Basin Plan Amendment to Establish New Salinity and Boron Objectives and a TMDL in the Lower San Joaquin River

CEQA Scoping Meeting and Public Workshop

Stanislaus County Ag Center

11 May 2005

Introductions

- Les Grober, Senior Land and Water Use Scientist, San Joaquin River TMDL Unit
- Eric Berntsen, Environmental Scientist, San Joaquin River TMDL Unit

Why are we here today?

- Second Phase of San Joaquin River Salt TMDL
- Present initial salinity, boron, and flow objectives for the Lower San Joaquin River upstream of Vernalis
- Discuss Basin Plan Amendment elements and the Total Maximum Daily Load (TMDL) planning process
- Solicit feedback on project scope

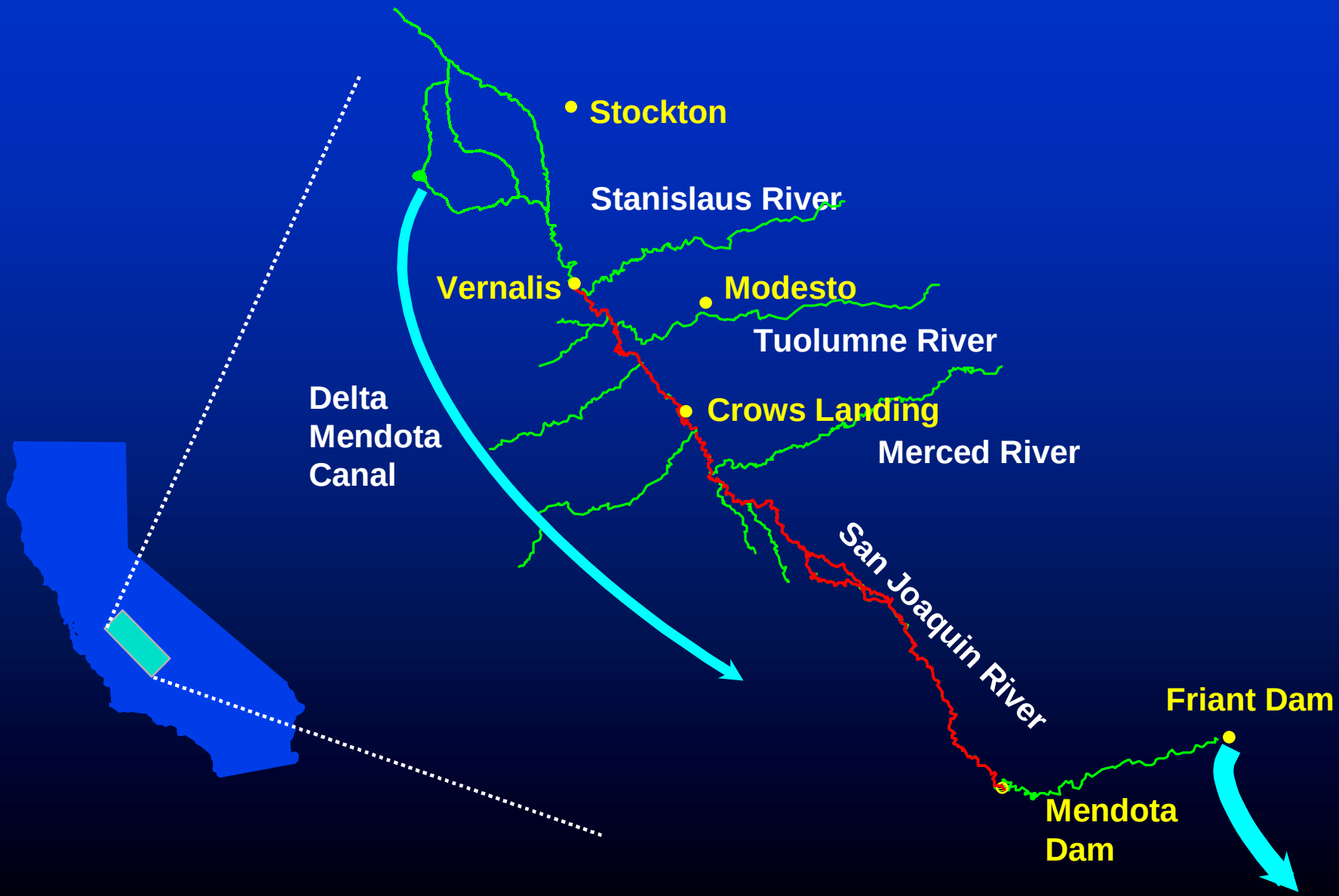
Agenda

- Background (15 min)
- Legal and Regulatory Framework (10 min)
- Basin Plan Amendment Elements – Water Quality Standards and Program of Implementation (45 min)
- Other Basin Plan Amendment Elements (20 min)
- Summary (15 min)

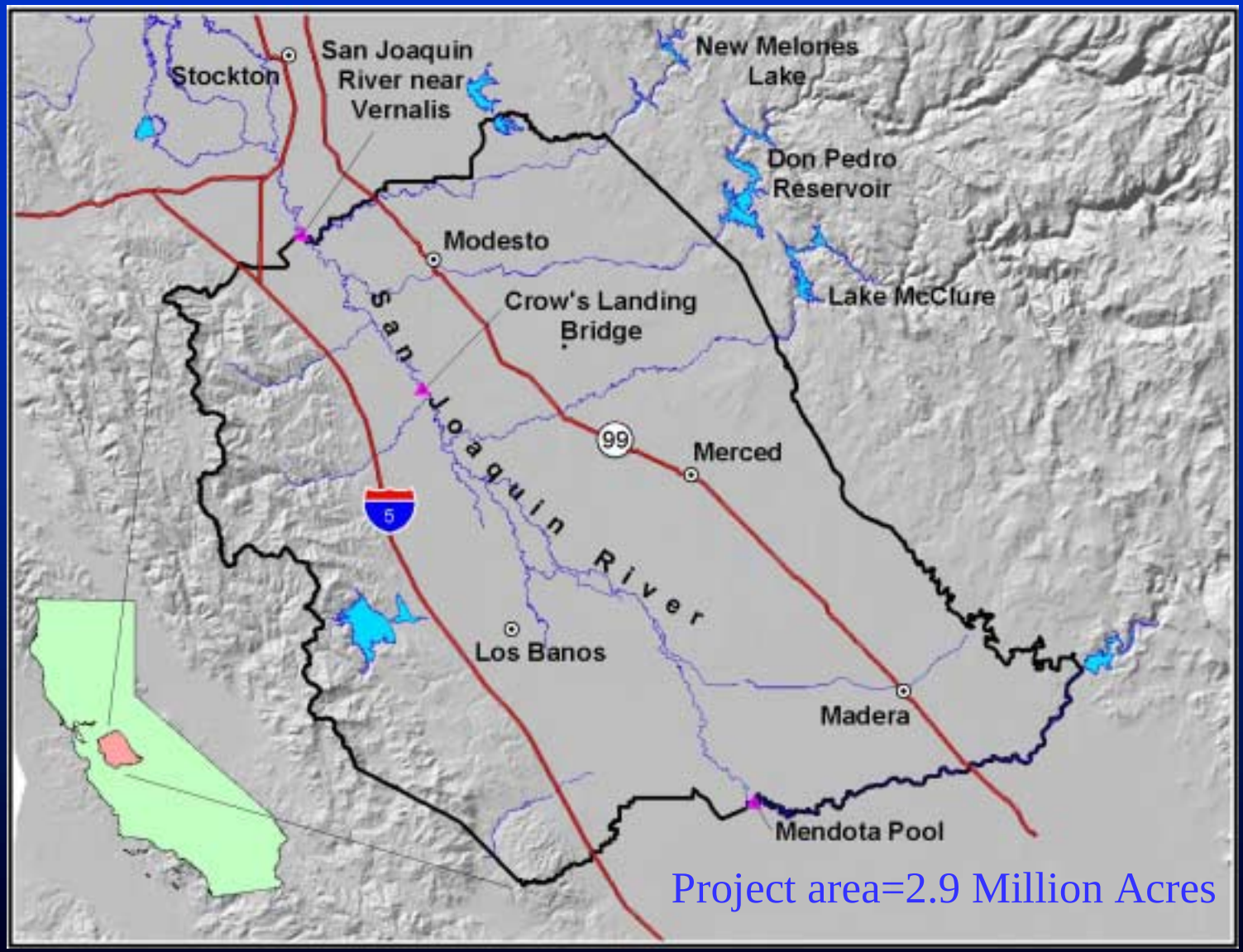
Background

Eric Berntsen

Lower San Joaquin River Basin



Project Area for the Lower San Joaquin River



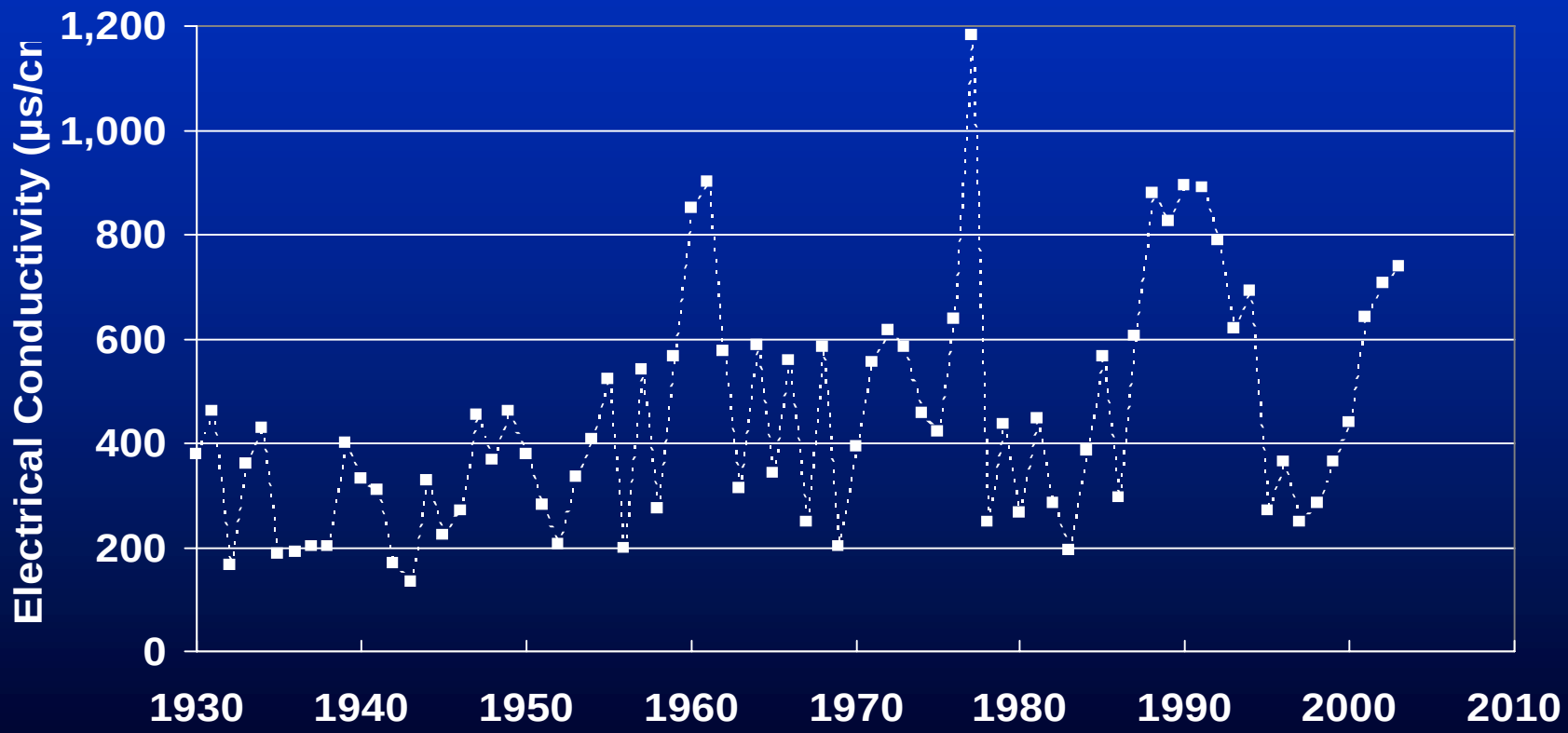
Why This Effort?

- Salt concentrations have nearly doubled since the 1940's
- SJR water quality degradation recognized in 1975 Basin Plan
- 303(d) listing in 1998
- Water Rights Decision 1641 (1999) gave direction to Regional Board and USBR

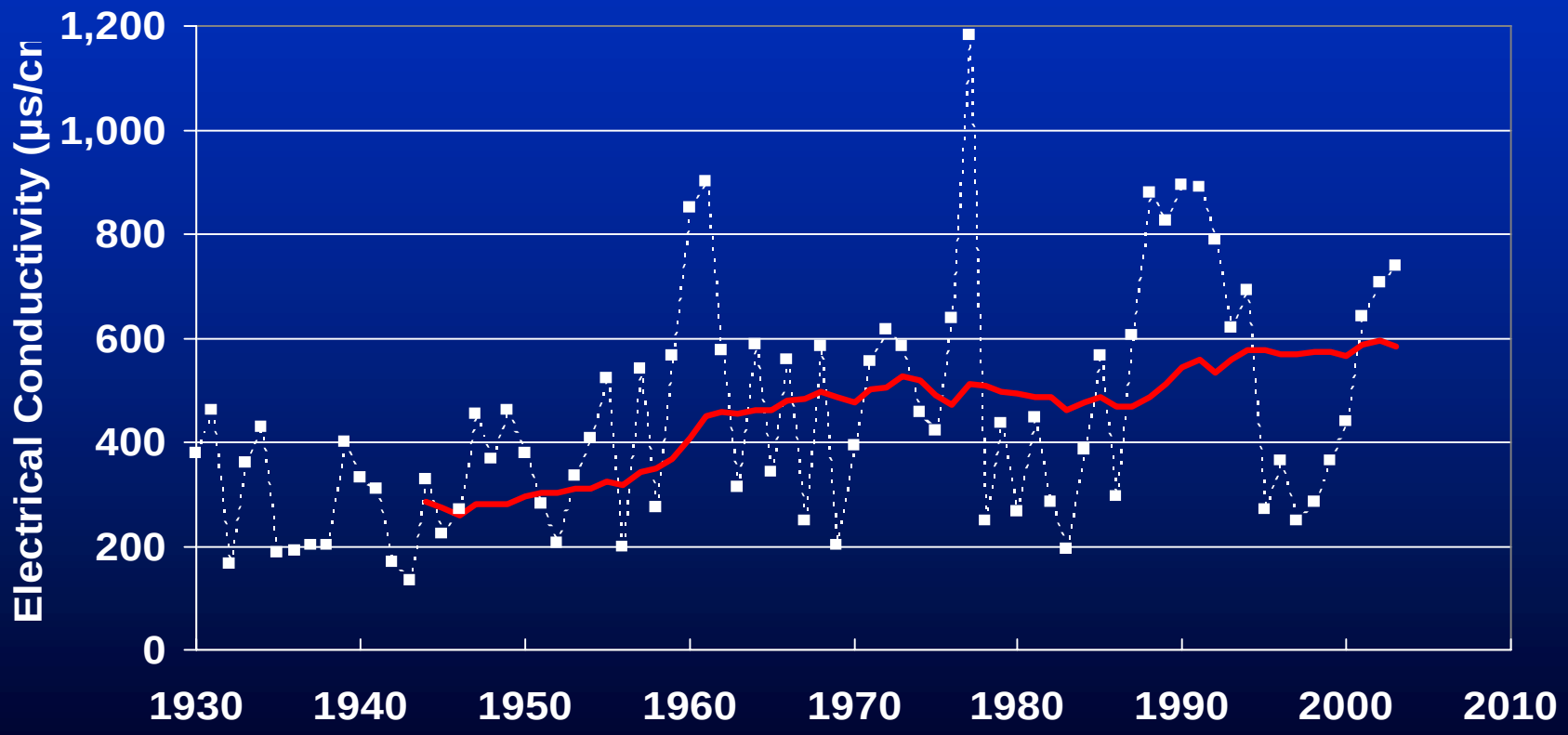
Why This Effort?

- Regional Board
  - salt load reduction program
  - salinity water quality objectives
- USBR
  - must meet Vernalis water quality objectives

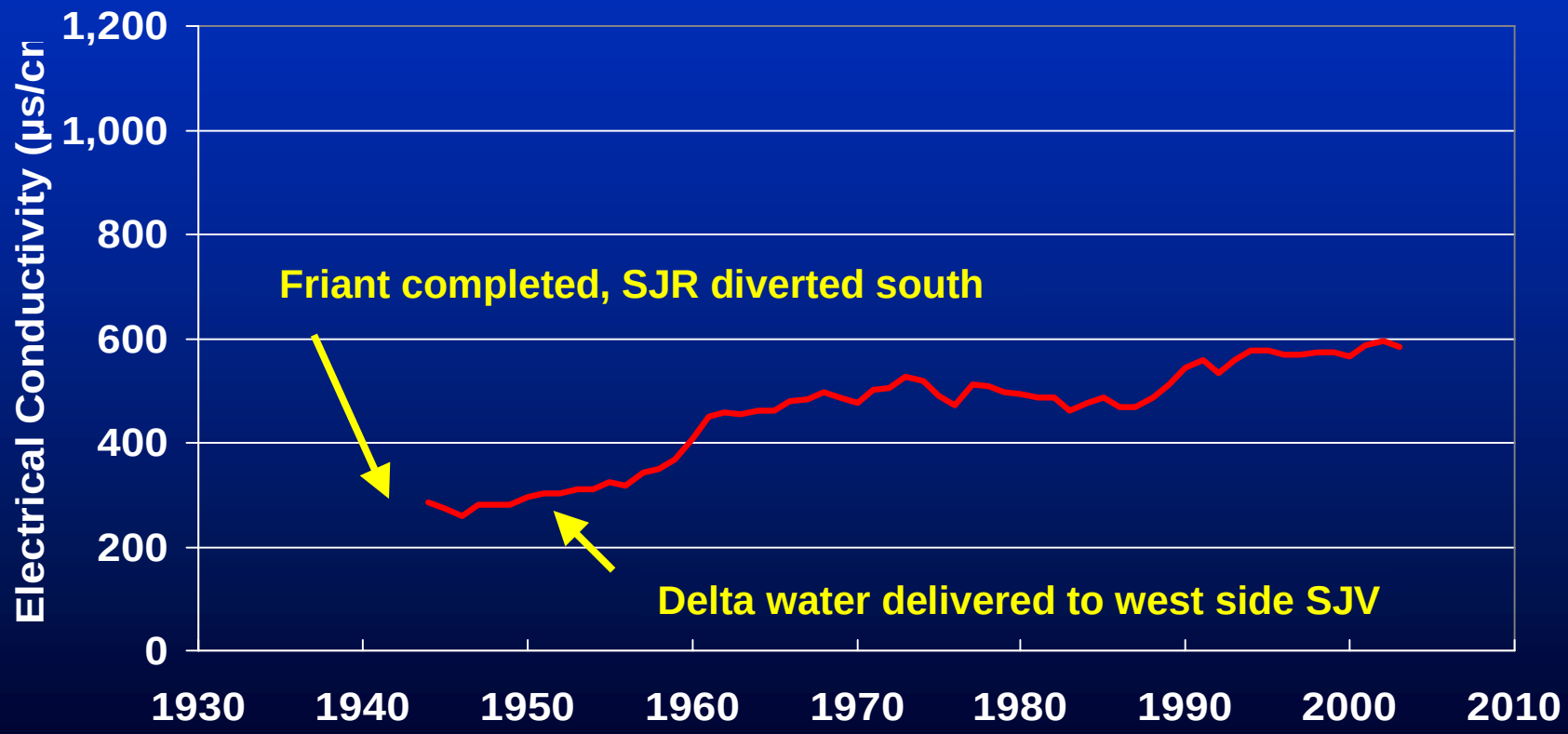
Average Electrical Conductivity SJR Near Vernalis



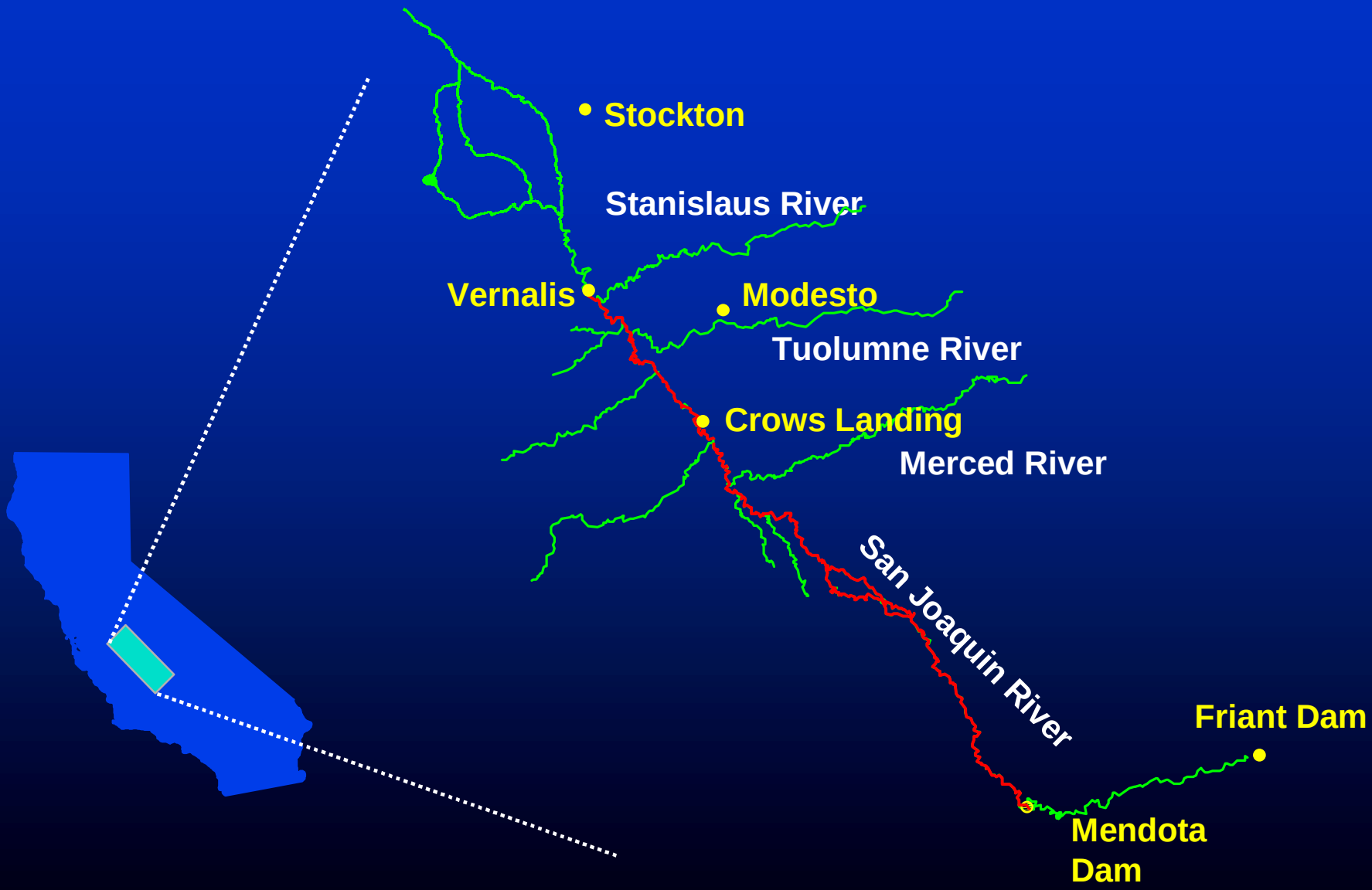
Average Electrical Conductivity SJR Near Vernalis



15-year Running Average Electrical Conductivity SJR Near Vernalis

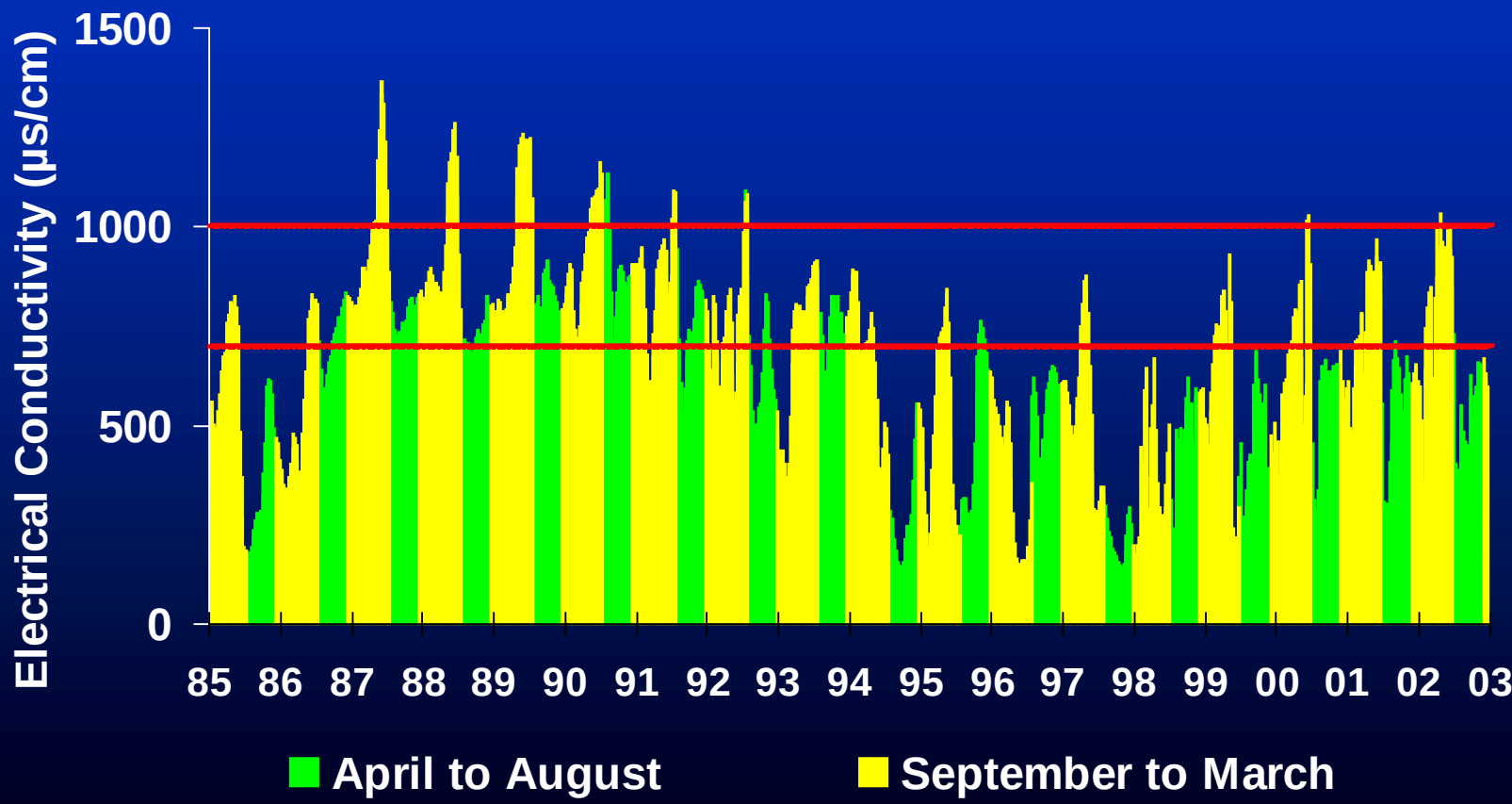


Lower San Joaquin River Basin



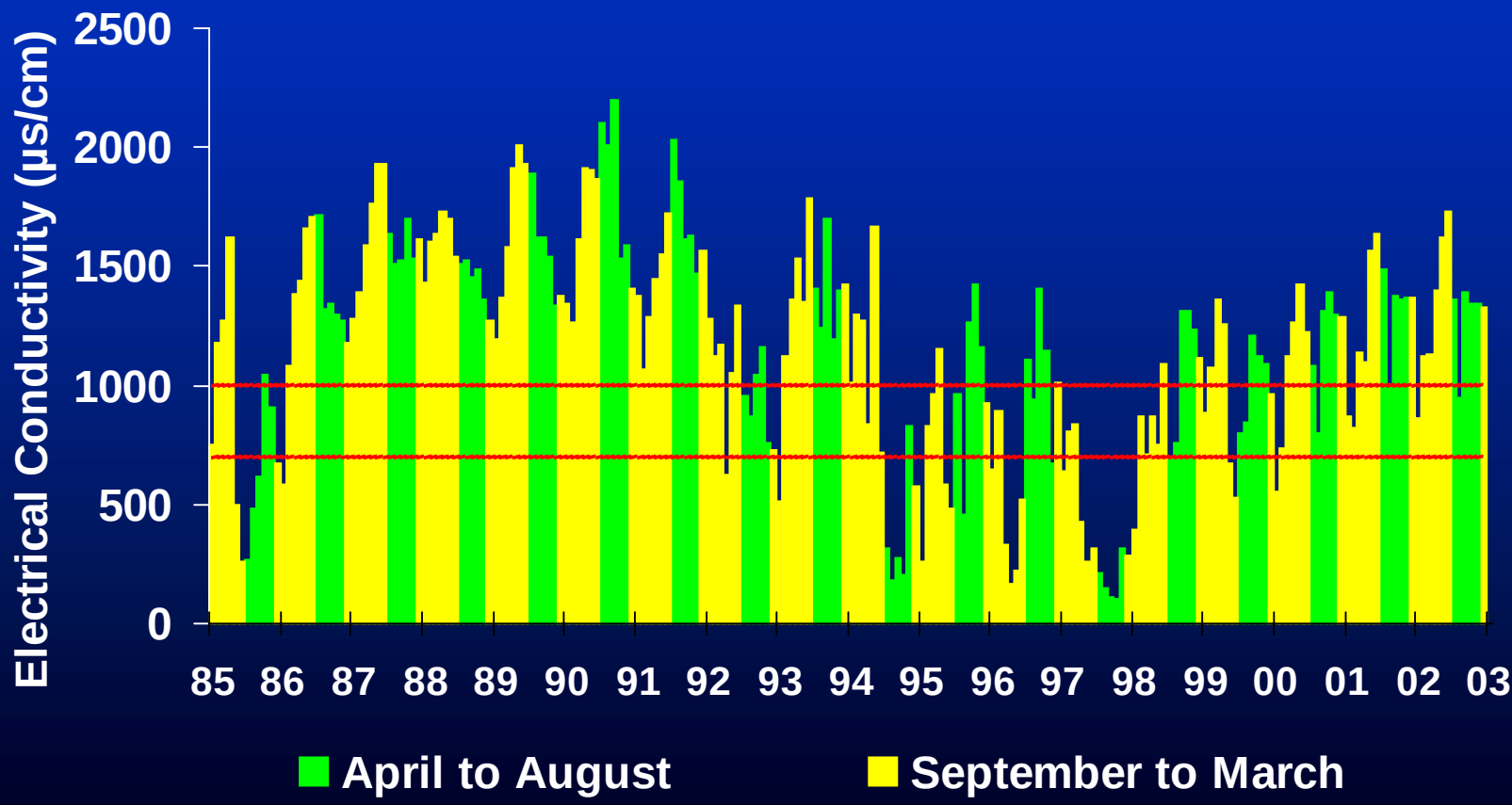
San Joaquin River near Vernalis

30-Day Running Average Electrical Conductivity

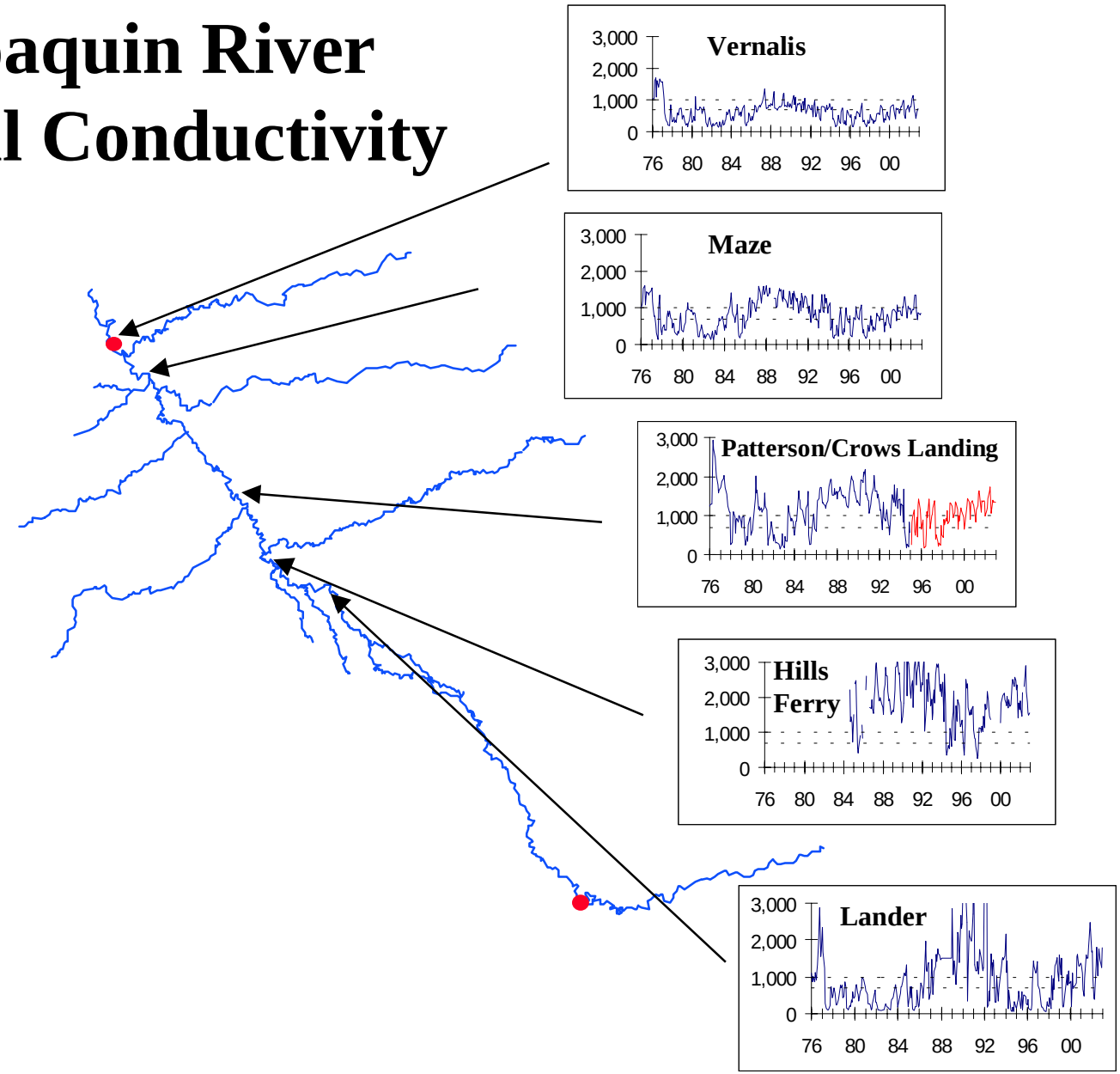


San Joaquin River at Crows Landing

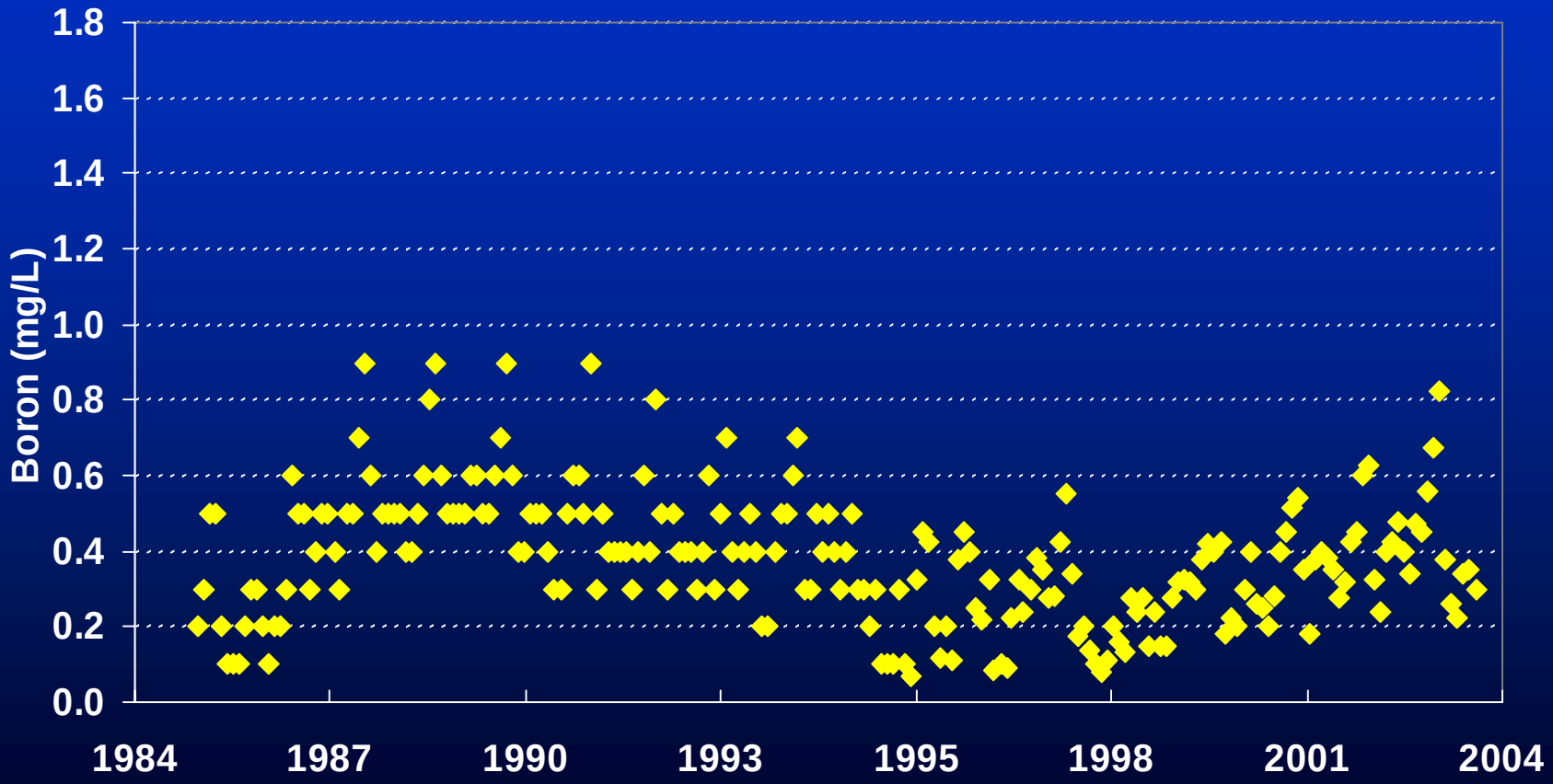
Monthly Average Electrical Conductivity



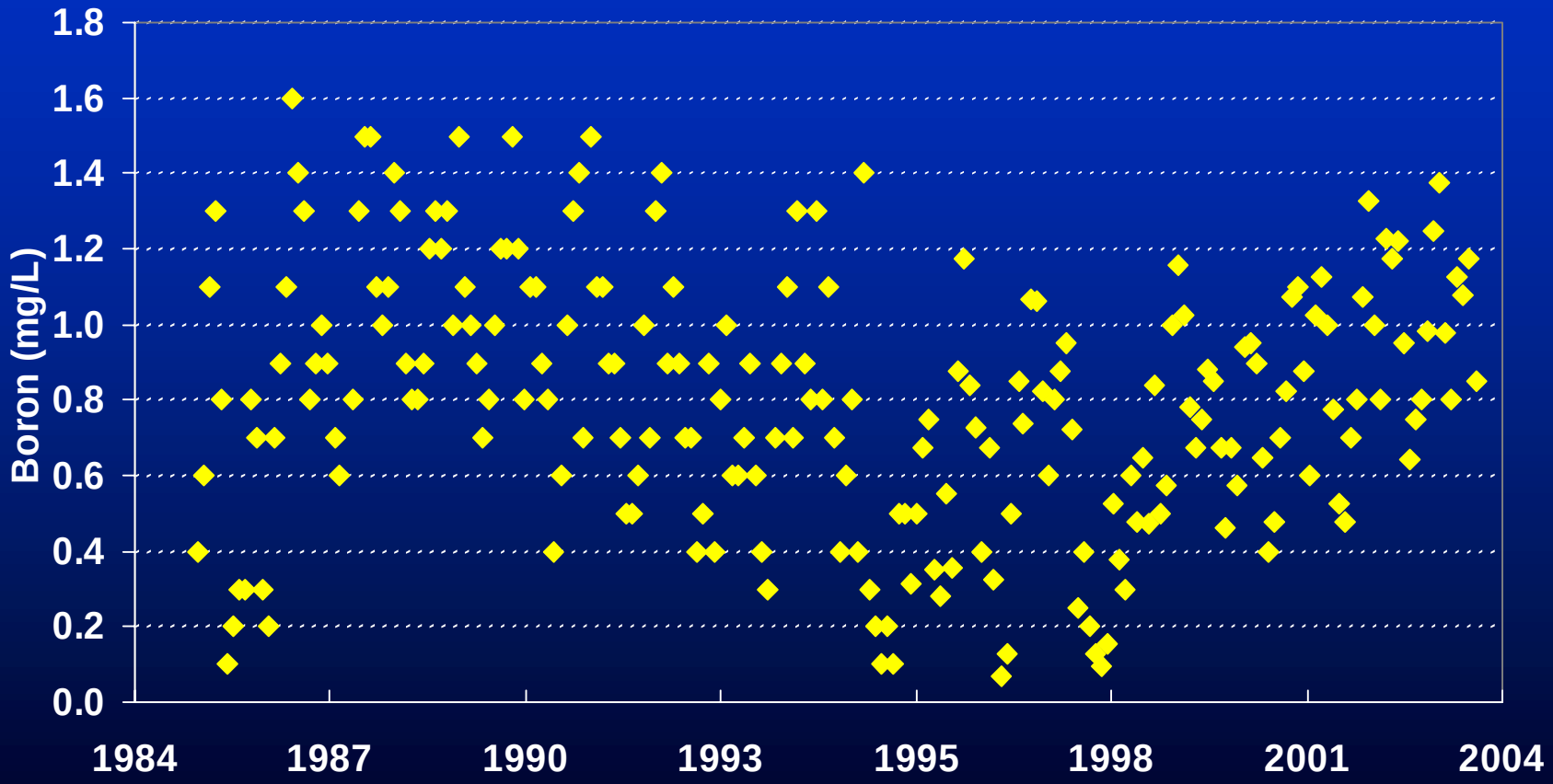
San Joaquin River Electrical Conductivity



Mean Monthly Boron (Vernalis)



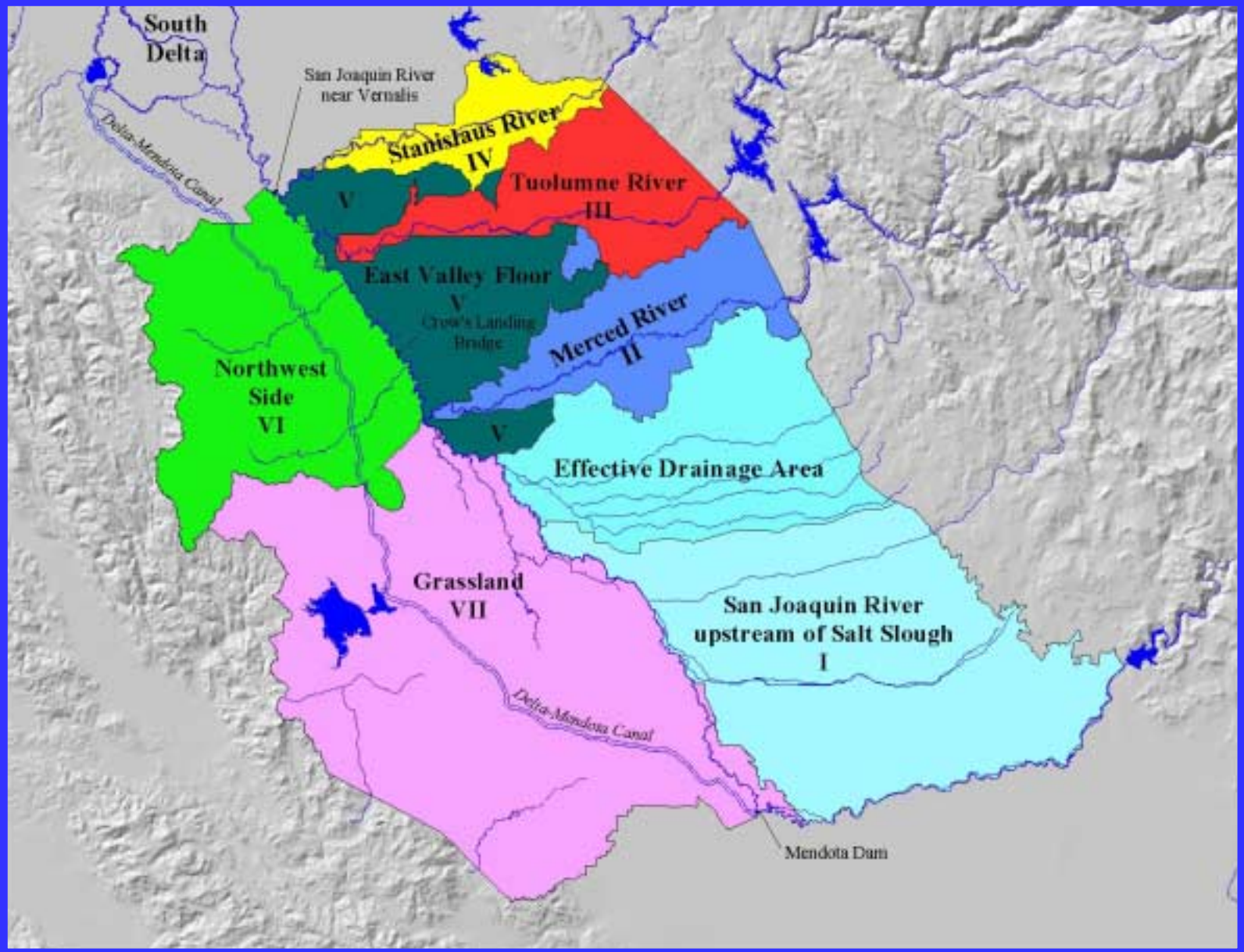
Mean Monthly Boron (Crows Landing)



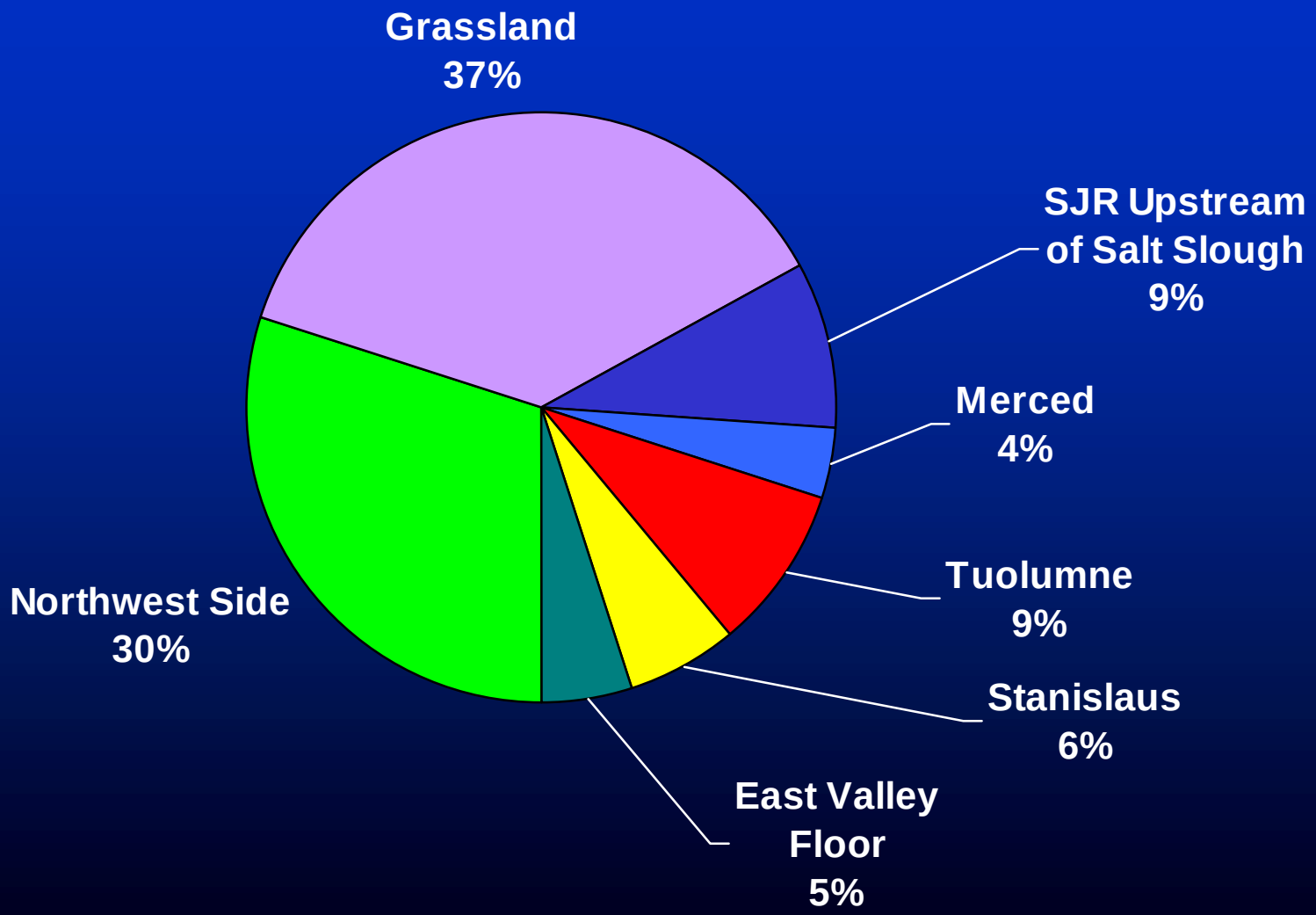
What's Different About Salt?

- Naturally occurring
- Found everywhere
- Ag impact (source) on ag (use)
- Results from water use
- Water and salt management problem

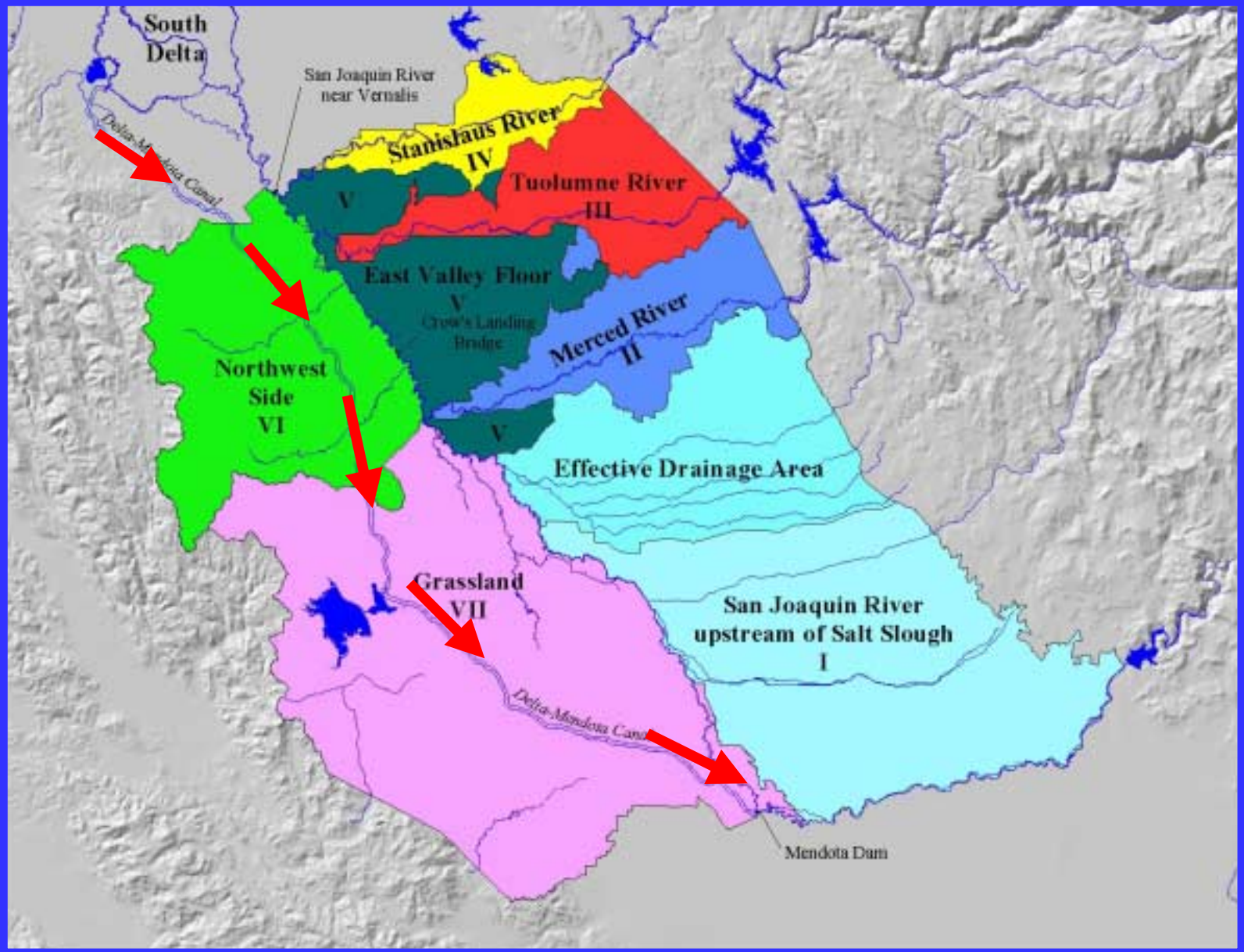
Lower San Joaquin River Subareas



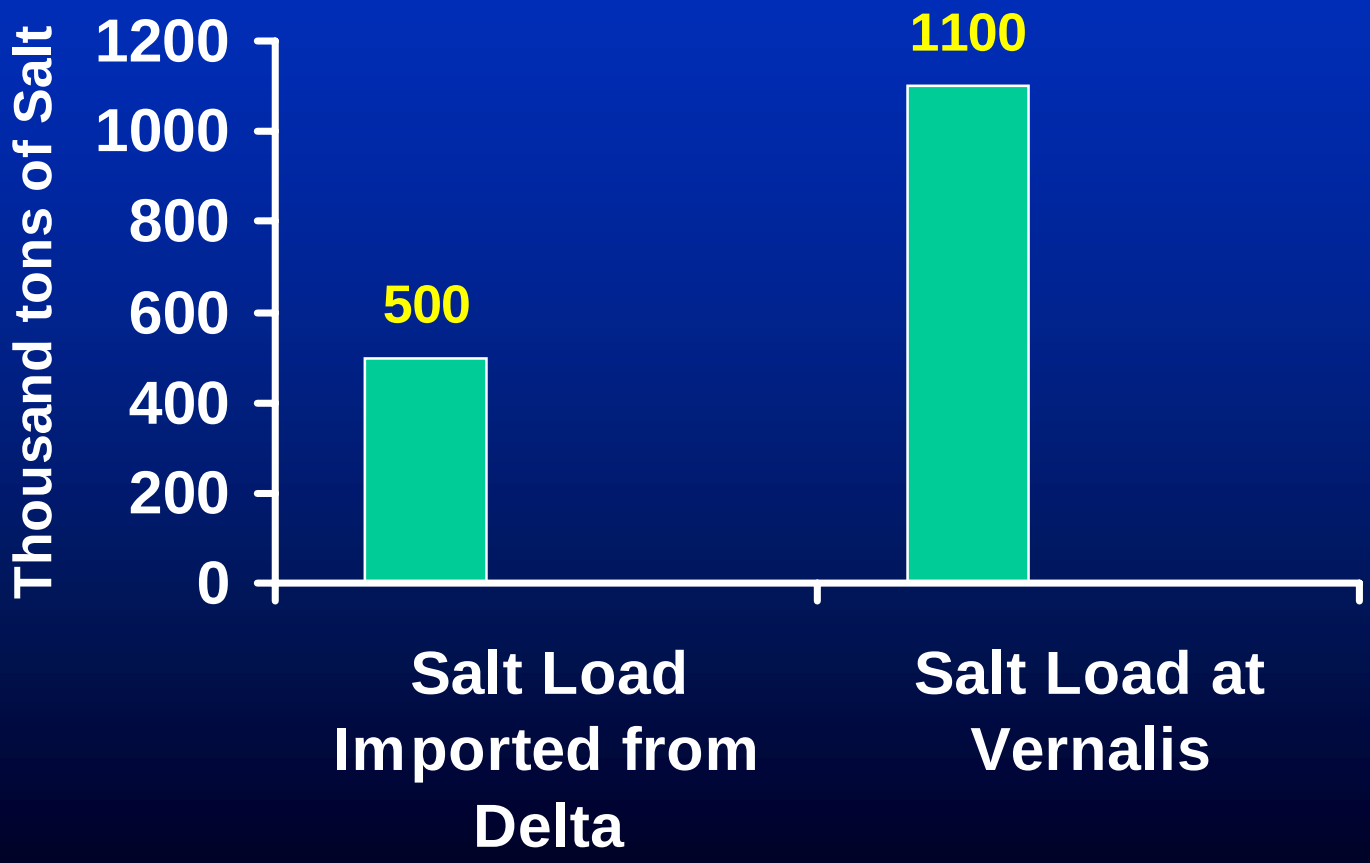
Salt Load at Vernalis by Subarea



Lower San Joaquin River Subareas



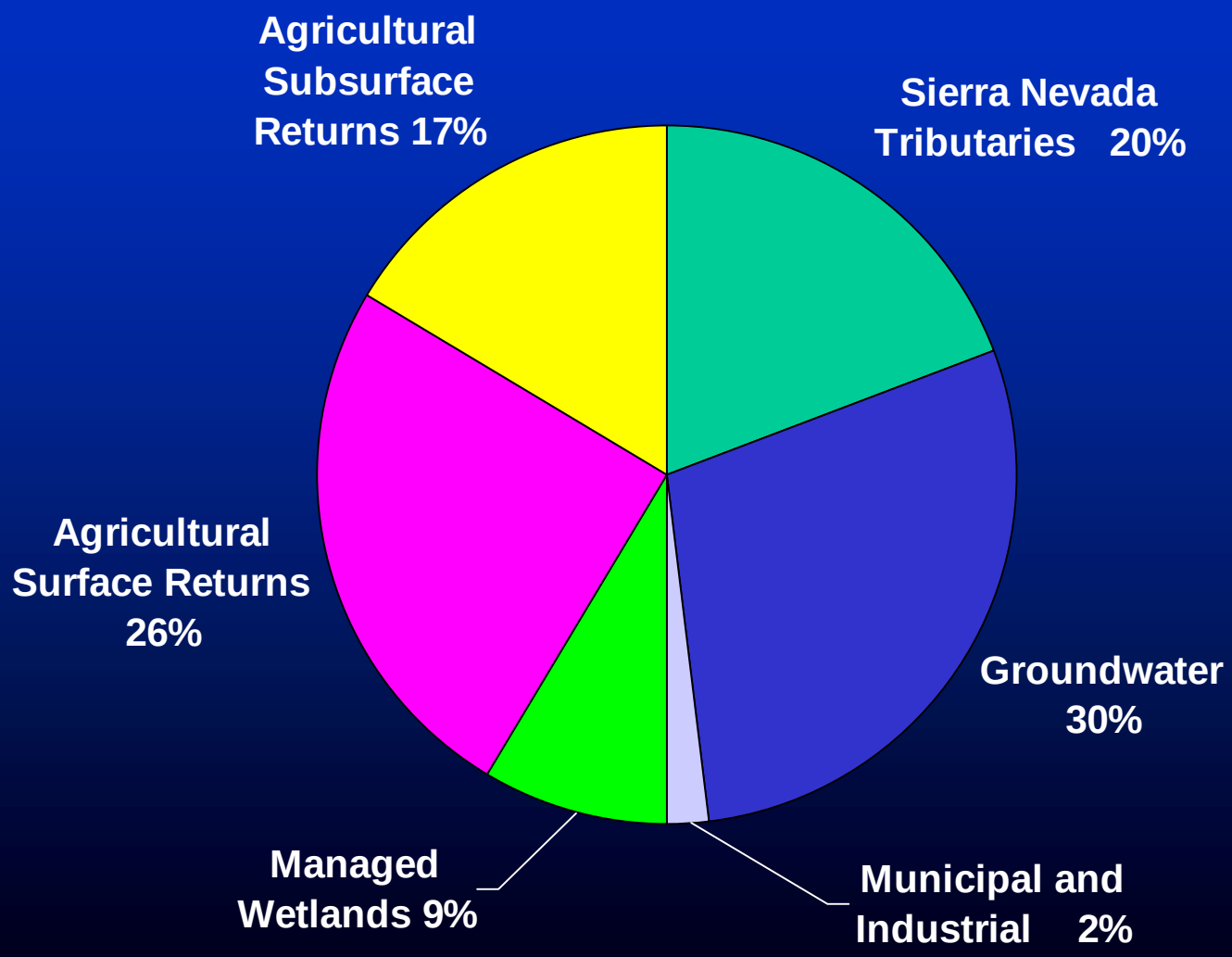
Salt Load Imported from the Delta (Water Years 1977-1997)



Sources of Salinity and Boron

- Agricultural surface return flows
- Agricultural subsurface return flows
- Groundwater accretions
- Sierra Nevada tributaries and LSJR upstream of Salt Slough
- Wetlands
- Municipal and industrial

Salt Load at Vernalis by type



Questions?

Legal and Regulatory Framework

Les Grober

Legal Requirements

- Federal Clean Water Act requires TMDLs for impaired waters [303(d) listed]
- State Water Quality Act (Porter-Cologne) requires implementation program for TMDLs; implementation program is contained in the Basin Plan Amendment
- This TMDL and Basin Plan Amendment will meet these legal obligations, and will be designed to restore the affected beneficial uses

Regulatory Framework

- First Phase Salt TMDL
- State Water Board Bay-Delta Plan (Periodic Review)
- Other State and Regional Board Policies

First Phase SJR Salt TMDL

- Adopted by Regional Board September 2004
- Based on attaining Vernalis objectives
- Established salt load limits:
  - fixed base load and real time
- Established load allocation 'framework'
- Tentatively scheduled for State Board July 2005

State Water Board Bay-Delta Plan (Periodic Review)

- Commenced December 2003
- Numerous workshops held
- Related Issues:
  - SJR (and Delta) salinity objectives
  - SJR flows
- Comments due to State Water Board by 3 June

Regional Board Policies

- Controllable Factors
- Water Quality Limited Segment
- Antidegradation
- Application of Water Quality Objectives
- San Joaquin Salt Balance
- Watershed

State Board Policies

- Water Quality Control
- Maintain High Quality of Water
- Nonpoint Source Management Plan

Questions?

Basin Plan Amendment Elements

Les Grober

Basin Plan Amendment Elements

- Water Quality Standards
  - Beneficial Uses
  - Water Quality Objectives
- Program of Implementation

Beneficial Uses

Lower San Joaquin River Reach	MUN	AGR		PROC	REC-1		REC-2	WARM	COLD	MIGR		SPWN		WILD
	Municipal and Domestic Supply	Irrigation	Stock Watering	Industrial Process Supply	Rafting Contact	Canoeing and	Other Noncontact	Freshwater Habitat-Warm	Freshwater Habitat-Cold	Warm	Cold	Warm	Cold	Wildlife Habitat
Mendota Dam to Sack Dam	P	E	E	E	E	E	E	E		E	E	E	P	E
Sack Dam to Merced River	P	E	E	E	E	E	E	E		E	E	E	P	E
Merced River to Vernalis	P	E	E	E	E	E	E	E		E	E	E		E

P = potential E = existing

Beneficial Uses

- Not proposing any modification of uses
- Agriculture and municipal beneficial uses are most sensitive to salinity and boron

Water Quality Objectives

- Water Quality Objectives are established to protect beneficial uses
- Proposed objectives differ in their level of protection

Water Quality Objectives

- Salinity
- Boron

Salinity Alternatives

1) "Existing" Narrative Drinking Water Standard
2) "Full Protection"
3) "Export Limit"

Note: salinity measured and objectives presented as electrical conductivity (EC) in units of µS/cm

Salinity Alternative 1
"Existing" Narrative Drinking Water

- Year-round objective of 1,600 µS/cm
- 1,600 µS/cm is upper level MCL* for domestic drinking water supplies per Title 22 of the California Environmental Health Code of Regulations

* Maximum Contaminant Level

Salinity Alternative 2 "Full Protection"

- 700 µS/cm from 1 April to 31 August when agriculture is most sensitive beneficial use
- 900 µS/cm from 1 September to 31 March when municipal water supply is most sensitive beneficial use

Salinity Alternative 3 "Export Limit"

- Year-round objective of 1,000 µS/cm
- 1,000 µS/cm is numeric standard for Delta waters at intakes to California Aqueduct and Delta-Mendota Canal

Boron Alternatives

1) “Existing”

2) “Full Protection”

Boron Alternative 1 "Existing"

- Same as Basin Plan numeric standards
- Concentrations vary from 0.8 to 2.6 mg/L

Basin Plan Boron Standards

Maximum (mg/L)	
2.0	15 March – 15 September
2.6	16 September – 14 March

Mean Monthly (mg/L)	
0.8	15 March – 15 September
1.0	16 September – 14 March
1.3	Year Round – Critical Water Year

Boron Alternative 2 "Full Protection"

- USEPA Suggested No-Adverse Response Level (SNARL) of 0.6 mg/L
- Designed to fully protect the most sensitive beneficial use (drinking water supply)

Summary of Salinity Alternatives

Existing Narrative Drinking Water	1,600 µS/cm
Full Protection	700 µS/cm Apr 1 to Aug 31 900 µS/cm Sep 1 to Mar 31
Export Limit	1,000 µS/cm

Summary of Boron Alternatives

Existing	0.8 to 2.6 mg/L
Full Protection	0.6 mg/L

Other Considerations
Flow Alternatives

1) None
2) “Base Load” Flow Augmentation
3) Other

Status of Effort

- Draft Report “Initial Proposals for Revised Salinity and Boron Water Quality Objectives”
- Draft Model Studies:
  - base load conditions
  - minimum flow requirements

Program of Implementation

- TMDLs and Control Actions
  - Load Allocations
  - Implementation Alternatives
- Implementation program will include TMDL components and Regional Board regulatory authority

What Is a TMDL?

- A total maximum daily load (TMDL) is the amount of a specific pollutant that a waterbody can receive and still maintain a water quality standard
- TMDLs allocate pollutant loads to point and nonpoint sources…

What Is a TMDL?

TMDL = WLA + LA + MOS + background

WLA: waste load allocation for point sources
LA: load allocations for nonpoint sources
MOS: margin of safety

Components of TMDLs

- TMDL Description (Problem Statement)
- Numeric Targets (usually related to new water quality objectives)
- Source Analysis
- Allocations
- Linkage Analysis (relationship between sources, allocations, and targets)
- TMDL Report

Why Develop a TMDL?

- TMDLs are required under section 303(d) of the Federal Clean Water Act
  - TMDLs must be developed for pollutants and waterbodies that have been identified and prioritized on 303(d) list of impaired waterbodies
- 2002 303(d) list has over 1,800 water body/pollutant combinations

Load Limits and Allocations

- Allocation of Loading Capacity
  - Load Allocations to nonpoint sources
  - Waste Load Allocations to point sources

Regulatory Authorities

- Prohibition of Discharge (Conditional)
- Waste Discharge Requirements (WDRs)
- Conditional Waiver of WDRs

Questions?

Other Basin Plan Amendment Elements

Les Grober

Other Basin Plan Amendment Elements

- Surveillance and Monitoring
- Time Schedule
- Economic Analysis

Surveillance and Monitoring

- Determine Success of Amendment
- Discharger Ultimately Responsible

Surveillance and Monitoring

- Program Goals
  - Compliance with Objectives
  - Compliance with Load Allocations
  - Effectiveness of Management Practices

Time Schedule for Compliance

- Schedule will be determined based on factors including relative contribution to the problem and achievability
- For example, municipal and industrial dischargers were given a longer time to comply with Vernalis TMDL allocations

Economic Analysis

- Nonpoint source discharger costs
- Point source (NPDES Permittee) costs
- Program costs
- Potential sources of financing

Salt and Boron Project Timeline

Staff or Regional Board Workshop on Draft BPA and TMDL	October 2005
Final BPA and TMDL released	January 2006
Regional Board Hearing	March 2006
State Board review	May 2006 (est)
Office of Administrative Law	July 2006 (est)
U.S. EPA	August 2006 (est)

Summary Questions:

- Is an appropriate range of water quality objectives being considered?
- Should flow be considered?
- Other?

Next steps

Submit Comments:

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Website:
http://www.waterboards.ca.gov/centralvalley/programs/tmdl/upstream-salt-boron/

Listserve:
http://www.waterboards.ca.gov/lyrisforms/reg5_subscribe.html

THANK YOU!