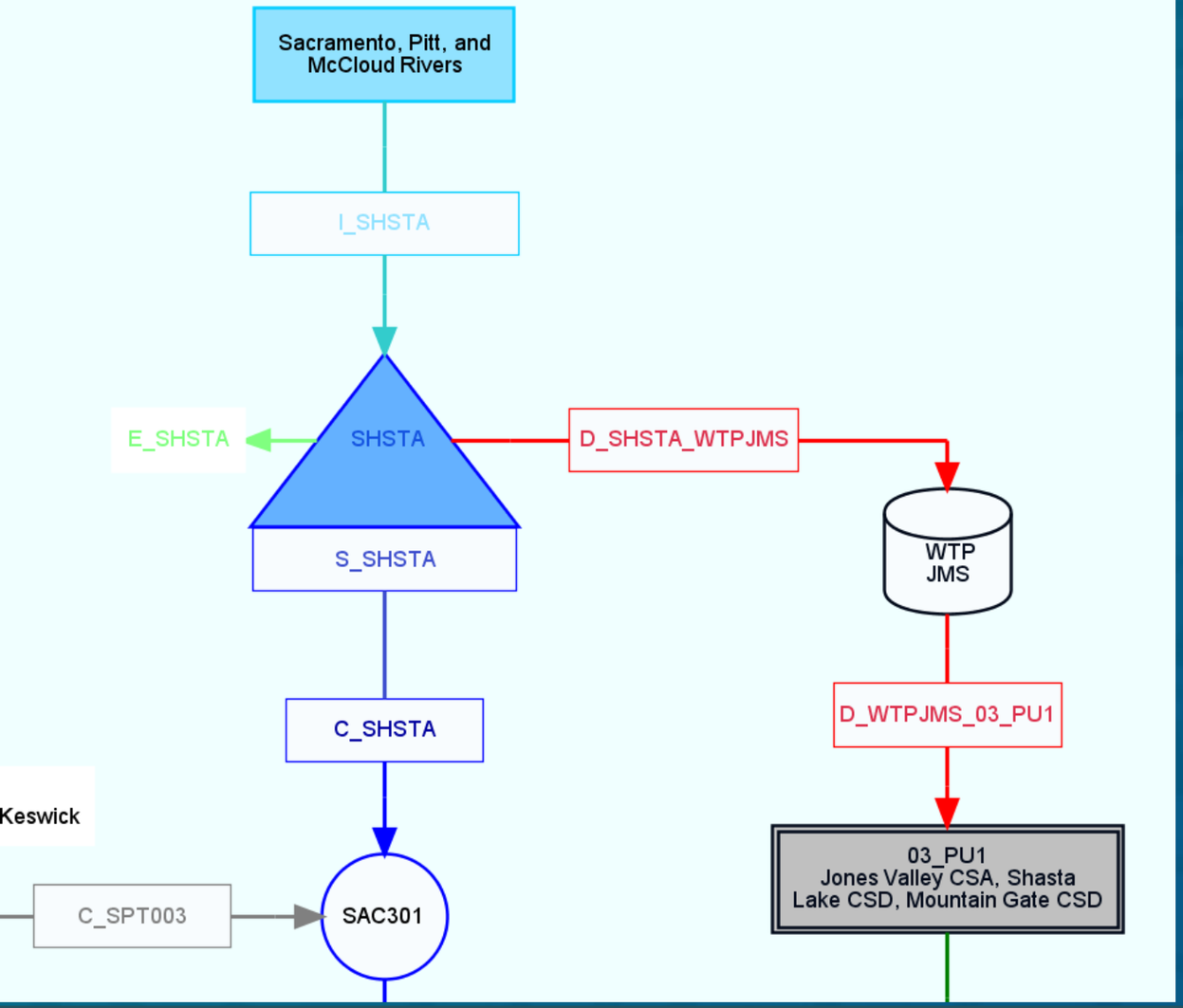


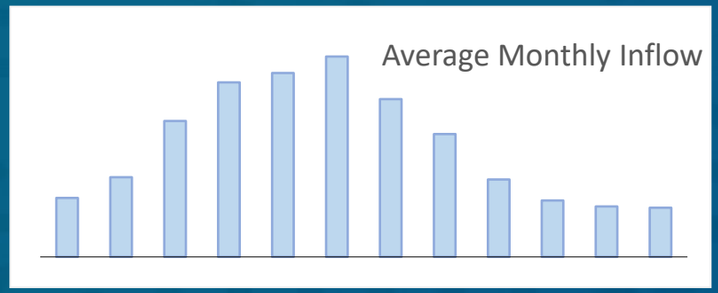


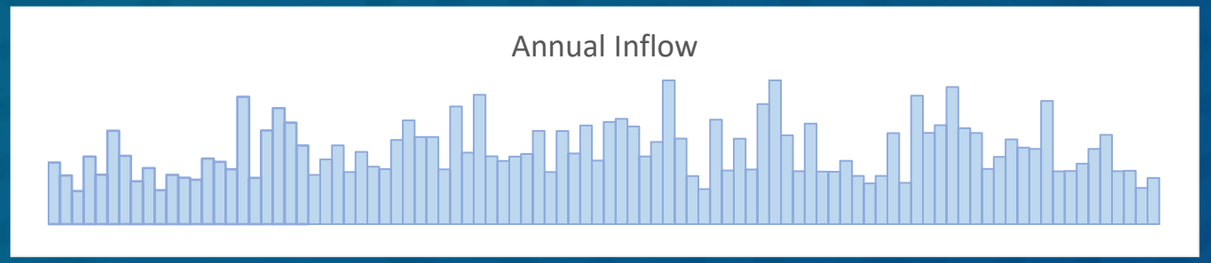
CalSim 3 Model

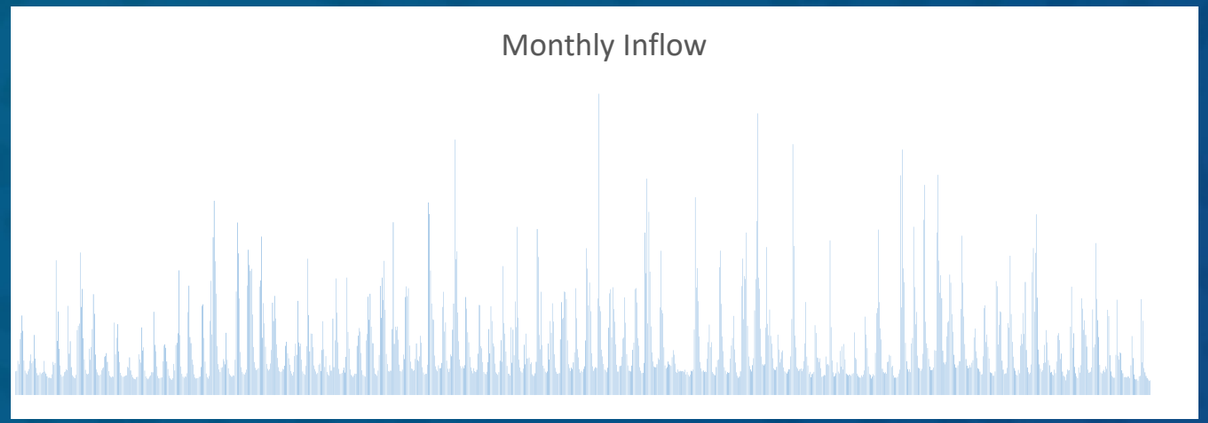
- Jointly developed by DWR and Reclamation
- Best available model for conducting planning studies relating to SWP/CVP operations
- Represents water resources of the Delta and upstream drainage areas using a complex network of nodes (junctions and storage) and arcs (flows)
- Includes significant refinements and additions compared to CalSim II

CalSim 3 Flow Balance

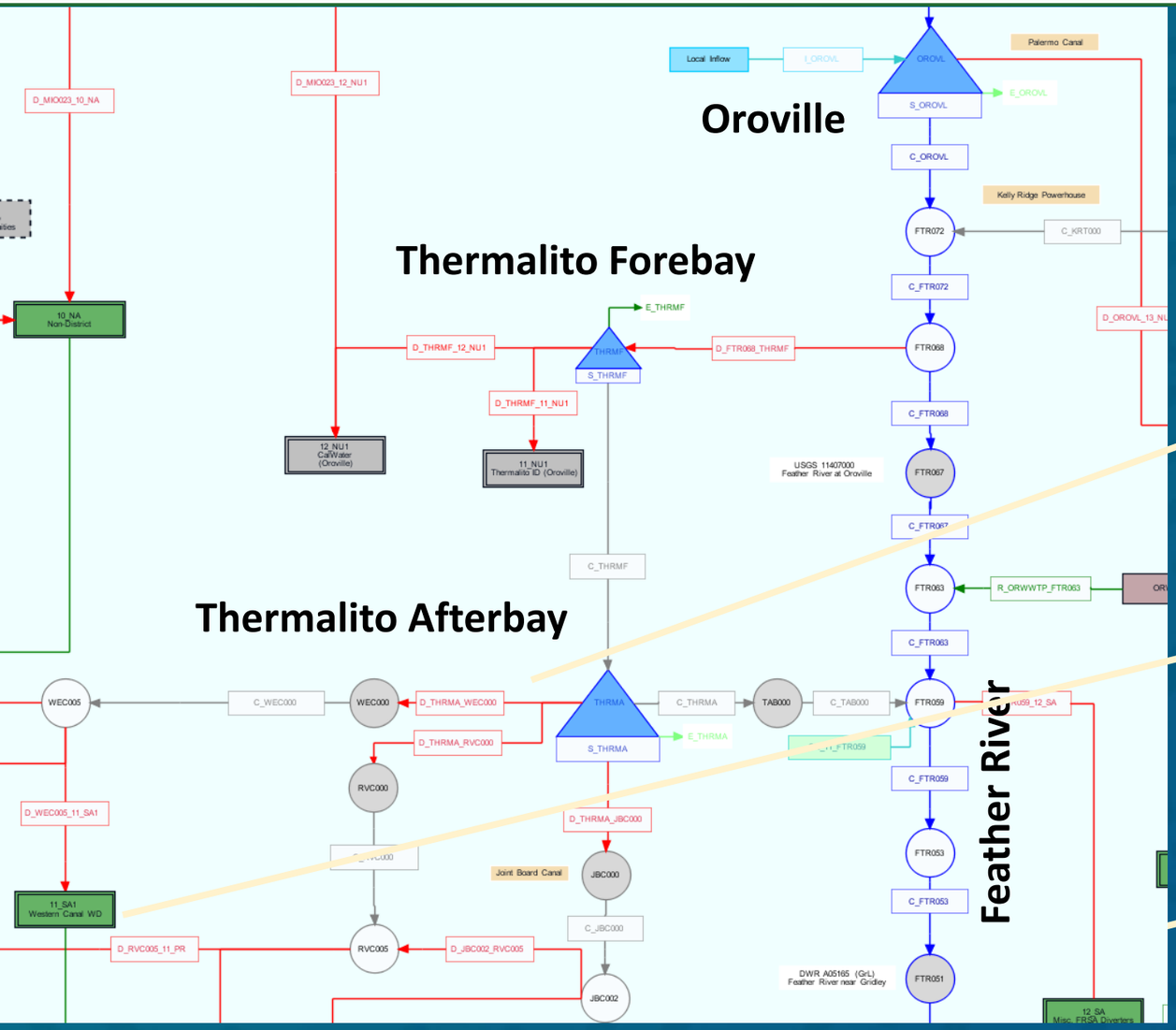








CalSim 3 Non-Discretionary Operations

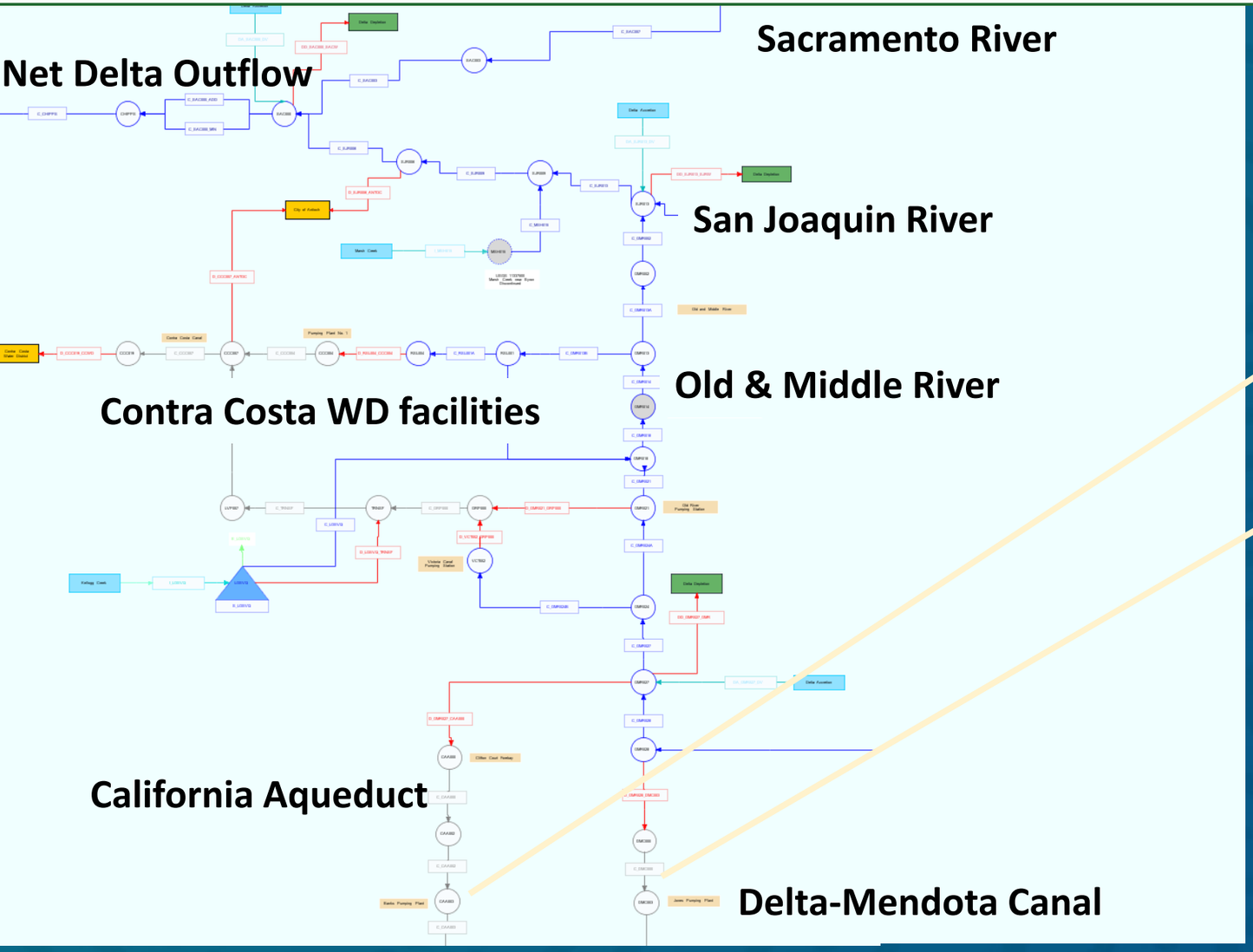


Water right settlement agreement to provide water

Agricultural water demands based on irrigated acreage, precipitation, and ET

Flow requirements specified in FERC license and 2019 BOs

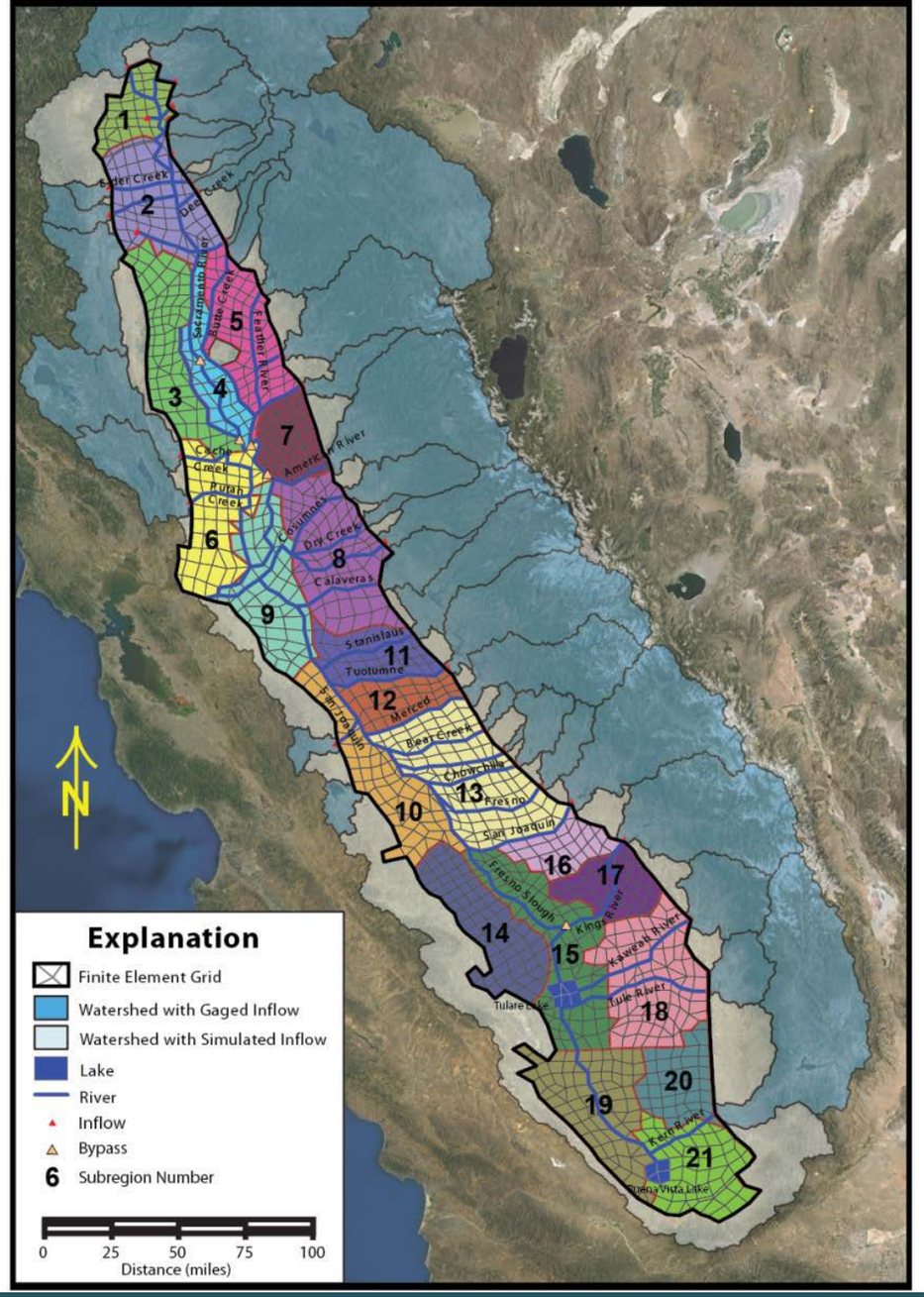
CalSim 3 Discretionary Operations



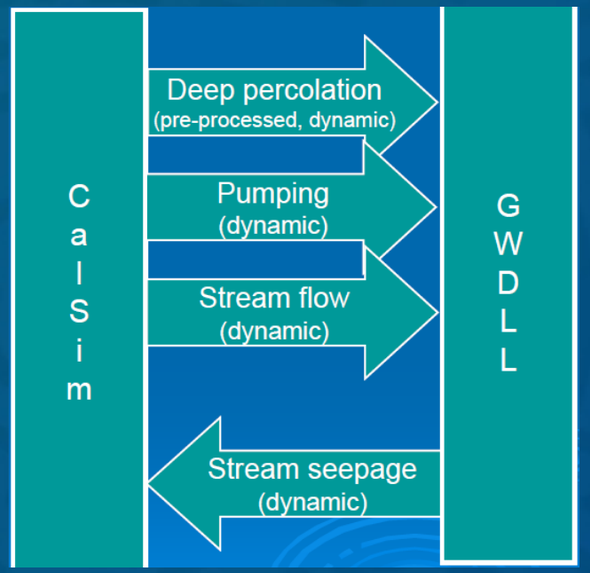
SWP exports from the south Delta

CVP exports from the south Delta

CalSim 3 Groundwater Simulation



Simulates groundwater flows, elevation, and stream-groundwater interaction by linking to finite element distributed groundwater model



Delta Constraints In CalSim 3

- Coordinated Operation Agreement (COA) (2018 addendum), sharing of obligations
- D-1641 flow and water quality standards
- 2019 BiOps for long-term operations of CVP and SWP
- 2020 Incidental Take Permit for long-term operation of the SWP

Delta Simulation Model 2

Hydrology and System Operations (CalSim 3.0)

(monthly time step)

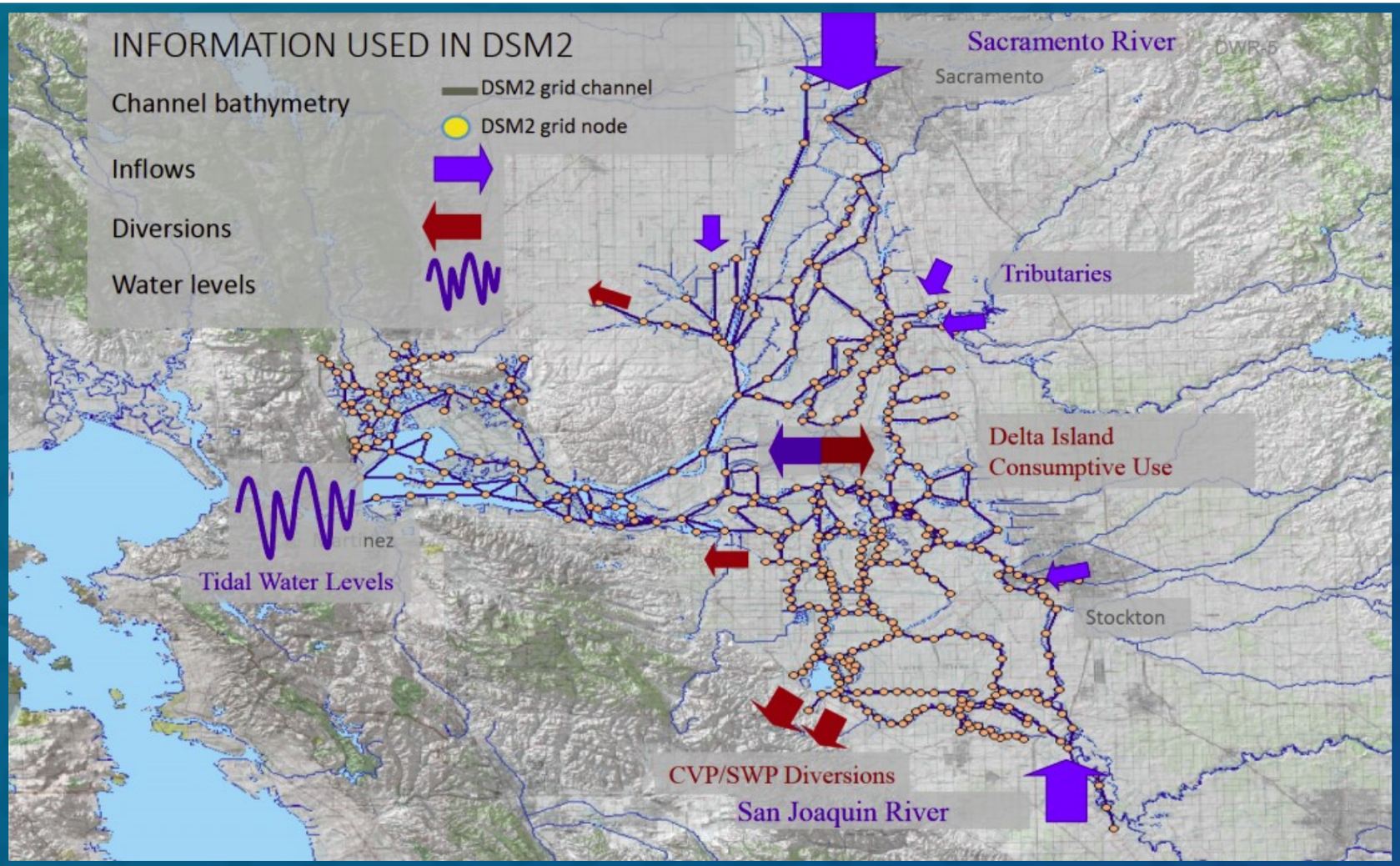
River flows, reservoir storage, diversions and deliveries

Delta Hydrodynamics and WQ

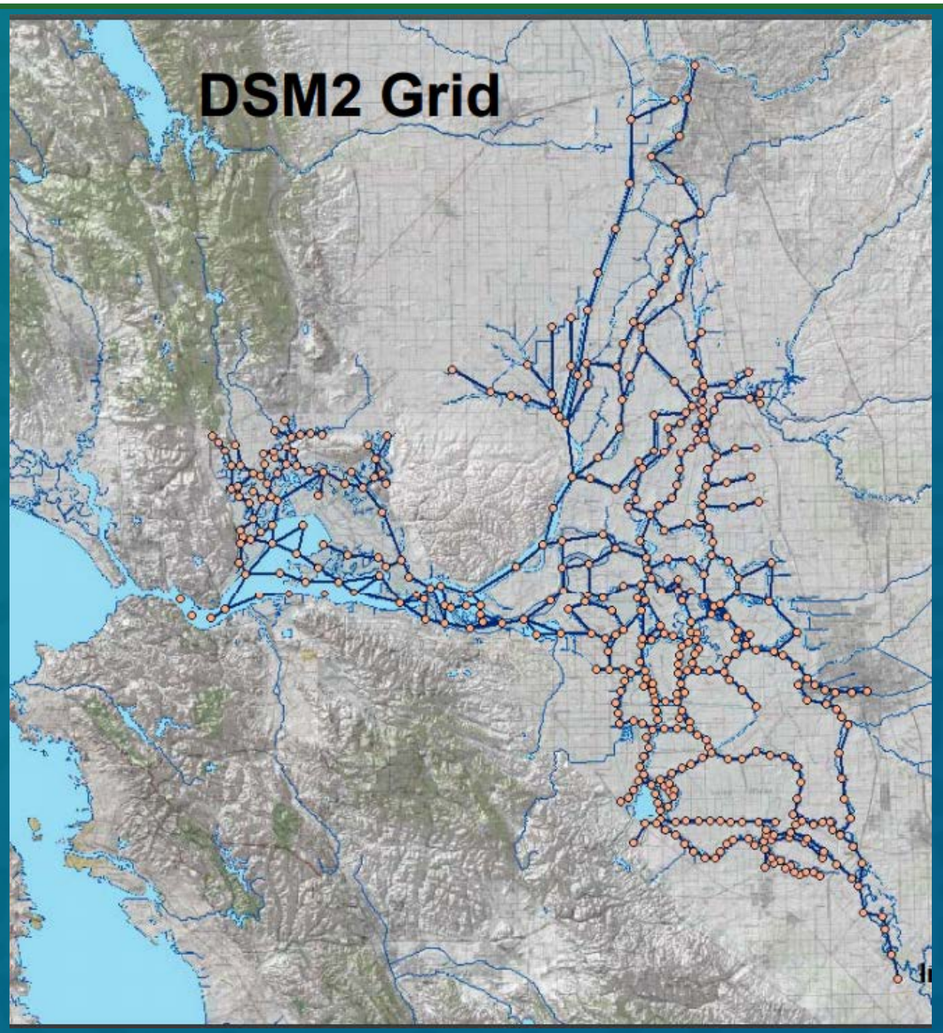
(DSM2-Hydro, -Qual)

(15-minute time step)

Delta channel flows, velocities, stage, water quality



Delta Simulation Model 2



- Developed by DWR
- Simulates one-dimensional Delta hydrodynamics and water quality
  - Tidal flows
  - Water level (stage)
  - Water quality
  - Particle tracking

Modeling Scenarios

- **Baselines:**
  - Existing Conditions (2020)
  - No Project Alternative (2040)
    - includes projected land use, urban growth, climate change, and sea level rise (more information in Webinar #3)
- **Proposed Project and Alternatives layered on existing conditions**
- **Proposed Project and Alternatives layered onto the No Project Alternative**

Appropriate Use of Model Results

- Not a predictive tool
- Comparative analysis: focus on difference in results from two model simulations.
- Use statistical measures as metrics (long-term average, water year type average, exceedances)

Flow-Based Effects Analysis (CalSim 3)

DCP Draft EIR results will include:

- CVP/SWP operations
  - Reservoir storage
  - Delta exports including two added intakes in North Delta
  - Deliveries North and South of Delta
- Stream flows at compliance locations
- Delta channel flows, Delta outflow, X2 location

Water Quality Effects Analysis (DSM2)

DCP Draft EIR results will include:

- EC at State Water Board D-1641 compliance locations
- Bromide and Chloride at Delta M&I intake locations
- Delta Dissolved Organic Carbon (DOC)
- Delta water temperature
- And other constituents

Questions

QUESTIONS

- Via Zoom: Use Raise Hand feature
- Via Phone: Press *9 to raise hand

QUESTIONS

00:02:00

Thank You for Attending

Upcoming Webinars

Fisheries:

Tuesday, August 3, 2021 • 6:00pm – 8:00pm

Climate Change:

Wednesday, August 25, 2021 • 6:00pm – 8:00pm

Environmental Justice:

Thursday, September 16, 2021 • 6:00pm – 8:00pm

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