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Managing Water in the West

Central Valley Project Overview

July 2013



U.S. Department of the Interior
Bureau of Reclamation

Central Valley of California

RIVER UNCONTROLLED - DISASTER

LOWE AND WALLS FOR DISASTERS

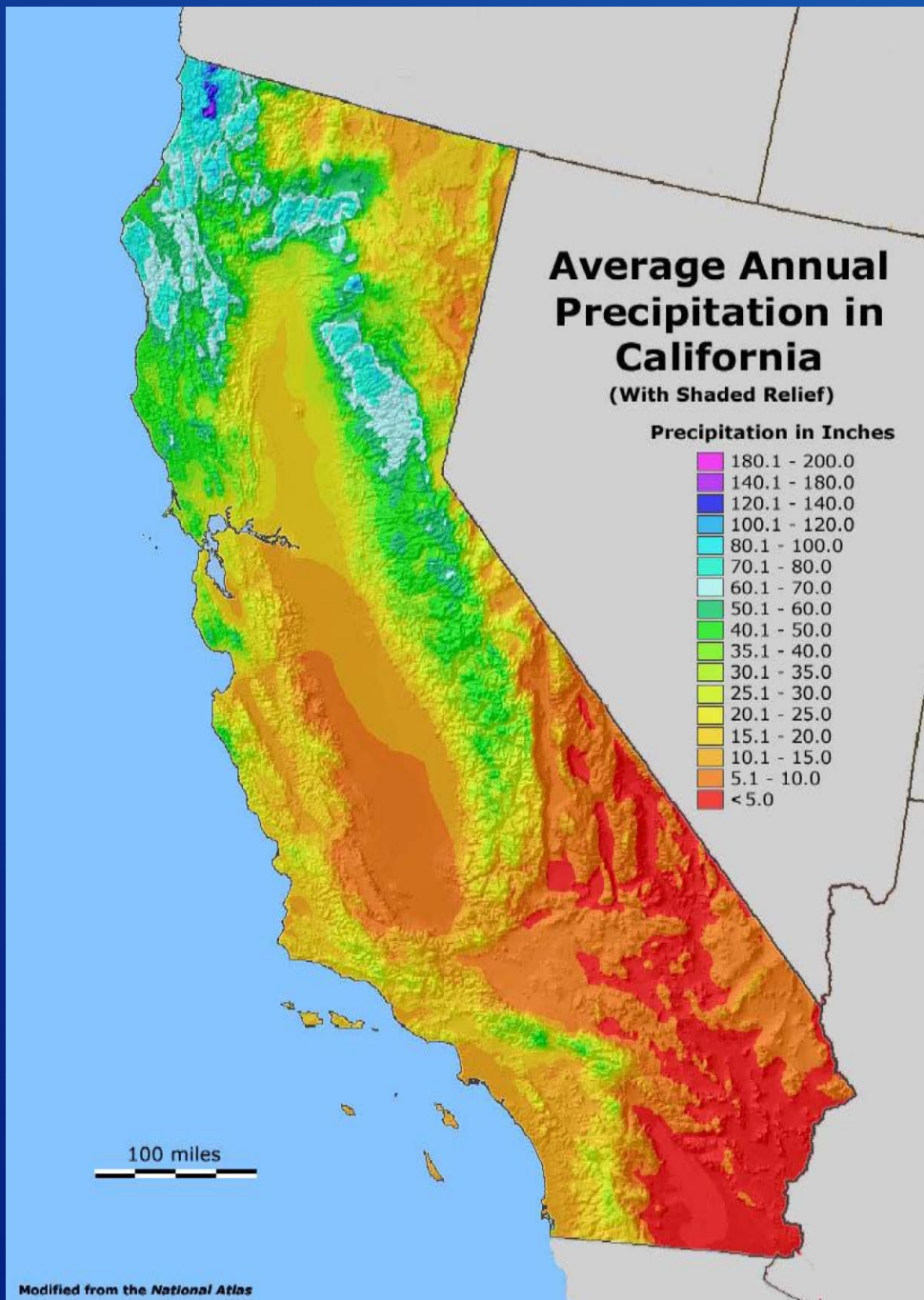
CONTRA COSTA CANAL IN USE

FRESH WATER FOR IRRIGATION



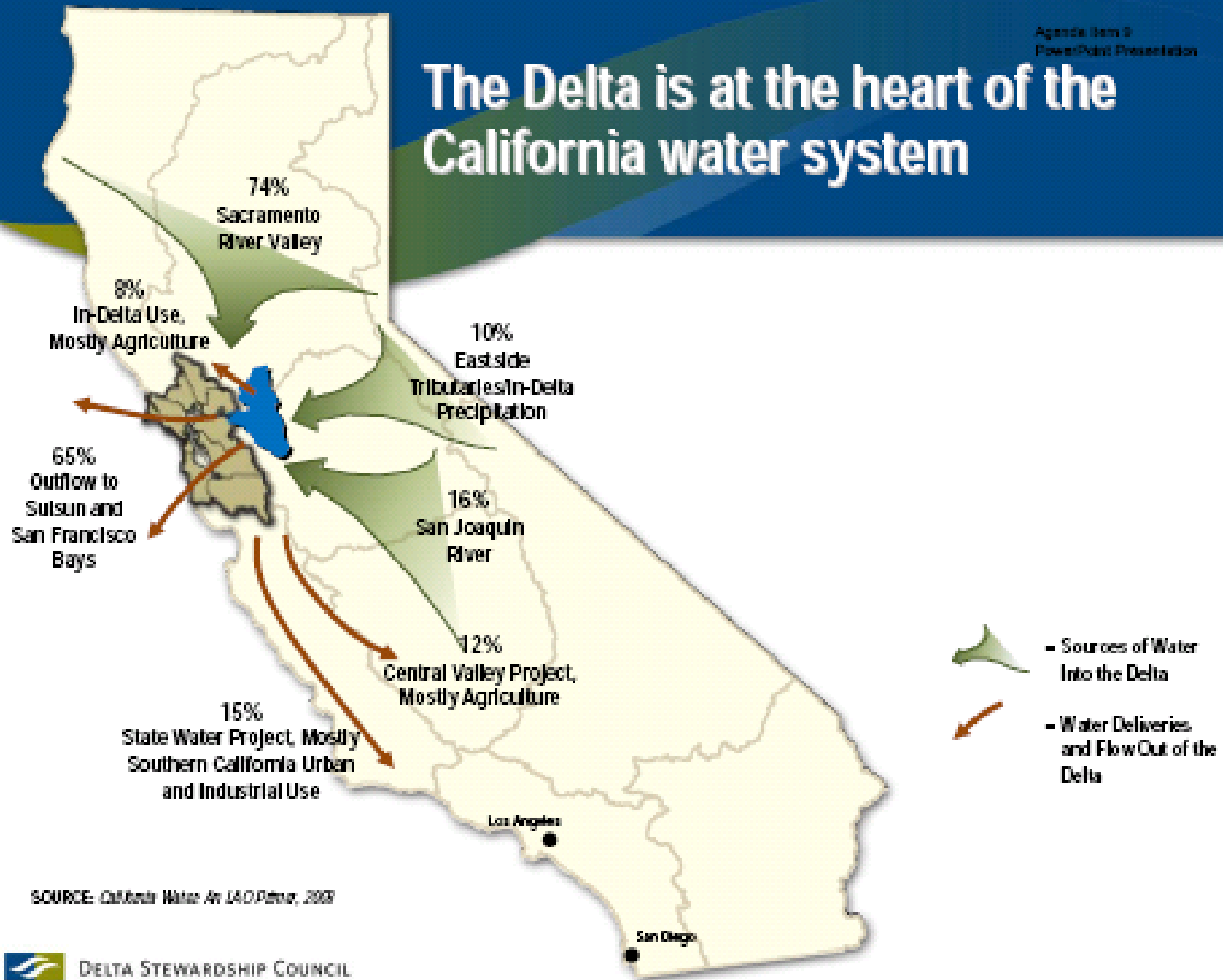
Hydrologic Constraints

- Majority of water supply in the north
- Most of the precipitation is in the winter/spring
- Majority of demand in the south
- Most of that demand is in the summer



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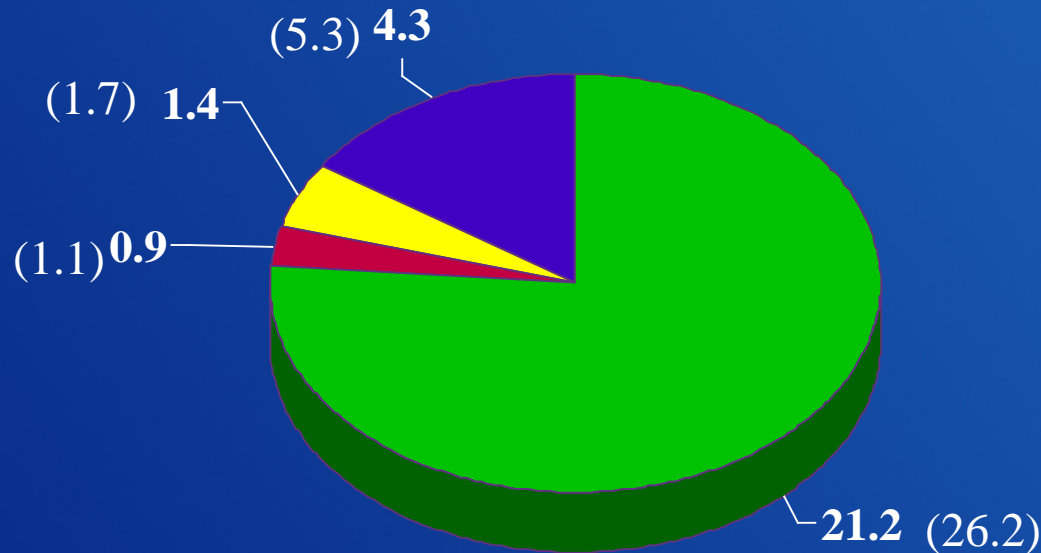
The Delta is at the heart of the California water system



Geographic Constraints

Sacramento/San Joaquin Delta

Avg Annual Inflow in MAF (Billion Cu Meters)



■ Sacramento ■ Delta Precip ■ Eastside Streams ■ San Joaquin

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California Water Projects

- State Water Project
- Central Valley Project
- Local Water Projects



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CVP

Major Storage Facilities



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CVP Conveyance Facilities



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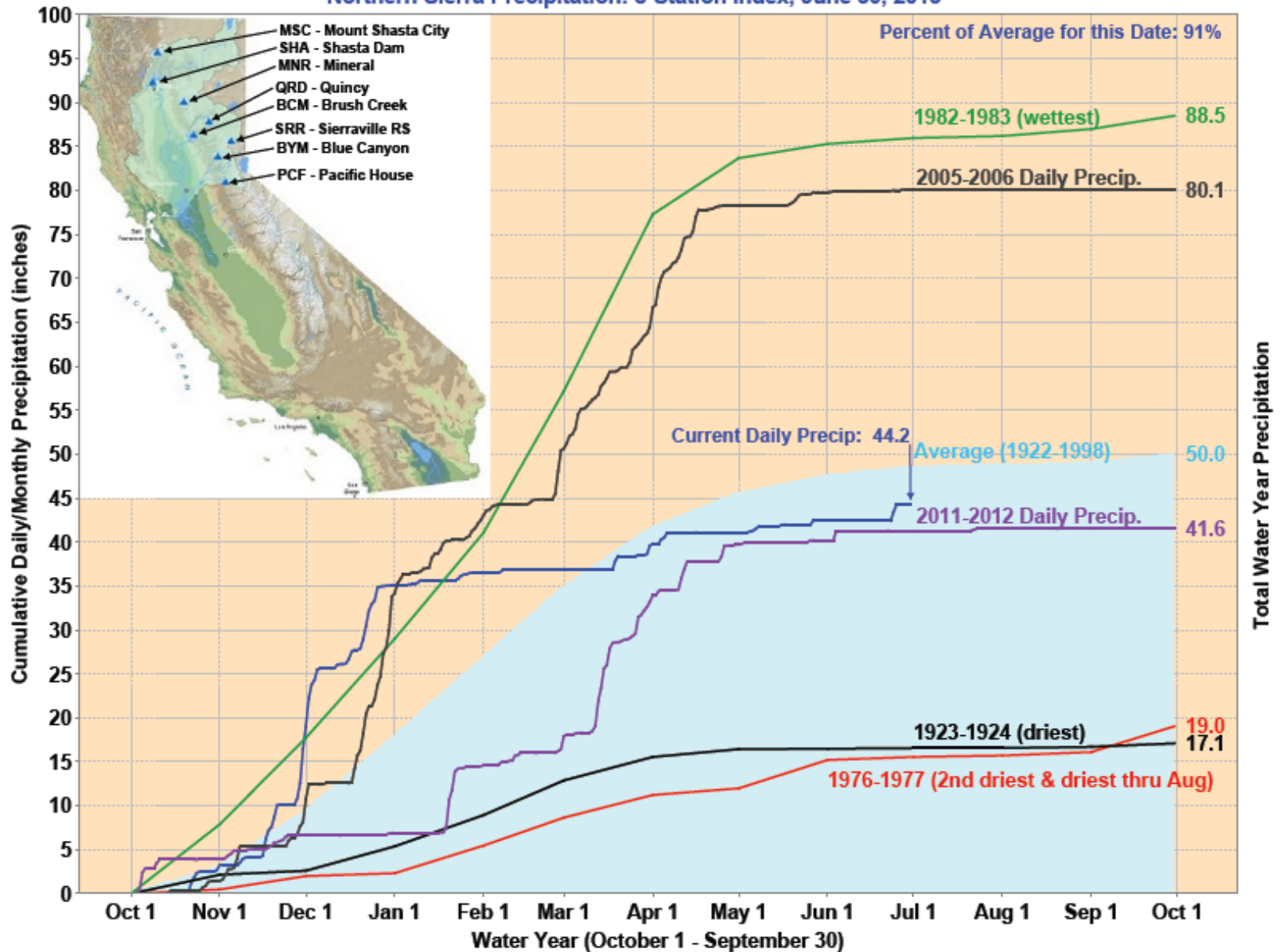
CVP Features Summary

- 18 Dams and Reservoirs
- 500 Miles (800 Kilometers) of Canals
- 11 Powerplants
- 10 Pumping Plants
- 20 Percent of State's Developed Water Supply (about 7 million acre-feet, 8.6 billion cu meters)
- 30 Percent of the State's Agricultural Supply (about 3 mil acres of farm land, 1.2 mil hectares)
- 13 Percent of State's M&I Supply (about 2 million people served)

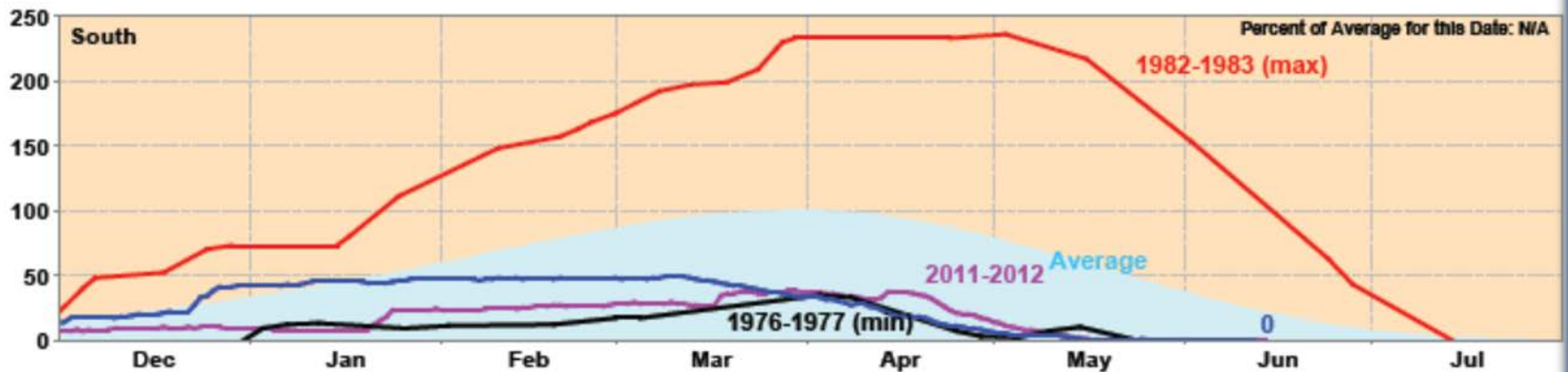
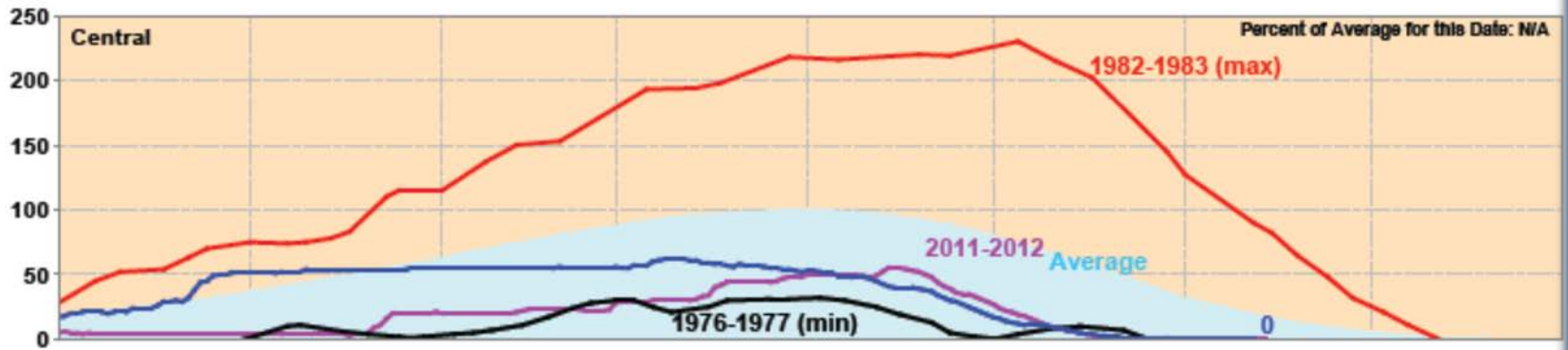
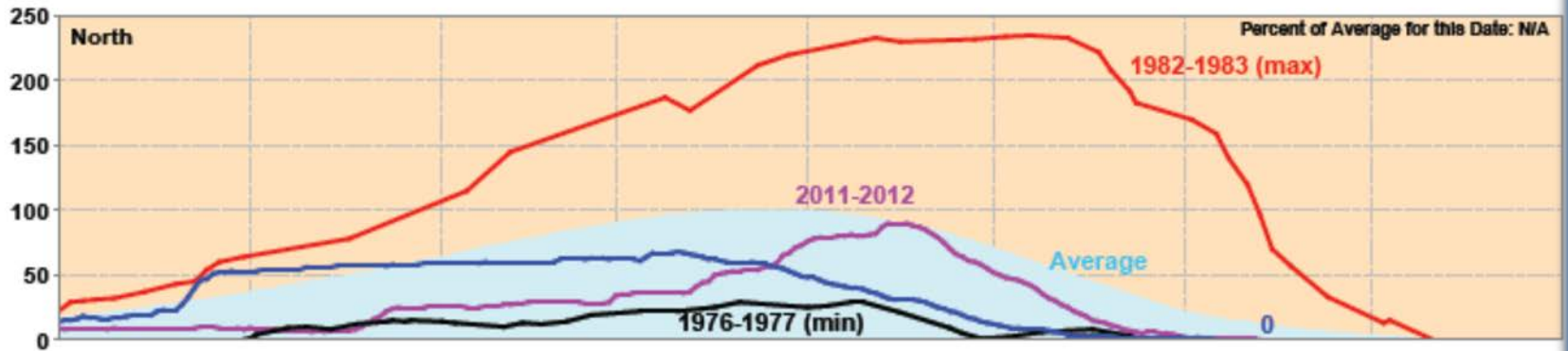
CVP Authorized Purposes

- Flood Control
- River Regulation (Navigation)
- Fish and Wildlife Needs
- Municipal & Agricultural Water Supplies
- Power Generation
- Recreation

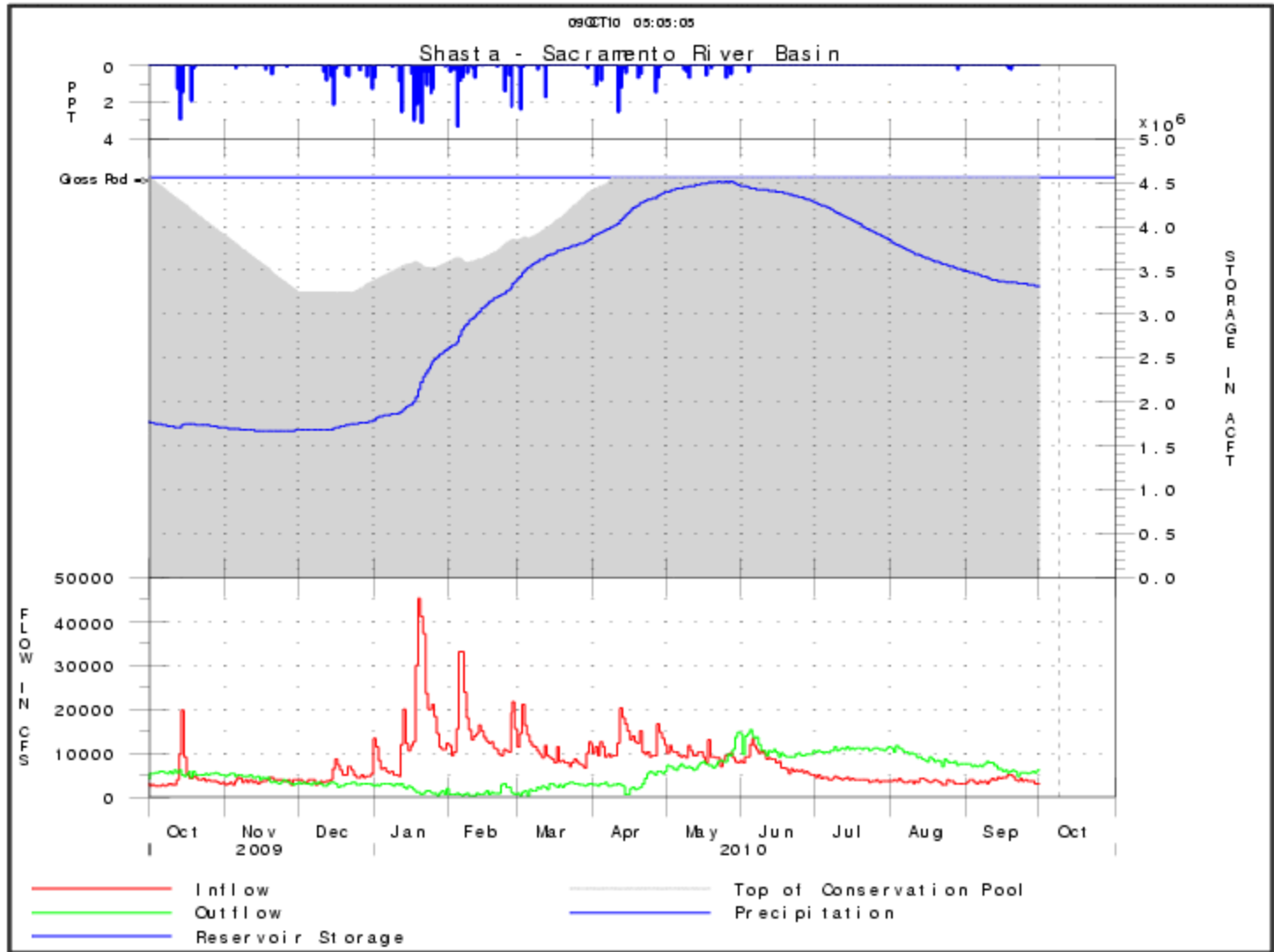
Northern Sierra Precipitation: 8-Station Index, June 30, 2013



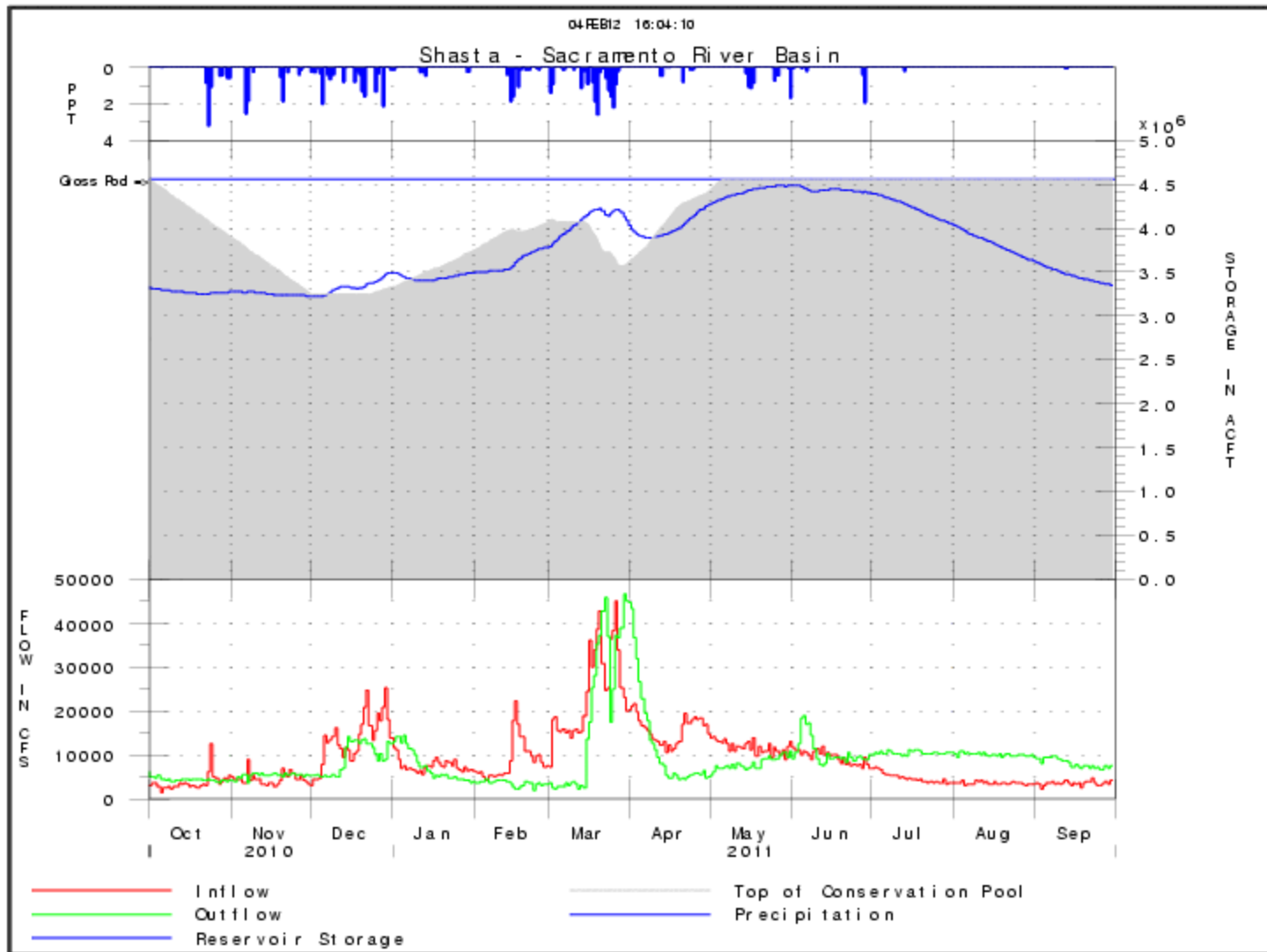
California Snow Water Content, June 12, 2013, Percent of April 1 Average



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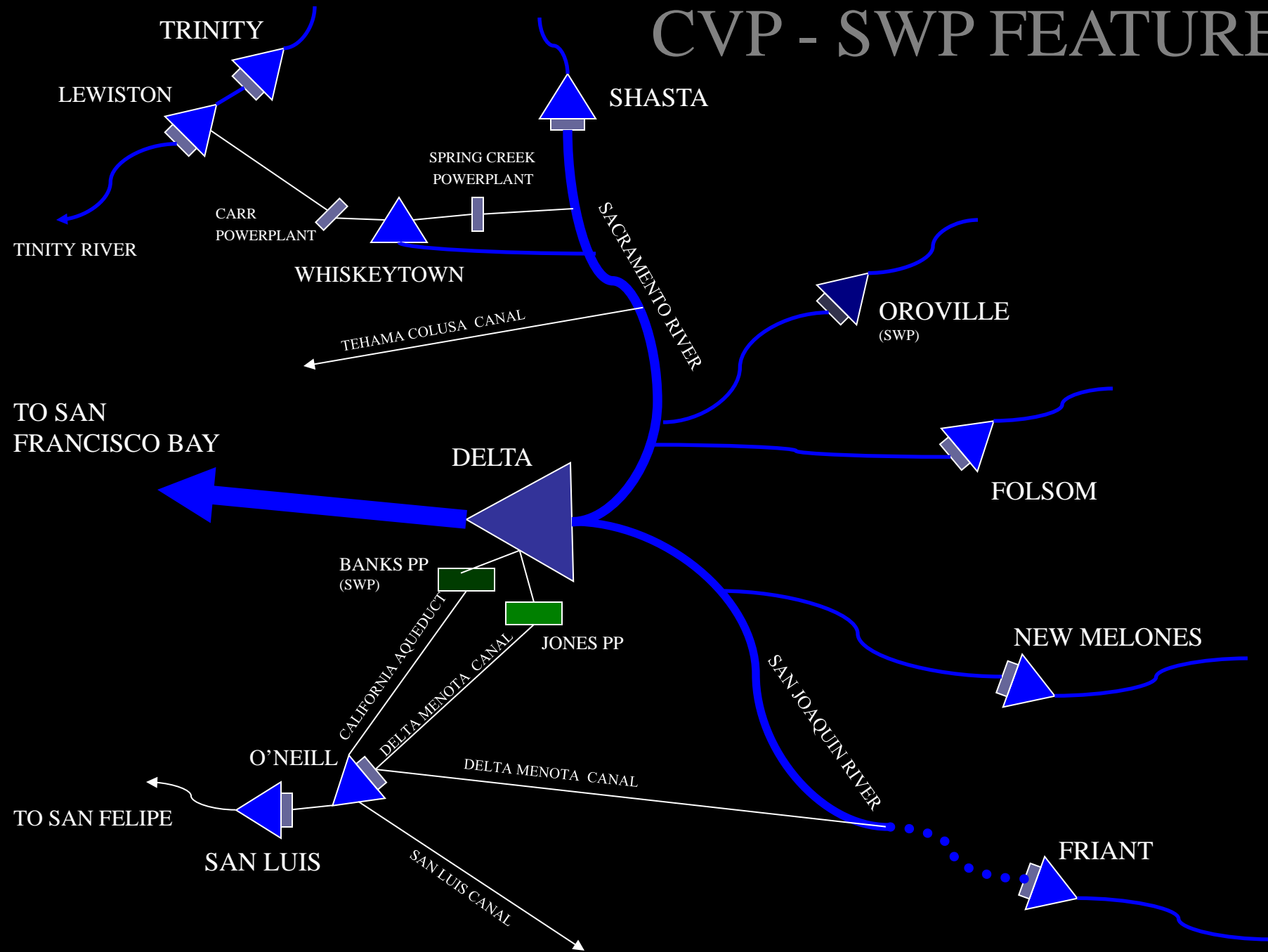


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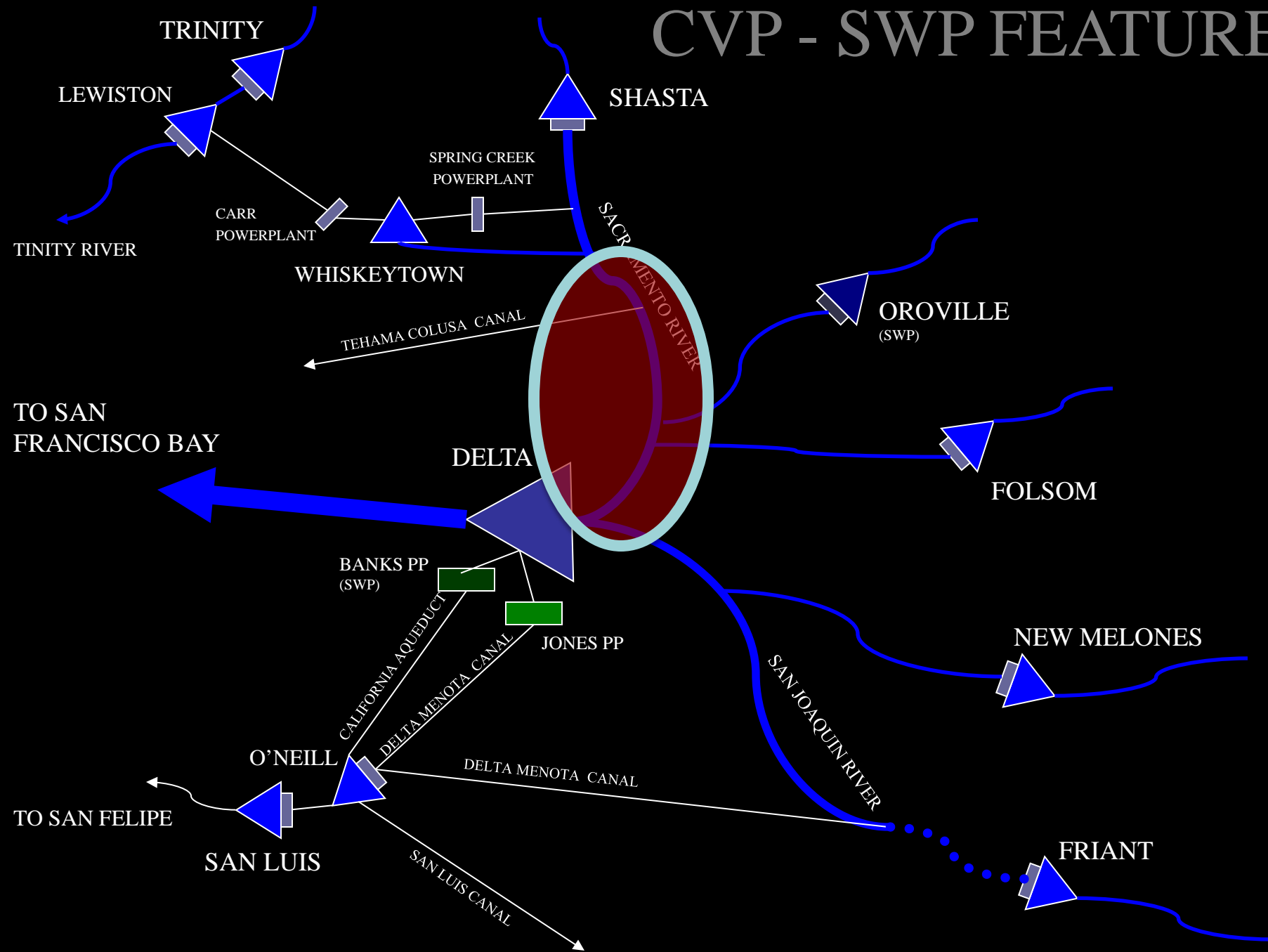


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CVP - SWP FEATURES

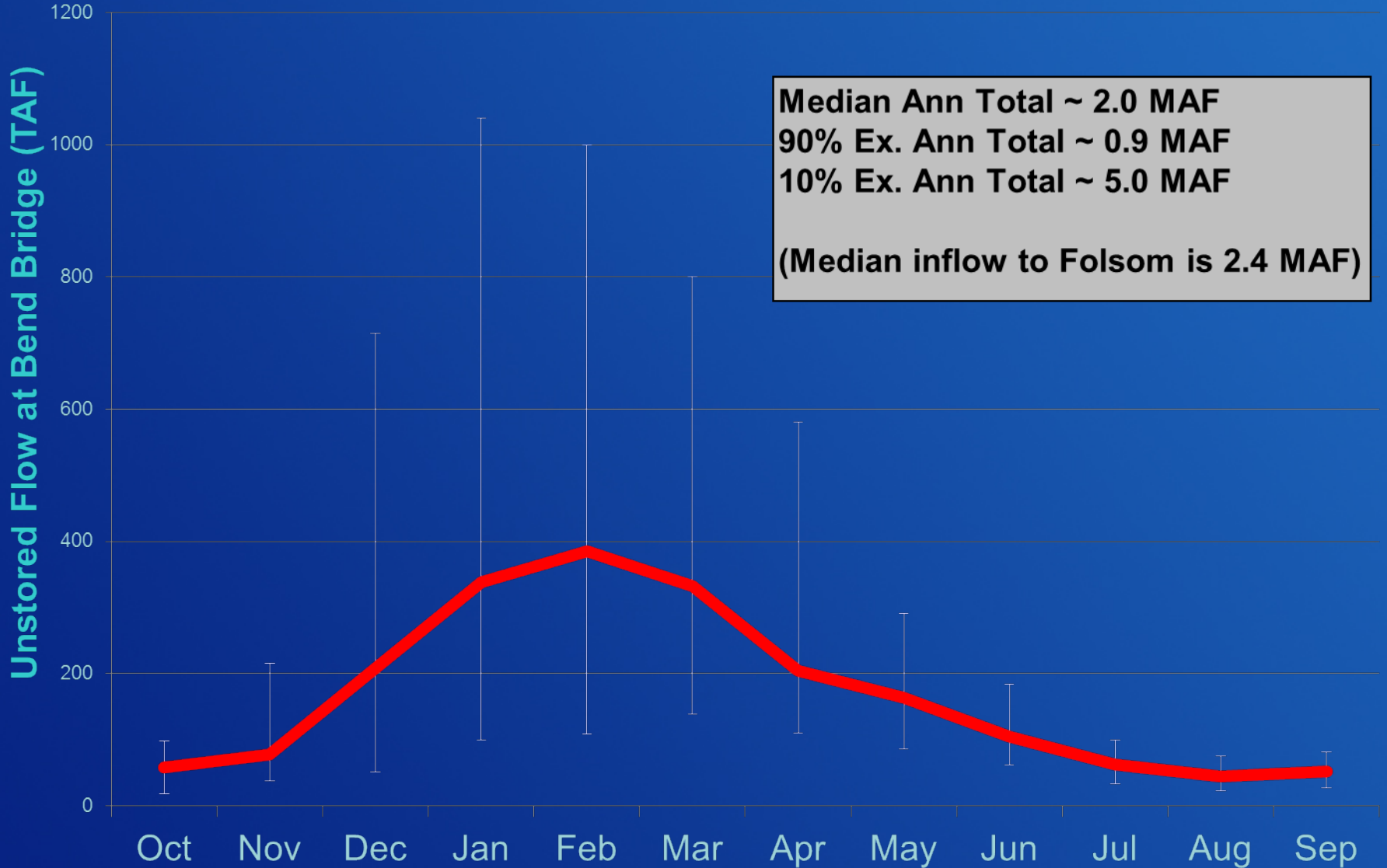


CVP - SWP FEATURES



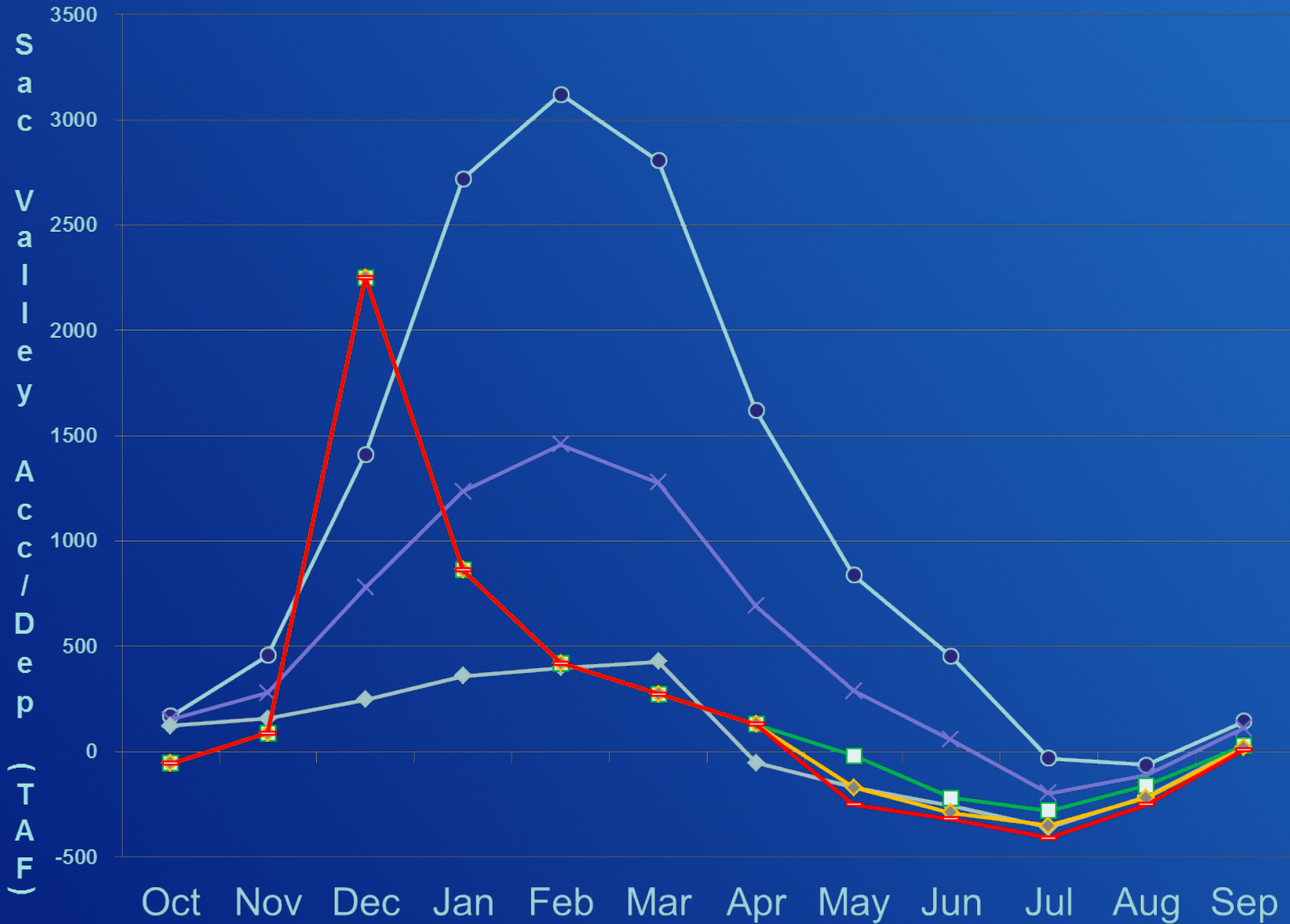
Unregulated Flow Sacramento River Flow

Median Flow at BND
with 90/10 Exceedence Bands



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Acc/Dep Trends for 2013 vs. Historic Exceedence



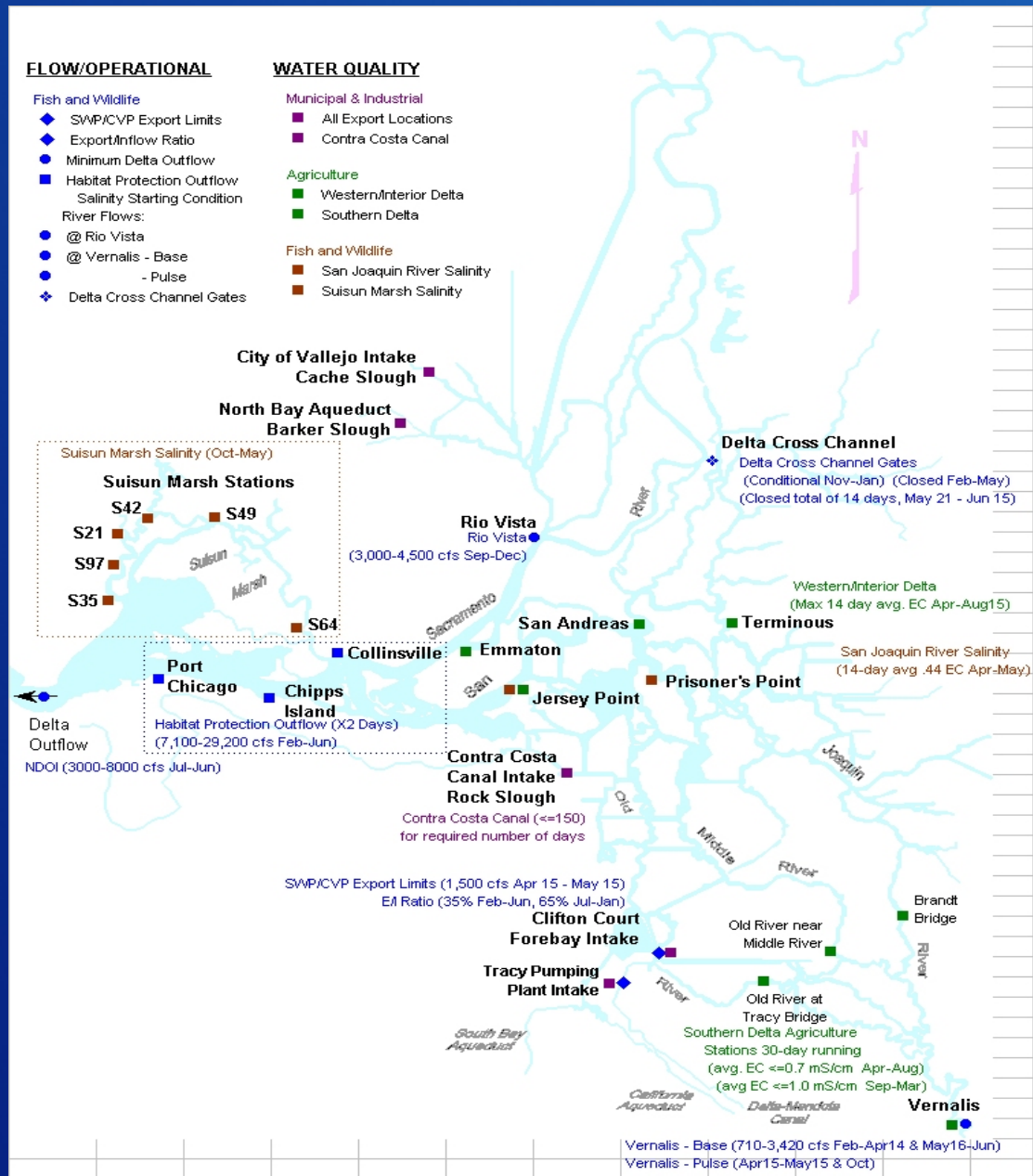
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Permits and Agreements

Key Operating Agreements and Standards

- Water Right Permits
- Water Rights Decision 1641
- Biological Opinions
- Flood Control Manuals
- Central Valley Project Improvement Act
- Coordinated Operations Agreement

Delta Water Quality Standards



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Water Quality Standards

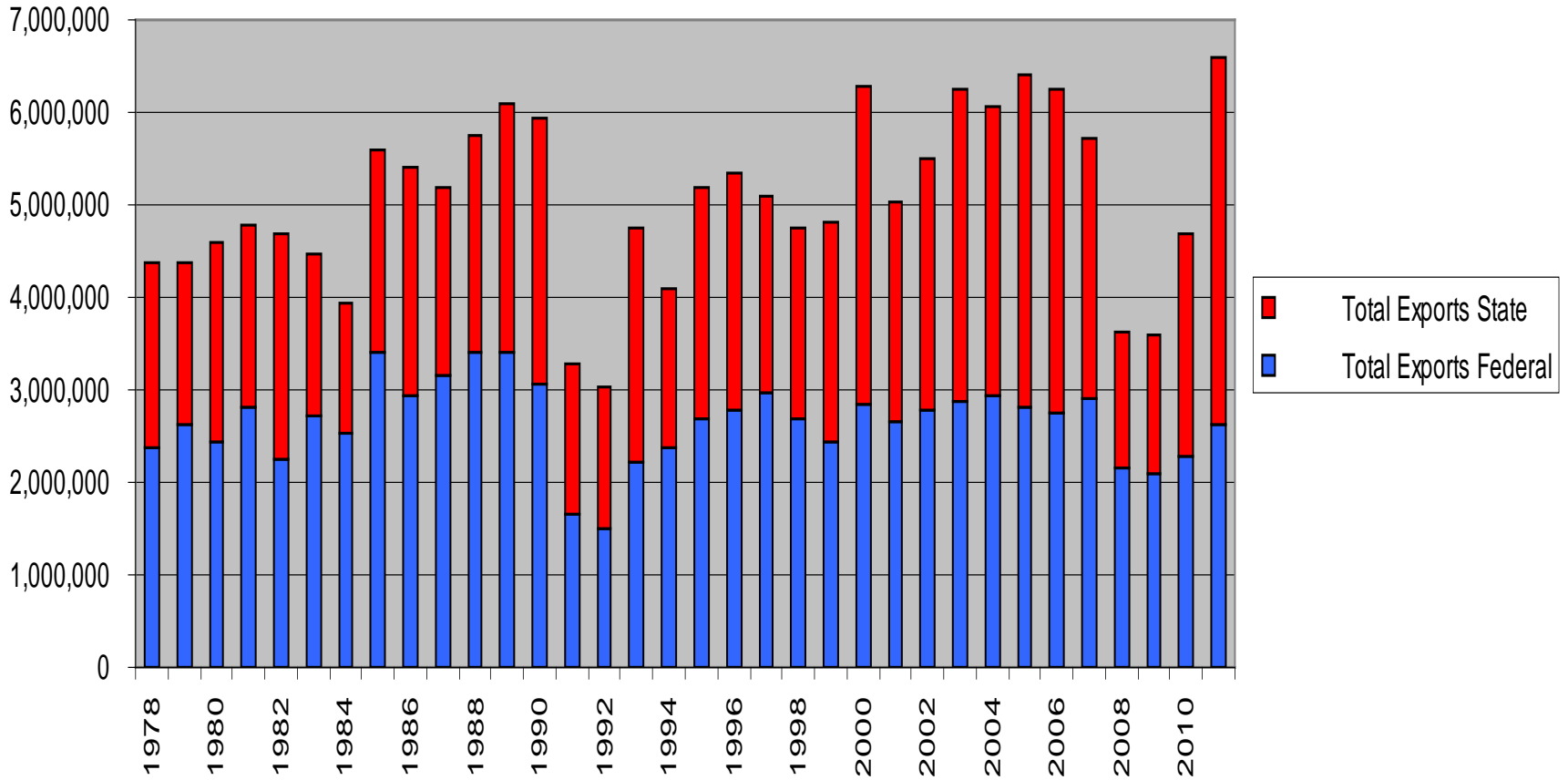
Summary Bay-Delta Standards

Contained in D-1641

CRITERIA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
FLOW/OPERATIONAL												
• Fish and Wildlife												
SWP/CVP Export Limits					1,500cfs ^[1]							
Export/Inflow Ratio ^[2]	65%		35% of Delta Inflow ^[3]					65% of Delta Inflow				
Minimum Delta Outflow	^[4]							3,000 - 8,000 cfs ^[5]				
Habitat Protection Outflow			7,100 - 29,200 cfs ^[3]									
Salinity Starting Condition ^[6]		^[6]										
River Flows:												
@ Rio Vista									3,000 - 4,000 cfs ^[7]			
@ Vernalis - Base		710 - 3,420 cfs ^[8]					^[8]					
- Pulse					^[9]					+28TAF		
Delta Cross Channel Gates	^[10]		Closed									Conditional ^[10]
WATER QUALITY STANDARDS												
• Municipal and Industrial												
All Export Locations												≤ 250 mg/l Cl
Contra Costa Canal												150 mg/l Cl for the required number of days ^[11]
• Agriculture												
Western/Interior Delta												Max 14-day average EC mmhos/cm ^[12]
Southern Delta ^[14]		1.0 mS				30 day running avg EC 0.7 mS				1.0 mS		
• Fish and Wildlife												
San Joaquin River Salinity ^[15]					14-day avg; 0.44 EC							
Suisun Marsh Salinity ^[16]	12.5 EC	8.0 EC			11.0 EC					19.0 EC	^[17]	15.5 EC

^[1] See Footnotes

Total Annual Water Exports from 1978-2011



System Constraints

- Maximize contractual water supply deliveries given the constraints of the system:
 - Geographic
 - Hydrologic
 - Physical Capacity
 - Flood Control requirements
 - Environmental (i.e. water quality, outflow)
 - Contractual, ESA and Water Rights Requirements
 - Economic
 - Demand Patterns

Questions ?



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