

**CALIFORNIA
BAY-DELTA
AUTHORITY**

Water Quality Program Initial Assessment

Cindy Paulson, Ph.D., Sarahann Dow, Ph.D.,
Robin Lee, and Sabre Duren
Brown and Caldwell
February 25, 2005

**BROWN AND
CALDWELL**

**CALIFORNIA
BAY-DELTA
AUTHORITY**

Needs for the Assessment - Meet ROD Commitment

**“Council [Drinking Water Subcommittee] will
complete initial assessment of progress
toward meeting CALFED water quality
targets and alternative treatment
technologies.”**

2



Other Benefits

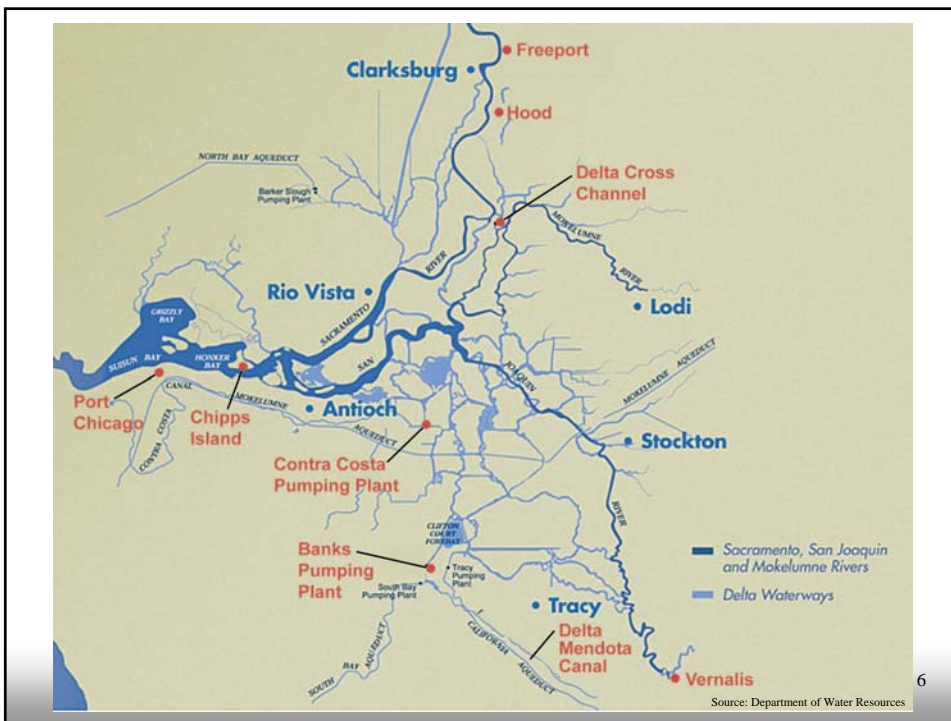
- Tracking and feedback mechanisms
- Input for future program strategy, direction, and priorities

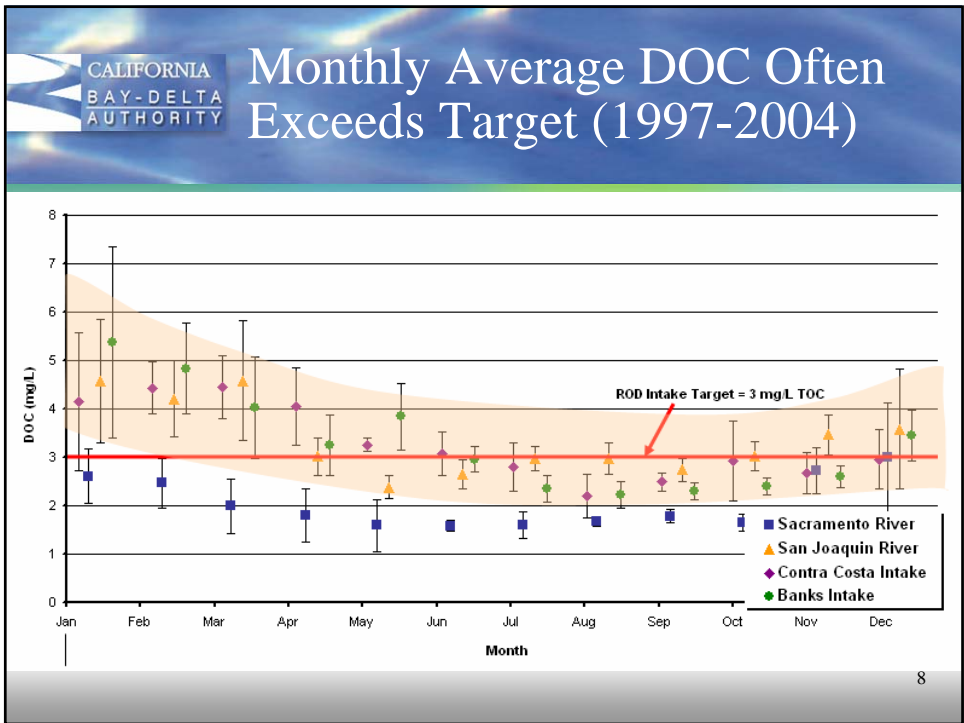
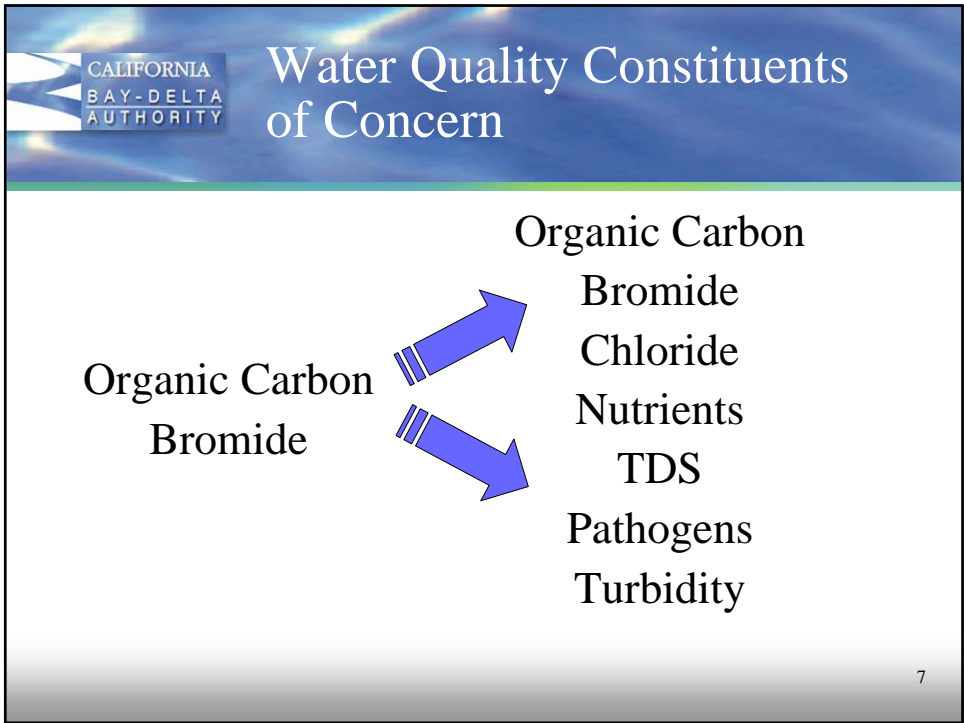


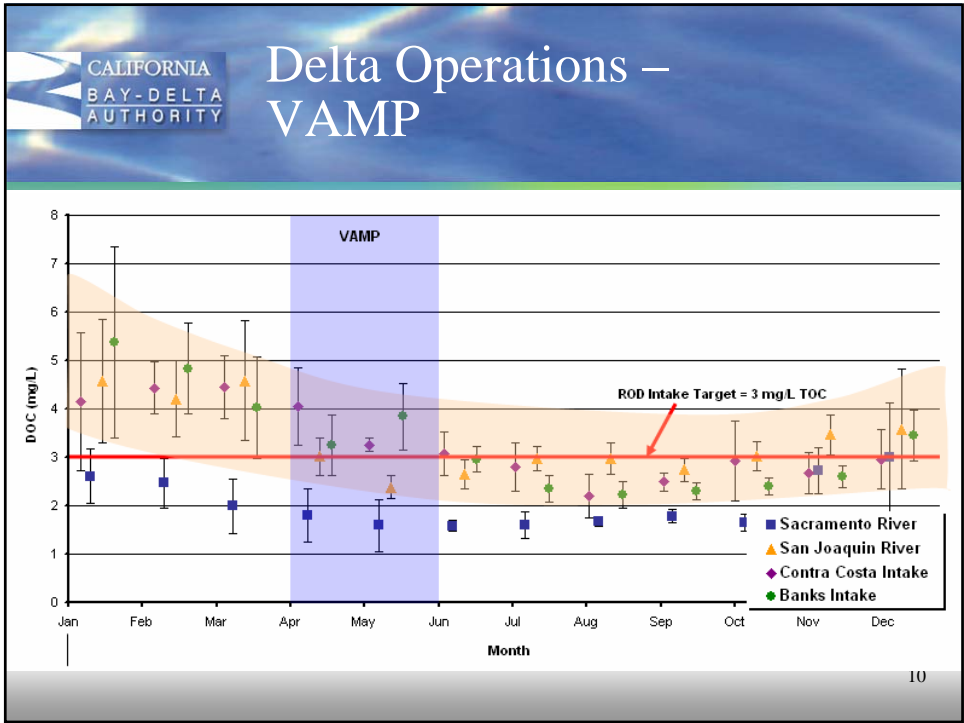
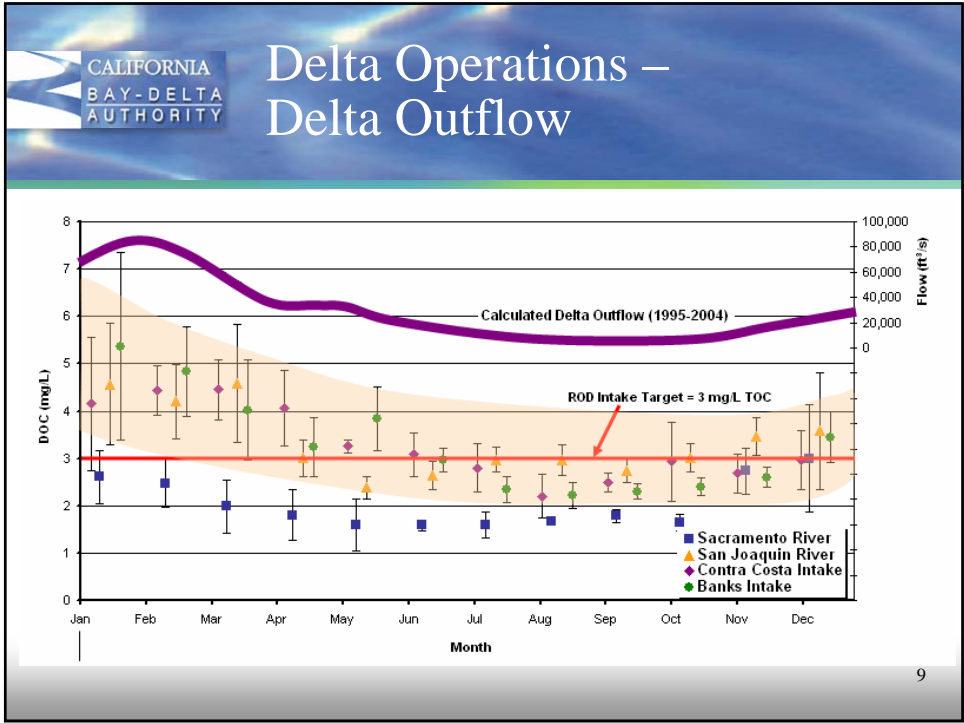
Assessment Overview

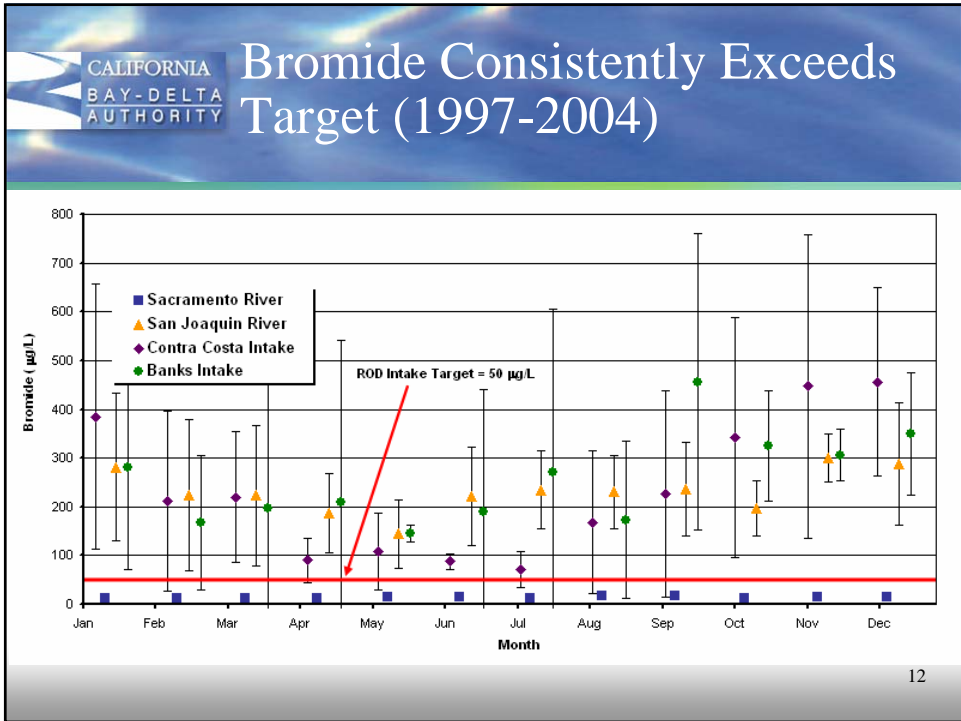
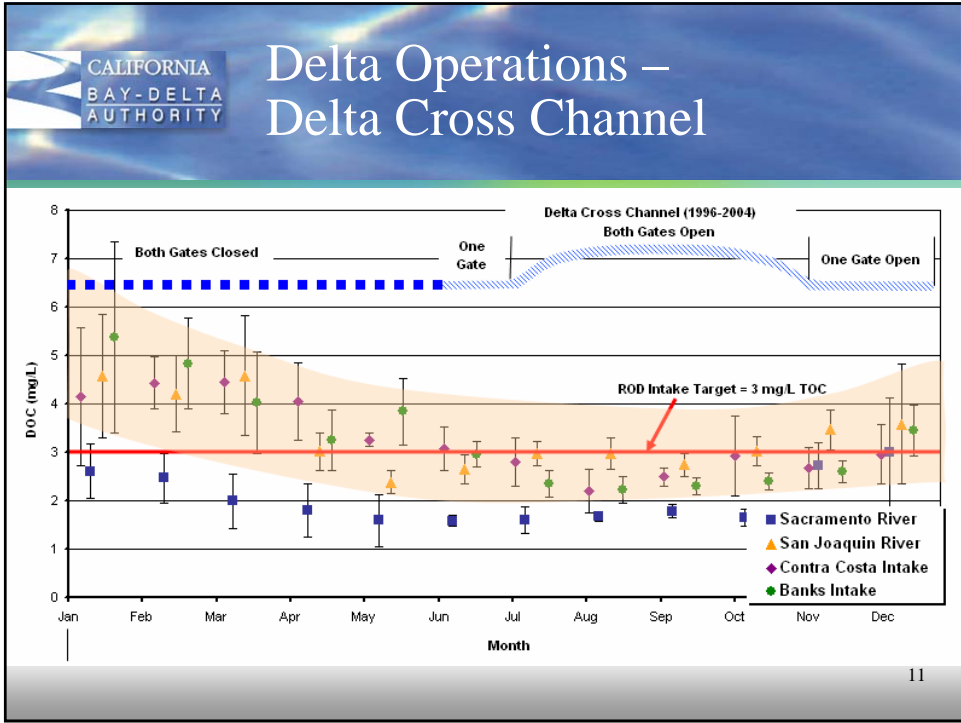
- Introduction/Background
- Existing Delta Water Quality
- Overview and Assessment
- Conclusions and Recommendations

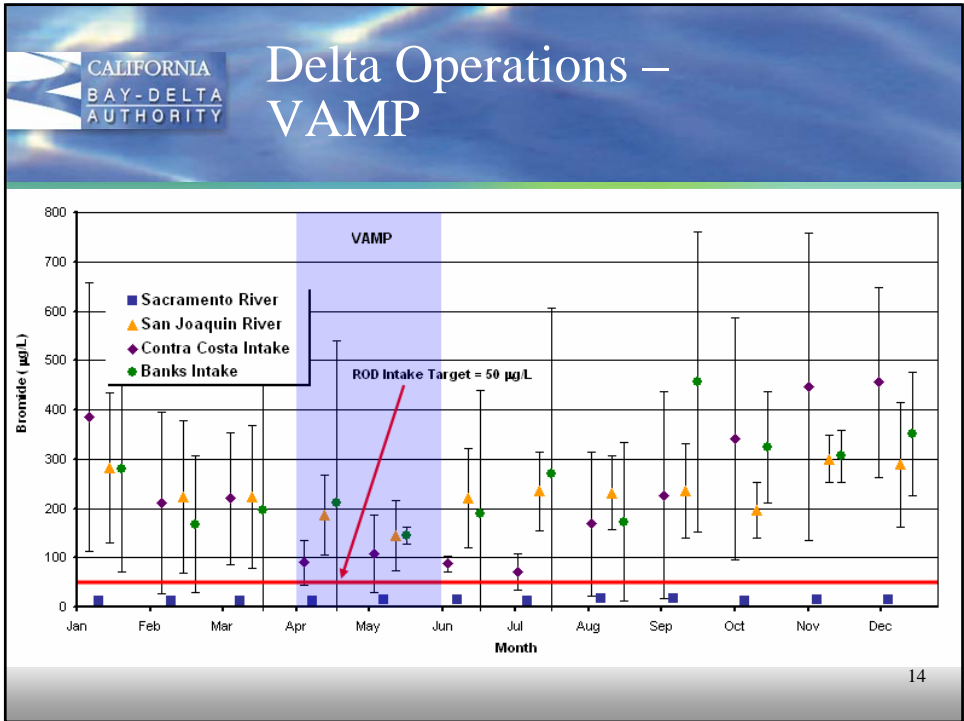
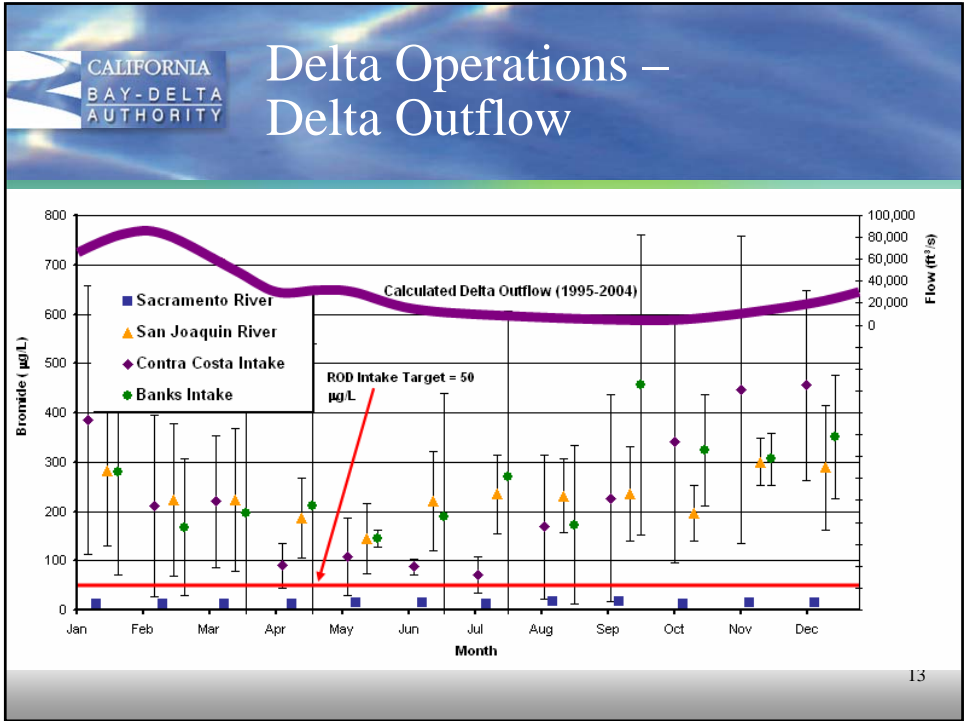
- ELPH
- 5 Action Areas
 - Science and Improved Understanding
 - Source Improvement
 - Regional Planning
 - Treatment Technology
 - Institutional and Program Management
- Performance Measures

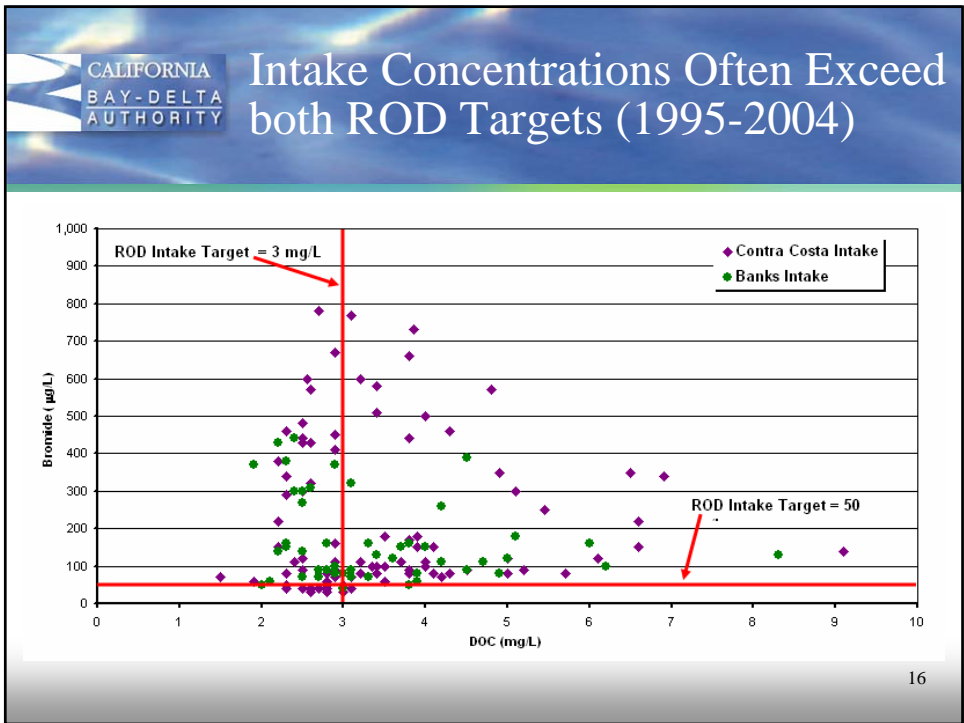
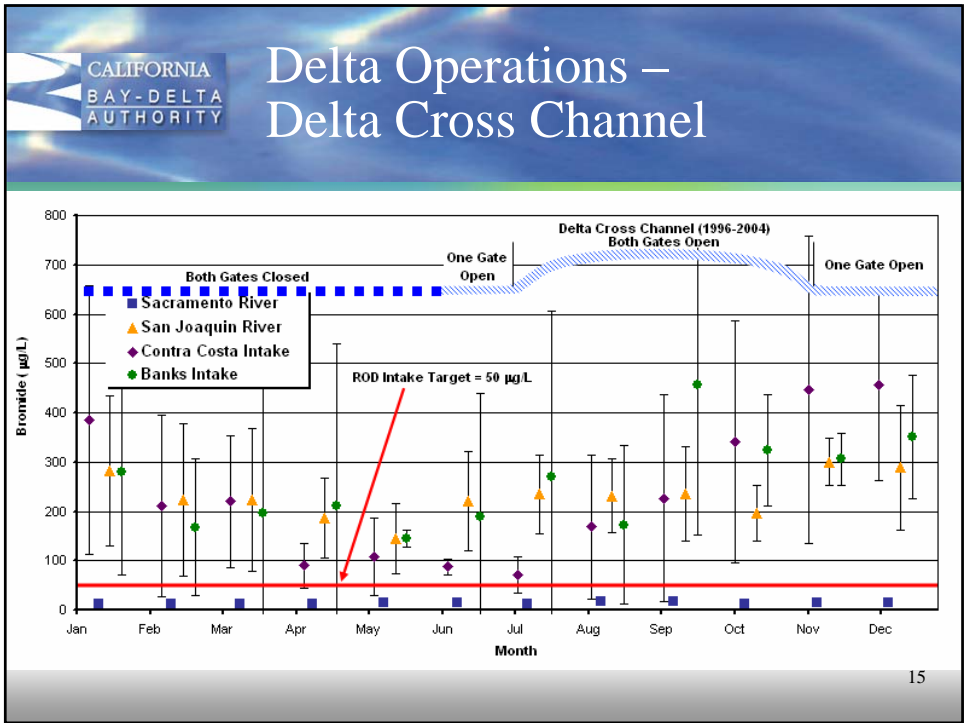
















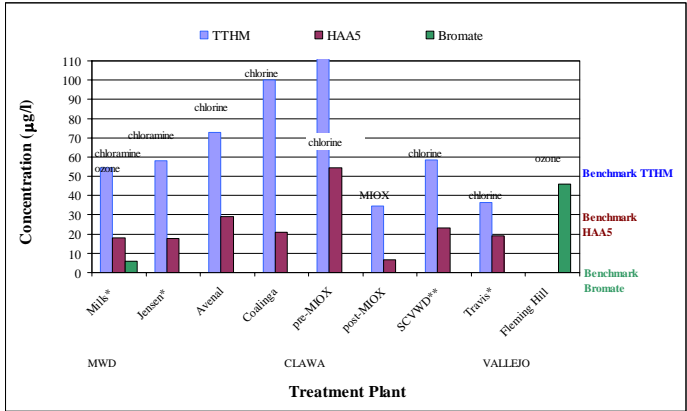
Water Quality Assessment Implications

- Need to focus on San Joaquin River for source control
- Delta operations also important
- More data needed at intakes
- Delta Water quality targets not achievable
- ELPH is critical

17



Implications for Drinking Water Treatment



Treatment Plant	TTHM (µg/d)	HAAS (µg/d)	Bromate (µg/d)
Mills	~55 (chloramine)	~20	~10
Jensen	~60 (chloramine)	~20	~10
Arroyo	~75 (chlorine)	~30	~10
Colunga	~100 (chlorine)	~25	~10
pre-MOX	~105 (chlorine)	~60	~10
post-MOX	~40 (MIOX)	~10	~10
SCVWD	~65 (chlorine)	~25	~10
Travis	~40 (chlorine)	~20	~10
Flaming Hill	~50 (ozone)	~30	~50

Mills Treatment Plant - ozone 4th quarter 2003.
 *Some missing data
 **Planned switch to ozone

18



Project Assessment Methods

- Reviewed project proposals and quarterly reports
- Surveyed project managers (50 out of 79 surveys returned)
- Developed project database
- Interviewed select project managers

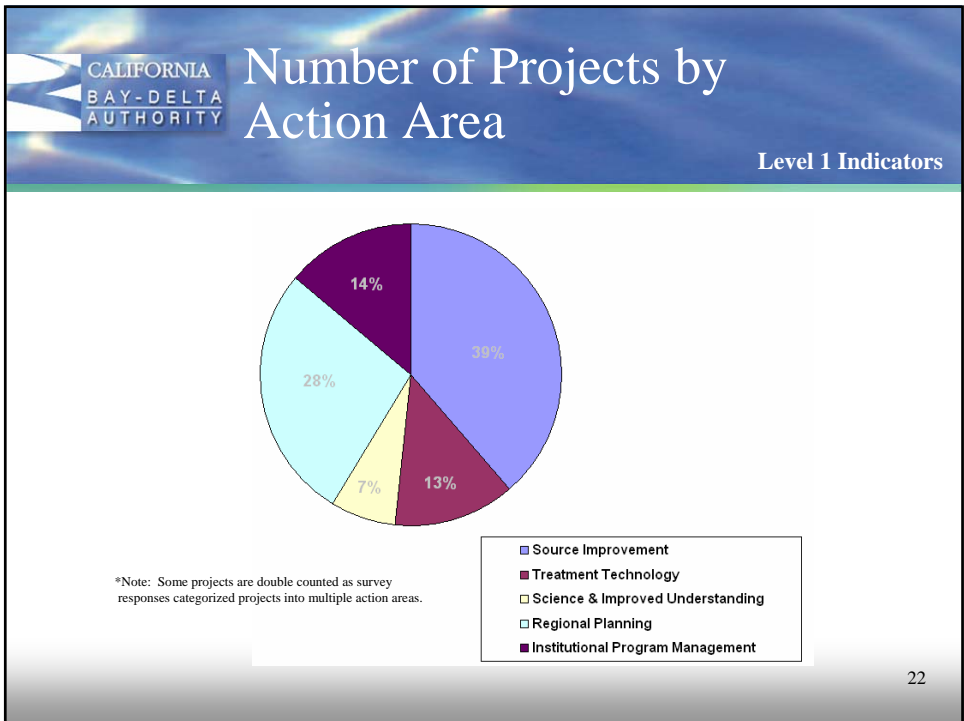
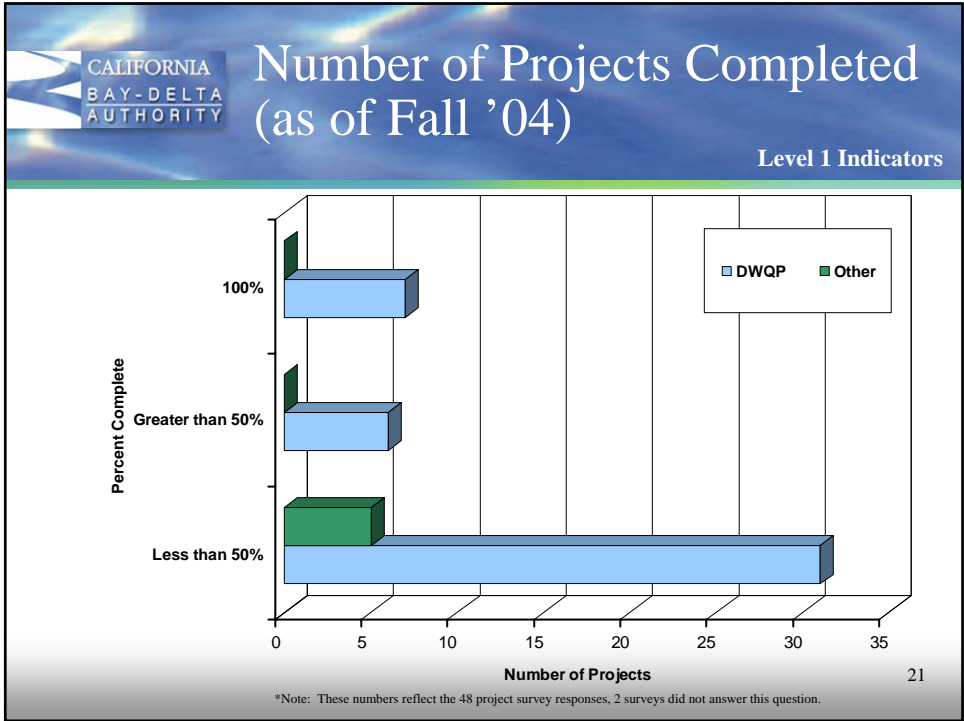
19

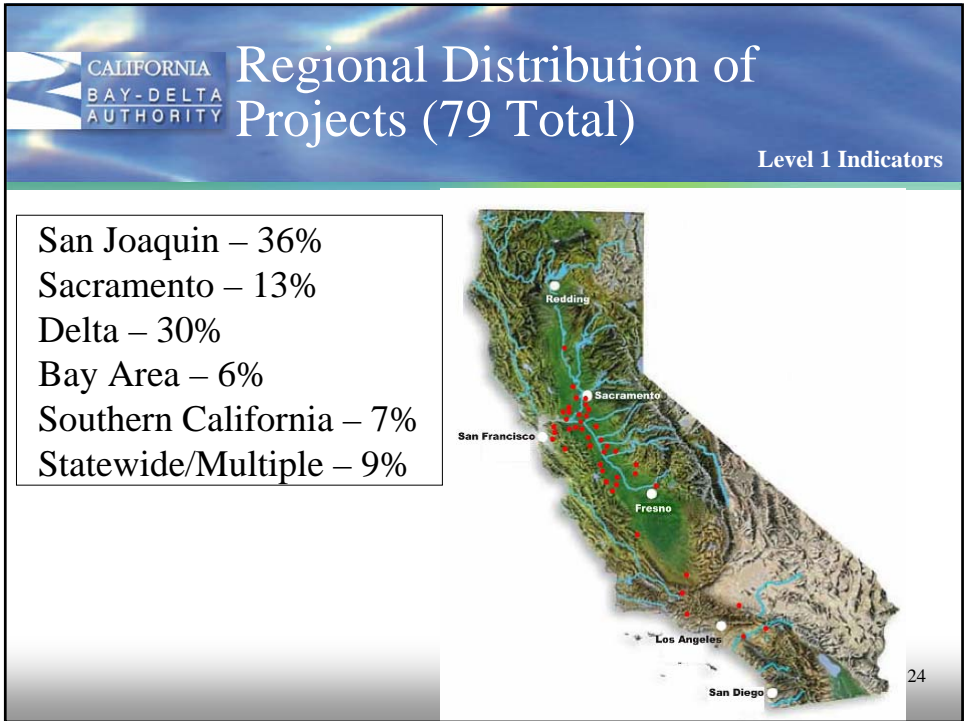
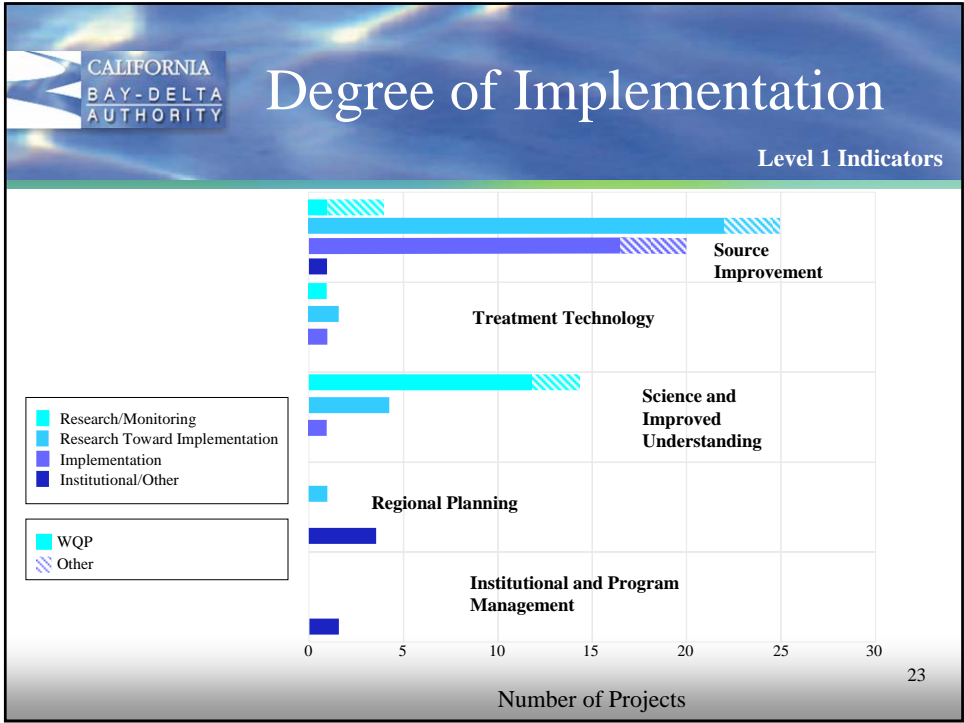


Three Levels of Indicators to Measure Progress

- Level 1 – Administrative Measures (Funding Statistics)
- Level 2 – Quantifiable Accomplishments (Steps to Improve Water Quality)
- Level 3 – System-wide Indicators (Water Quality Improvements and Progress on ELPH)

20







Steps to Improve Water Quality - ROD Commitments

Level 2 Indicators

- San Joaquin Valley drainage
- Source controls (and drinking water policy)
- Drinking Water Subcommittee
- Treatment technology
- Conveyance water quality
- North Bay Aqueduct issues
- Recirculation
- Complementary actions

25

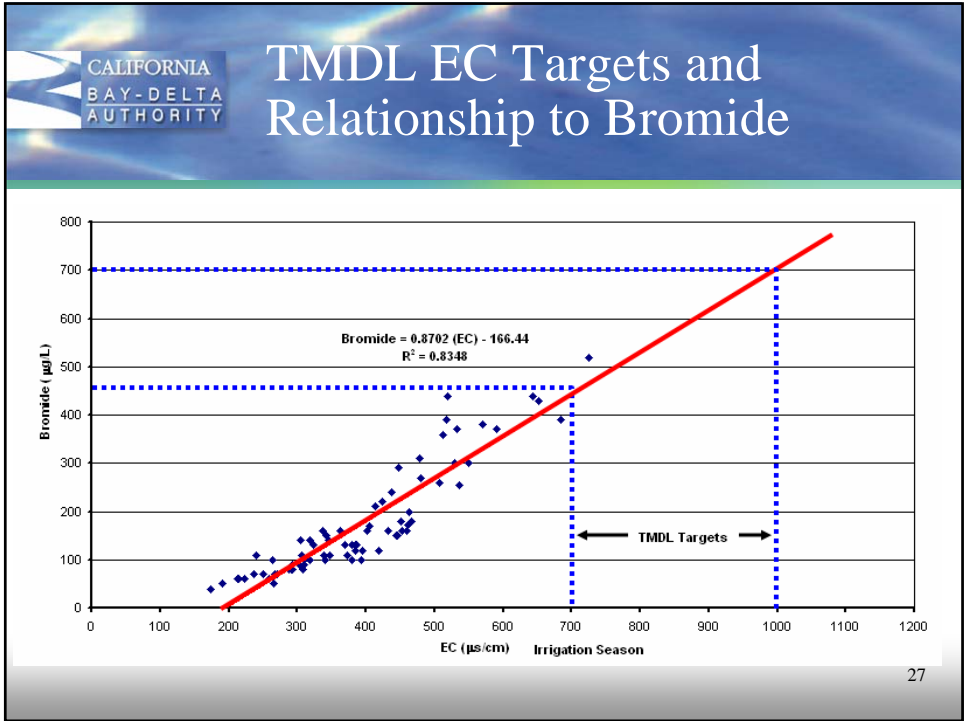


San Joaquin Valley Drainage

- 12 projects, \$7.4M funded
- Many projects just started
- Salt and Boron TMDL BPA in process
- Still more to do



26



Full-Scale Demonstration of Agricultural Drainage Water Recycling Using Membrane Technology

San Joaquin Valley Drainage

- First full-scale facility (0.36 mgd)
- RO technology effectively applied to ag runoff

Water Tech Partners and UCD

28

Detailed description: This slide features a title and two bullet points on the left. On the right, there are two photographs. The top photograph shows an industrial facility with large white tanks and complex piping, identified as the membrane technology demonstration facility. The bottom photograph shows an agricultural landscape with a drainage canal in the foreground and mountains in the background.



CALIFORNIA
BAY-DELTA
AUTHORITY

Source Controls (and Drinking Water Policy)

- 44 projects, \$47.2M funded
- Monitoring – good progress, but still many uncertainties
- BMP evaluation and implementation, still early
- CVDW Policy by 2009 (conceptual models to guide)



29



CALIFORNIA
BAY-DELTA
AUTHORITY

Vernalis Real-Time Monitoring Station

Source Controls

- Quality to coincide with flow data
- Organic carbon, bromide, others
- Third real-time station in Delta



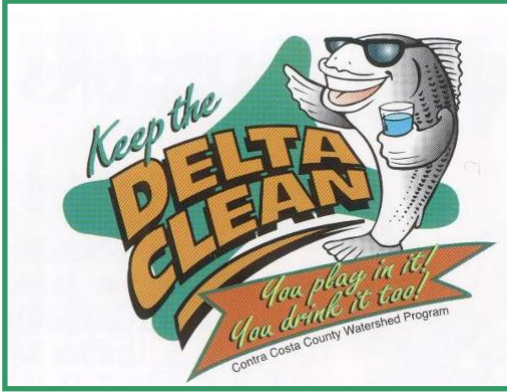
DWR

30

CALIFORNIA BAY-DELTA AUTHORITY

The Water You Play in is the Water You Drink

Source Controls



- Distributed 5,000 boater kits.
- Promoting pollution prevention at marinas.
- Difficulties quantifying pathogens.

Contra Costa County

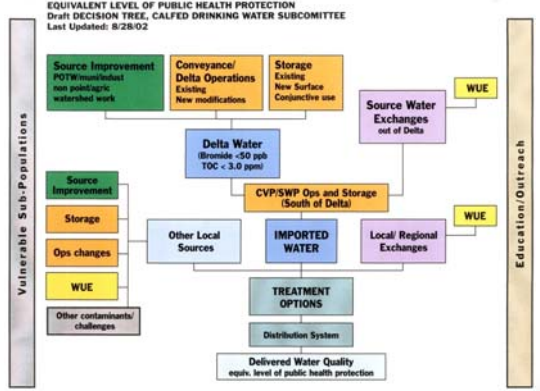
31

CALIFORNIA BAY-DELTA AUTHORITY

Drinking Water Subcommittee

- ELPH framework
- Performance measures
- Planning

EQUIVALENT LEVEL OF PUBLIC HEALTH PROTECTION
Draft DECISION TREE, CALIFED DRINKING WATER SUBCOMMITTEE
Last Updated: 8/28/02



Vulnerable Sub-Populations

Education/Outreach

Delivered Water Quality
equiv. level of public health protection

32

Treatment Technology

Drinking Water

- 4 projects, \$2.2M
- MIEX, Bromate reduction proven effective
- UV just starting
- Need to look at other technologies

Ag Drainage Desalination

- 3 projects, \$2.7M funded
- RO, ASBR viable, but expensive
- Balance with source control?

33

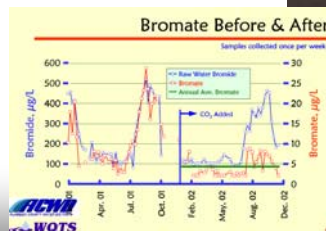
Bromate Control with Carbon Dioxide Addition

Treatment Technology

- Cost-effective bromate reductions below MCL
- Enables ozonation of high bromide waters



Alameda County Water District



34



Conveyance Water Quality

- 9 projects, \$17.7M funded
- Addressing Rock Slough, SBA, CA aqueduct, storage
- Still early



35



Rock Slough and Old River Water Quality Actions

Conveyance Water Quality

- Assessed agricultural and urban runoff sources
- Evaluated alternatives
- Encasing 1900' of Contra Costa Canal

36

Lake Perris Pollution Prevention and Source Water Protection

Conveyance Water Quality

- Monitoring pathogen risk from recreation
- Considering limiting body contact
- Also, working on oxygenation



MWD

37

North Bay Aqueduct Issues

- 2 projects, \$0.6 funded
- Addressing source control
- Identifying alternative intake location

38



CALIFORNIA
BAY-DELTA
AUTHORITY

NBA Watershed BMPs

North Bay Aqueduct Issues

- Installed 13 miles of fencing
- Monitoring to quantify effects



CALIFORNIA
BAY-DELTA
AUTHORITY

Recirculation – To Reduce Salinity and Improve DO

- Still trying to figure this one out





Complementary Actions

- 3 projects, \$21.5M funded
- Bay Area Blending – to be completed shortly
- Water Quality Exchanges – Friant-Met just beginning
- State and Federal water projects planned – December 2005



41




System-Wide Indicators – Did We Get There? Water Quality Improvements

Level 3 Indicators

- Better understanding of Delta, but still many uncertainties
- Too early to detect any improvements
- May never achieve targets
- Continue to improve and/or maintain existing conditions



42




CALIFORNIA
BAY-DELTA
AUTHORITY

System-Wide Indicators – Did We Get There? ELPH

Level 3 Indicators

- Framework is an important first step
- Needs major focus going forward

43




CALIFORNIA
BAY-DELTA
AUTHORITY


Conclusions

- Overall, a slow start, due to contracting
- Many good projects in process
- Next few years are critical to produce results
- Funding efforts in the right areas generally
- Need a comprehensive strategy to guide future funding priorities


44

 Recommendations –
Contracting, Communication,
Coordination, Continuation

- Establish expectations for timing and meet them
- Streamline process
- Pick a format and stick with it
- Guide proposals to priority areas




45

 Recommendations –
Contracting, **Communication**,
Coordination, Continuation

- Improve feedback loop to CBDA and scientific community
 - Strengthen accountability and expectations
- Provide more forums
 - Website
 - Workshops/brown bags
 - Meaningful reporting
- Maintain project tracking system and share with others


46

 **Recommendations – Contracting, Communication, Coordination, Continuation**

- Drinking water and ecosystem issues
- Monitoring programs and data sharing
- Project-to-project



47

 **Recommendations – Contracting, Communication, Coordination, Continuation**

- Build on knowledge base
- Consolidate results in key areas
- Follow important leads and drive to closure
- Need to balance implementation with ongoing research

48



CALIFORNIA
BAY-DELTA
AUTHORITY

Ongoing Activities

- Project tracking (database) and communications
- Drinking water treatment assessment
- Coordinated monitoring
- Central Valley Drinking Water Policy database
- Water Quality Indices

