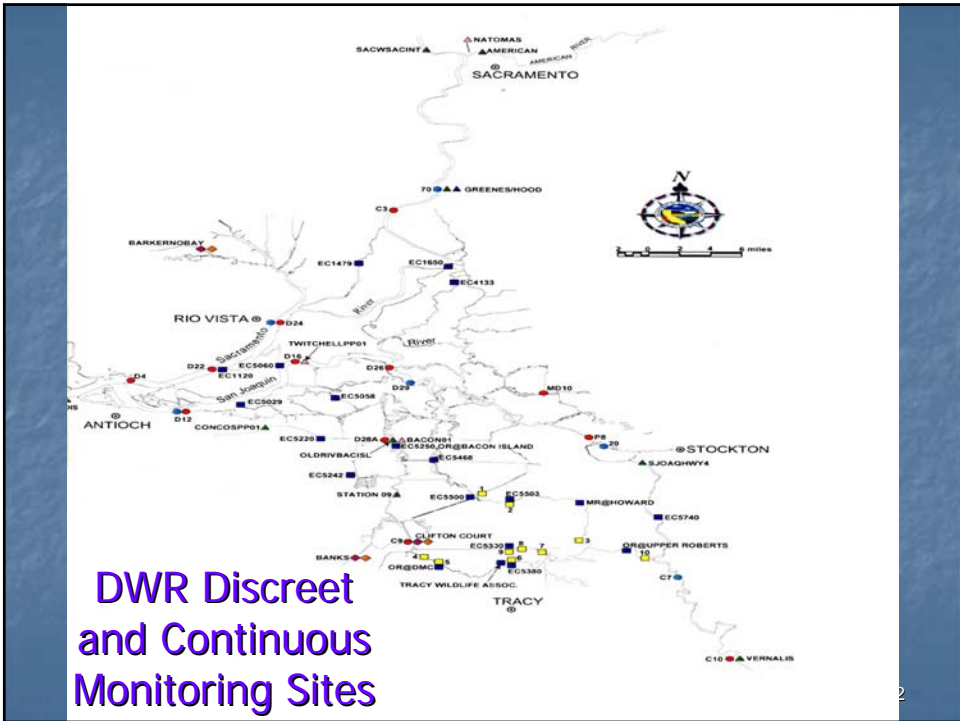


REAL TIME DATA AND FORECASTING (RTDF): Integrating Information with Source Water Management

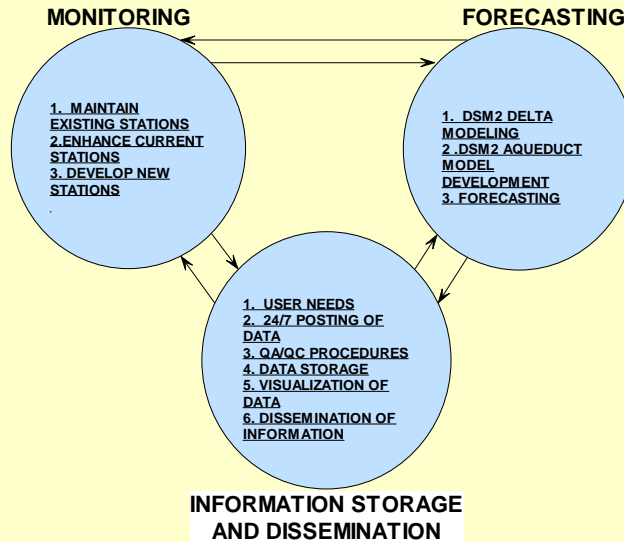




Rich Breuer
MWQI Program
California Department of Water Resources



Real Time Data and Forecasting



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Real Time Monitoring

- What is "Real Time"?
- Value
- Modeling and Forecasting
- Challenges



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TOC Analyzers



Organic Carbon Analyzers	Shimadzu model 4100 (@ Banks and Hood Stations)	Sievers model 800 (@Hood Station)	Tytronic model FPA 1000 (@Banks Station)
Measurement Type	NPOC (acidify/sparge removal of IC)	TOC (TC - IC)	Absorbance at 254 nm with turbidity correction
Measurement Principle	Catalytically aided combustion with NDIR detection	UV/persulfate oxidation with membrane/conductivity detection	Single beam dual wavelength spectrophotometer
Range	0 - 1000 mg l ⁻¹	0.05 - 50,000 µg l ⁻¹	0 - 100 mg l ⁻¹
System Price	\$30,000	\$25,000	\$15,000

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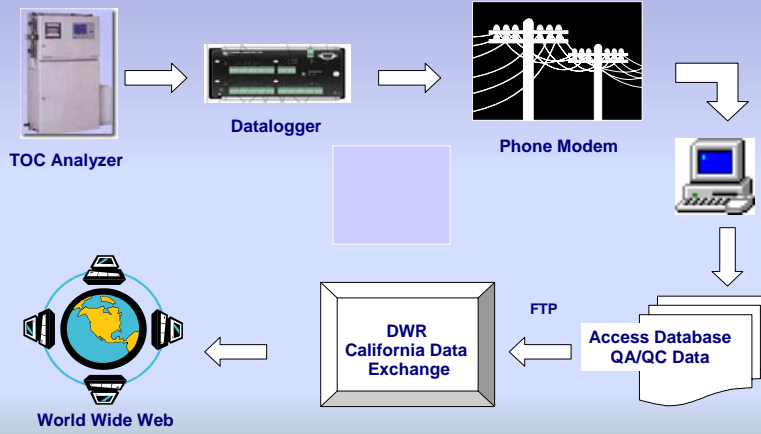


DIONEX-800 PROCESS ANALYZER

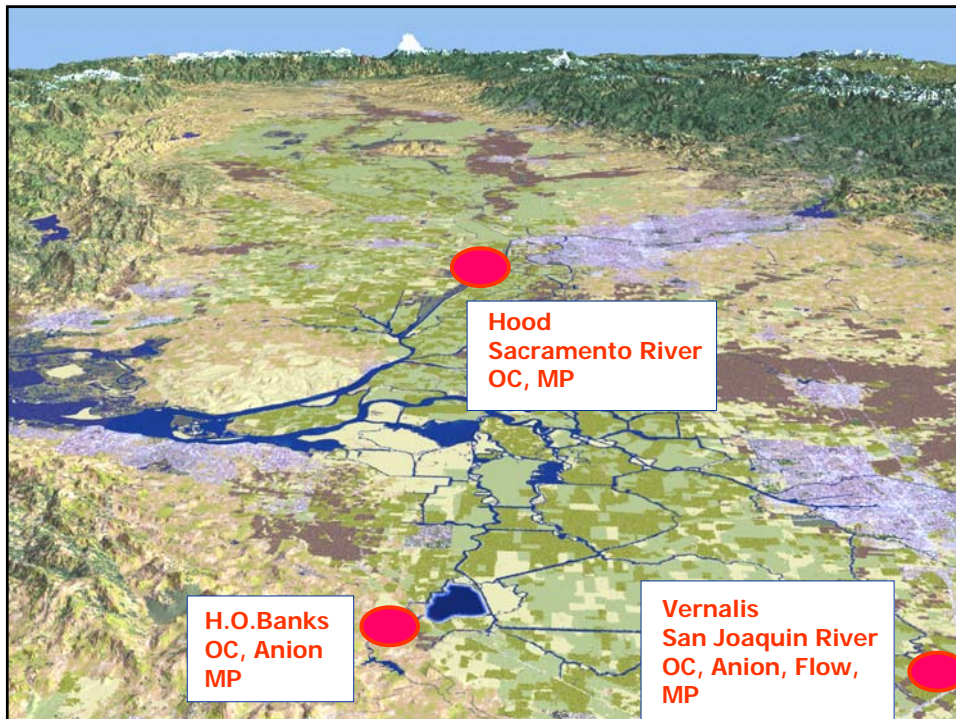
- Ion Chromatography
- Anion Analyzer
 - Bromide
 - Nitrate
 - Sulfate
 - Chloride

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Data System



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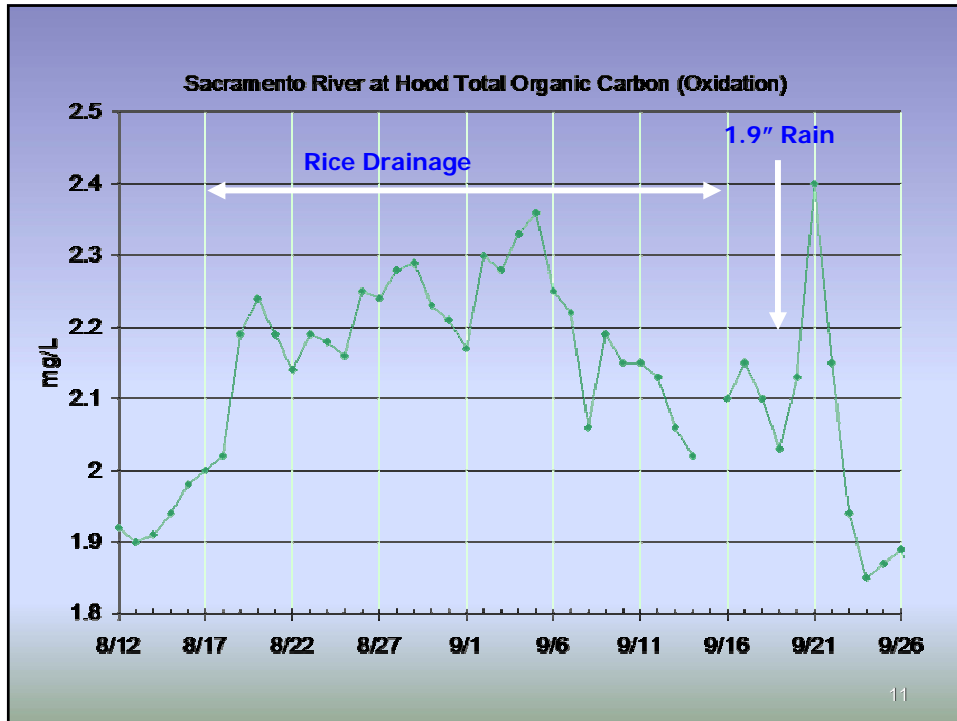
Sacramento River at Hood




Shimadzu and Sievers Analyzers



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Information Storage and Dissemination

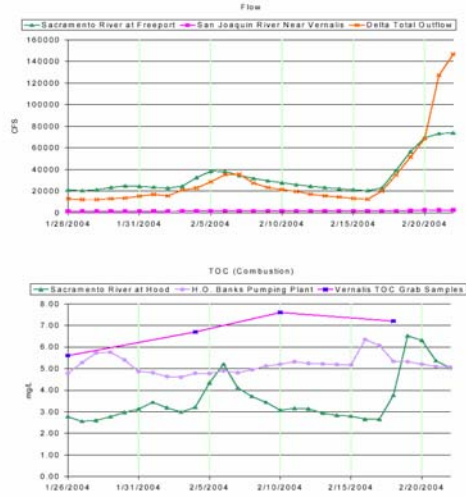


- Define Stakeholder Needs
- Develop Visualization Tools and Delivery Processes
- Feedback Process

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**Data
Dissemination-
Flow
Versus
Carbon**

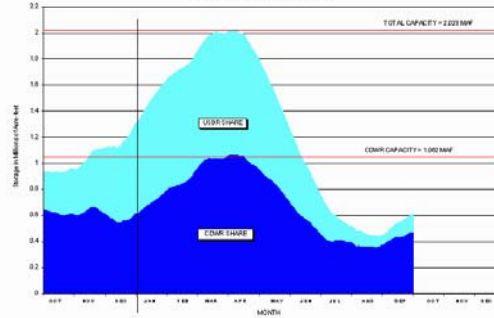
4. Flow and Total Organic Carbon - Delta



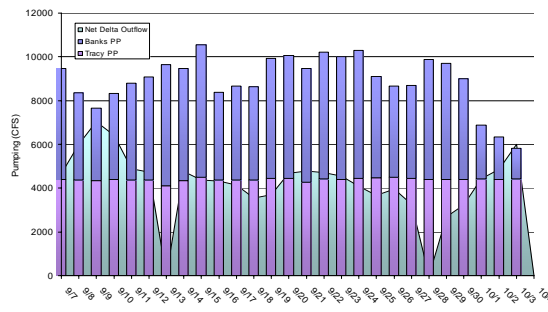
Delta Flow and Total Organic Carbon 1/26/2004-2/22/2004

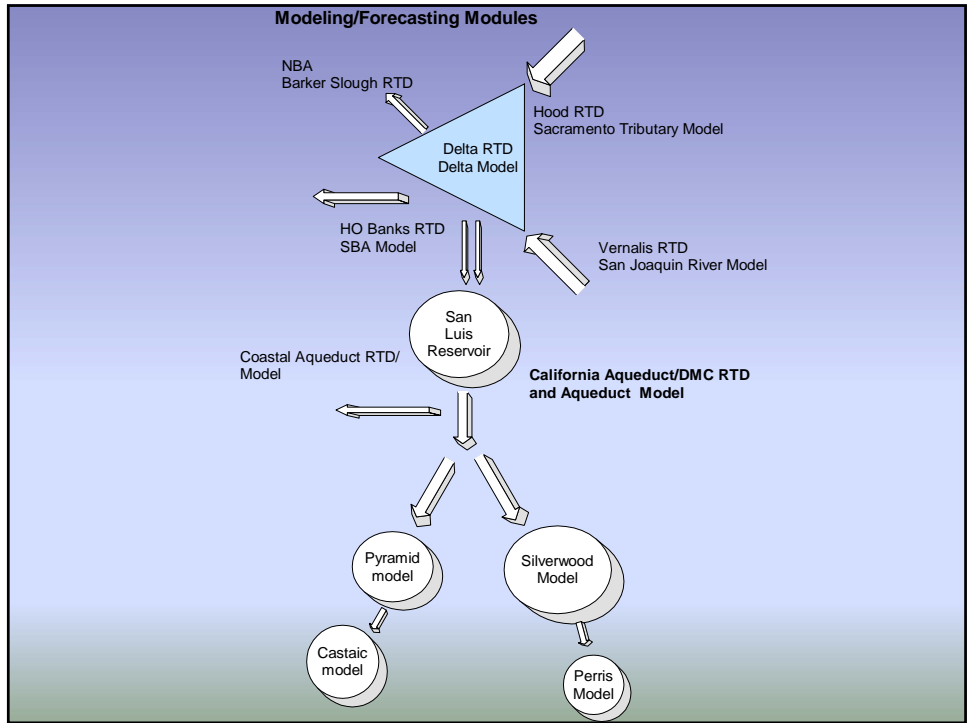
As mentioned last week the winds on 2/19/04 caused a sudden increase in TOC at the H.O. Banks pumping plant with several of the individual analyses going above 7.5 mg/L, however, the levels dropped the next afternoon and daily averages for the two days were only 6.35 and 6.07 mg/L. The range for the last few days was 5.34 to 5.07 mg/L. The recent high flows in the Sacramento River have resulted in higher TOC values at Hood with values going from less than 3.0 mg/L, to 6.52 mg/L, on 2/19/04 and 5.04 mg/L, on 2/22/04.

California Department of Water Resources San Luis Reservoir Storage Shares State Water Project Operations Control Office
Combination Water Calendar Year 2004



H.O. Banks and Tracy Pumping plus Net Delta Outflow



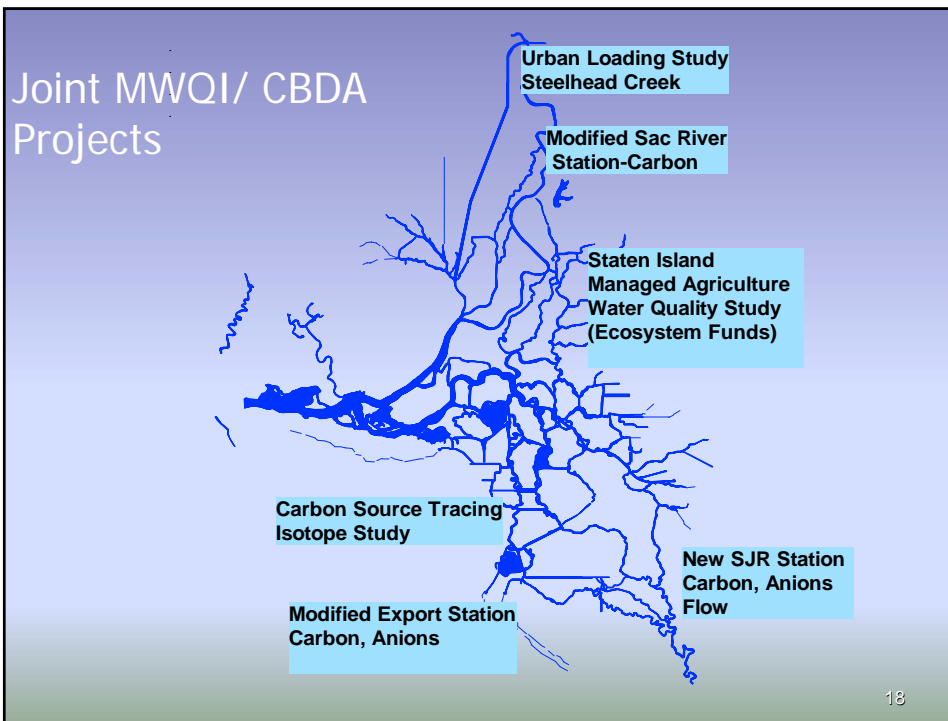
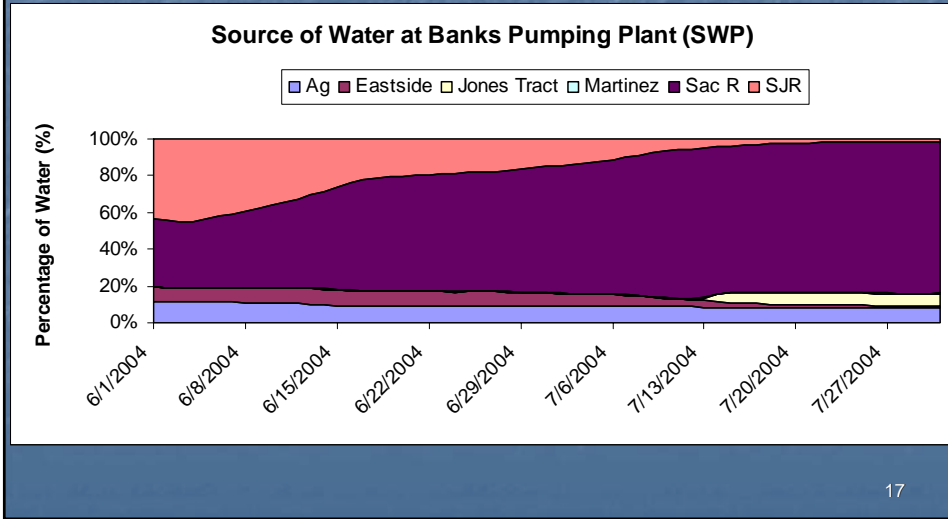


Source Tracking or "Fingerprinting"



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Volume Fingerprinting For July 2004



Take Home Messages

- Real Time Data Expanding
- Forecasting Tools Being Developed
- Increased Value to Stakeholders in Data Integration and Dissemination

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Real Time Data and Forecasting Project

Water Quality Weekly Report

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