

# Draft Work Plan: Water Quality Sub-Committee

Calif. Bay-Delta Authority  
Water Management Science Board  
May, 2005

# Current Members of the WQSC

- Michael Anderson, Ph.D., Professor, University of California, Riverside.
- Bill Glaze, Ph.D., Professor, Oregon Health & Science University, Portland.
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# Water Quality: The Overall CALFED Target

“continuously improving Delta water quality for all uses, including in-Delta environmental and agricultural uses”

CALFED Record of Decision

# Drinking Water Quality Target from the ROD

“providing safe, reliable, and  
affordable drinking water in a  
cost-effective way”

CALFED Record of Decision

# Purpose of the Water Quality SubCommittee of the WM-SB (DRAFT)

----- To provide scientific analysis, counsel and peer review that bear on the fundamental commitment within the ROD to continually improve Delta water quality for all uses, and to provide safe, reliable and affordable water from the Delta to the now over 23 million people of California and to the other sectors who rely on this water.

# Water Quality Goals from the ROD

- Elaboration in the ROD of the specific target for “providing safe, reliable, and affordable drinking water in a cost-effective way, [is] to achieve either:
    - (a) average concentrations at Clifton Court Forebay and other southern and central Delta drinking water intakes of 50  $\mu\text{g/L}$  bromide and 3.0 mg/L total organic carbon\*,
- OR
- (b) an equivalent level of public health protection [ELPH] using a cost-effective combination of alternative source waters, source control and treatment technologies.”

# Water Quality Goals from the ROD

In addition, Appendix D[1] of the Water Quality Program Plan, identified several additional numeric targets listed for drinking water intakes:

Chloride	250 mg/L, 150 mg/L (Same as D-1641 and the current Sacramento-San Joaquin Bay Delta Water Quality Control Plan)
Nutrients (nitrate)	10 mg/L, no increase in nitrate levels
Total Dissolved Solids	< 220 mg/L (10-yr avg) (from SWP Water Service Contract, may be changed to a 6-month or 1 year avg target) < 440 mg/L (monthly avg)
Pathogens	No MCL standard; < 1 oocyst/100L for <i>Giardia</i> and <i>Cryptosporidium</i>
Turbidity	0.5 or 1.0 NTU (in treated water); 50 NTU (target is to reduce current variability)

# Achieving the Drinking Water Quality Target

## CALFED WATER QUALITY TARGET

continuously improving Delta water quality for all uses, including in-Delta environmental and agricultural uses



## DRINKING WATER QUALITY TARGET

providing drinking water that is:

affordable

reliable

safe

3/50 TOC/Br

ELPH protection

OTHER

other measures

### CRUCIAL RESEARCH ISSUE:

- WHAT SHOULD BE THE WATER QUALITY GOALS USED IN THIS PROCESS TO PROTECT PUBLIC HEALTH AND ACHIEVE THE LETTER & SPIRIT OF THE ROD?

# Achieving the Drinking Water Quality Target

## CALFED WATER QUALITY TARGET

continuously improving Delta water quality for all uses, including in-Delta environmental and agricultural uses



## DRINKING WATER QUALITY TARGET

providing drinking water that is:

affordable

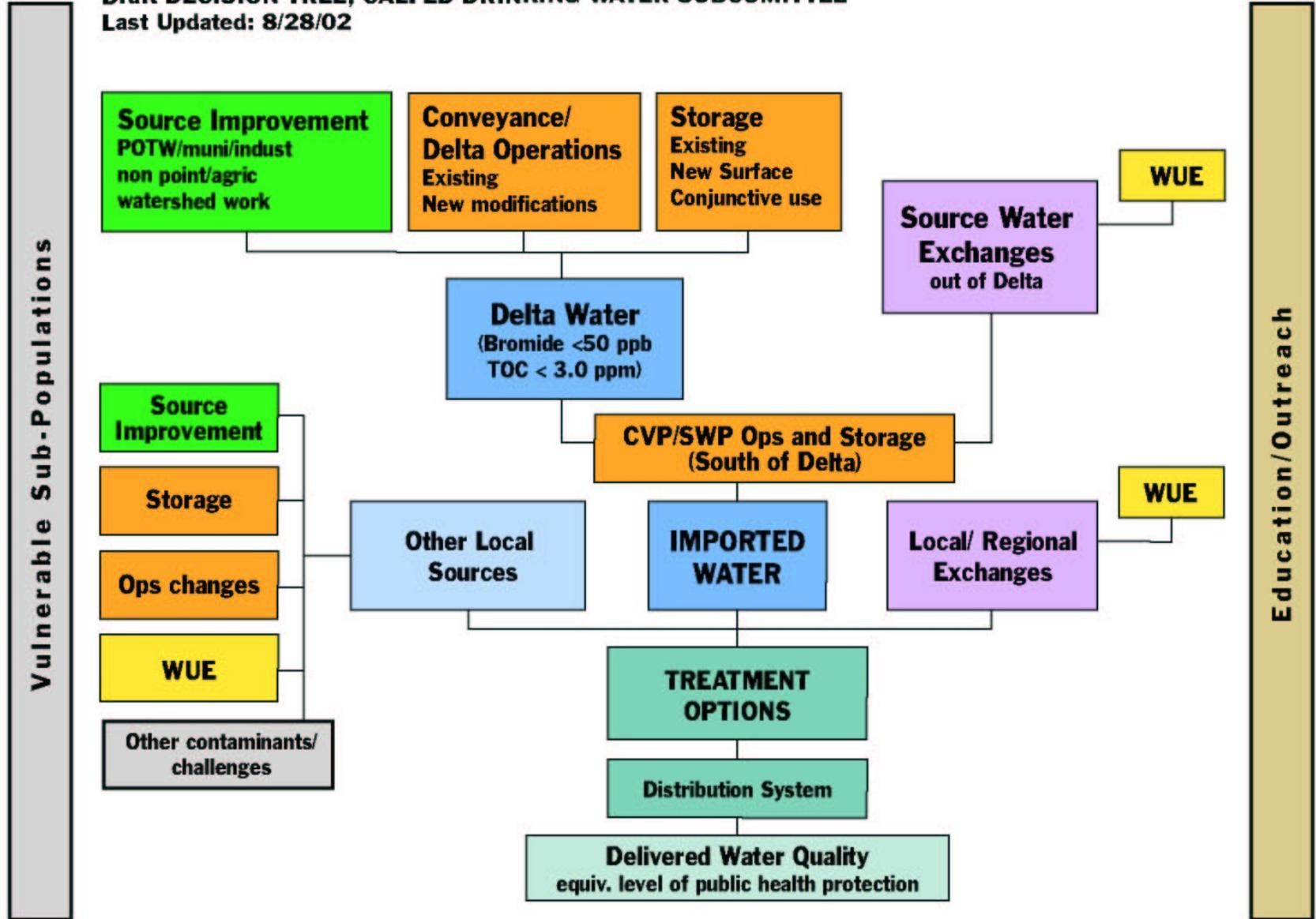
reliable

safe



**THE CONCEPTUAL MODEL**

**EQUIVALENT LEVEL OF PUBLIC HEALTH PROTECTION**  
**Draft DECISION TREE, CALFED DRINKING WATER SUBCOMITTEE**  
 Last Updated: 8/28/02



# Achieving the Drinking Water Quality Target

## CALFED WATER QUALITY TARGET

continuously improving Delta water quality for all uses, including in-Delta environmental and agricultural uses



## DRINKING WATER QUALITY TARGET

providing drinking water that is:

affordable

reliable

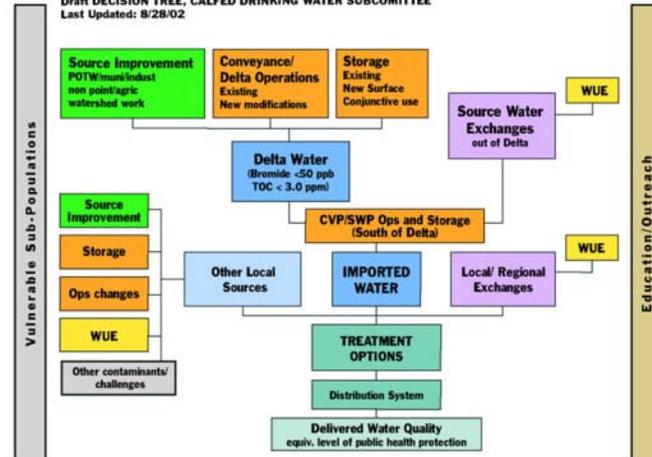
safe



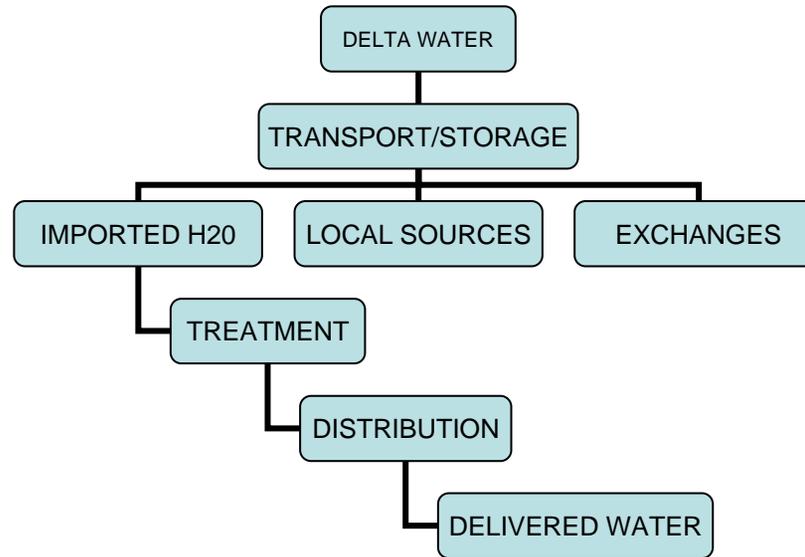
## ISSUES:

- IS THIS AN APPROPRIATE CONCEPTUAL MODEL FOR ACHIEVING DRINKING WATER QUALITY TARGETS?

EQUIVALENT LEVEL OF PUBLIC HEALTH PROTECTION  
Draft DECISION TREE, CALFED DRINKING WATER SUBCOMMITTEE  
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# ALTERNATIVE WATER QUALITY CONCEPTUAL MODEL



**STEP 1. DOES DELIVERED WATER MEET WATER QUALITY GOALS?**

**STEP 1A. DISTRIBUTION SYSTEM WATER?**

**STEP 1B. TREATED WATER?**

**STEP 1C. IMPORTED (LOCAL SOURCE)(EXCHANGE) WATER MEET THESE GOALS?**

**FOR EACH STEP:**

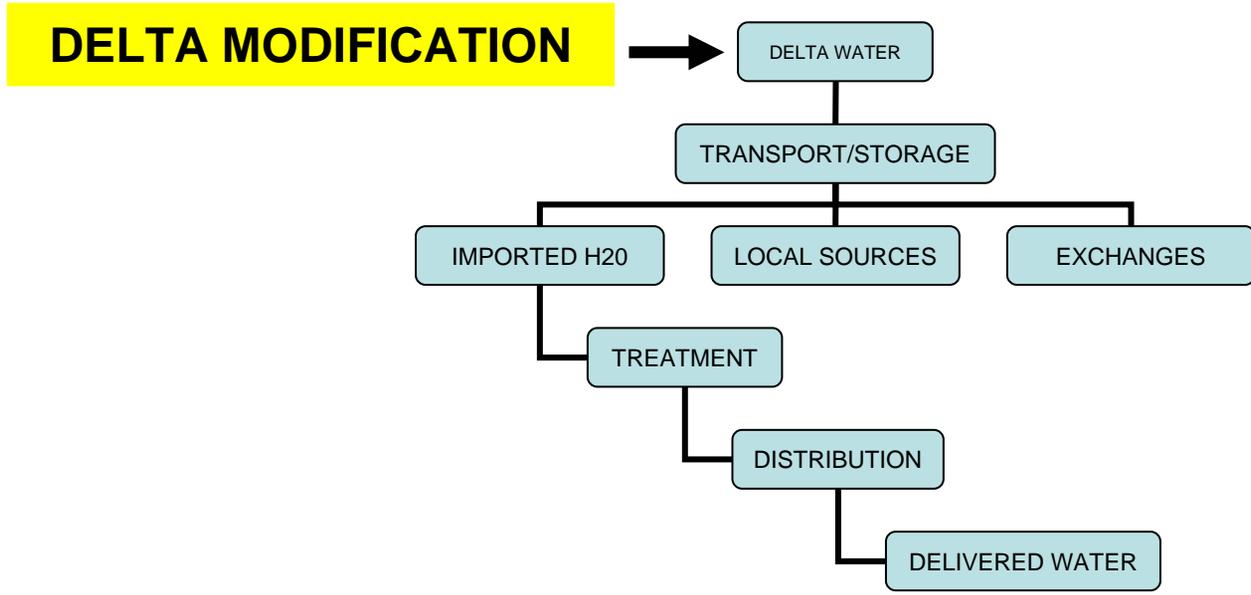
**YES: (NO ACTION)**

**NO: IS RISK ACCEPTABLE?**

**NO: OPTION A. REVISE GOALS (REJECT); OPTION B. CONSIDER OTHER SOURCES**

**OPTION C. CONSIDER ALTERNATIVE TREATMENT OPTIONS OR D. IN-DELTA OPTIONS**

# ALTERNATIVE WATER QUALITY CONCEPTUAL MODEL



**STEP 1. WILL DELTA WATER MEET WATER QUALITY GOALS?**  
**STEP 1A. WILL TREATED WATER?**

**FOR EACH STEP:**  
**YES: (NO ACTION)**  
**NO: IS RISK ACCEPTABLE?**  
**NO: OPTION A. REVISE GOALS (REJECT); OPTION B. CONSIDER OTHER SOURCES**  
**OPTION C. CONSIDER IN-DELTA OPTIONS**

# Priority Projects for the WQSC

1. Assist in the development of More Comprehensive and Useful Water Quality Goals for CALFED: *An Operational Definition of “Equivalent Level of Public Health Protection”*

# Priority Projects for the WQSC

## 1. Assist in the Development of More Comprehensive and Useful Water Quality Goals for CALFED

TARGET and TIMELINE: DEVELOP PERIODIC REPORTS AND EVENTUALLY A WHITE PAPER THAT:

- recommends Water Quality Goals to be used in adaptive management projects that affect “Delta system water”, i.e. protection of water quality in all waters that are included in the Water Quality Conceptual Diagram (the ELPH Decision Tree)
- interprets the ROD criteria and the Water Quality Goals in terms of risk, highlighting uncertainties and information gaps.
- reviews on-going studies by CALFED program elements, stakeholders and other organizations related to the water quality goals of Delta water.
- examines the quality of exported Delta water from a health risk perspective *vis a vis* the targets of the ROD.

ASSEMBLE TEAM AND PRODUCE DETAILED OUTLINE OF STUDY: AUGUST 31, 2005

MEETING WITH STAKEHOLDER GROUPS: SEPT. – NOV. 2005

DRAFT REPORT AND PUBLIC MEETING: JULY 1, 2006

# Priority Projects for the WQSC

## 2. WATER QUALITY INDICES

Review past and on-going works that relate to quantitative measures or indices of drinking water quality that go beyond mandated federal and state standards, and are consistent with the Water Quality Goals of CALFED.

TARGET and TIMELINE: DEVELOP PERIODIC REPORTS TO THE WM-SB THAT:

- summarize world-wide efforts to evaluate water quality using different risk-based and precautionary approaches.
- follow on-going studies sponsored by CALFED and others.
- recommend further studies that are needed.

OUTLINE OF STUDY: AUG. 1, 2005

PERIODIC REPORTS AT WM-SB MEETINGS

DRAFT REPORT: TBD

# An Appropriate Role for the Water Quality SubCommittee of the WMSB

- A lot of work on Water Quality and viz. Drinking Water Quality is already in progress. We need have a good grasp of these projects and work closely with all parties.
- We should state our goals and objectives not in terms of what we will do ourselves but in providing analysis, counsel, and peer review to assist all of these others.
- We stand ready, however, to organize initiatives such as workshops, task forces, etc. to address topics that have special relevance to the needs of our stakeholders, and to encourage funding of projects through the PSP process.

# Expansion of the WQSC

POSSIBLE AREAS OF EXPERTISE FOR FUTURE MEMBERS:

- RISK ASSESSMENT OF DRINKING WATER CONTAMINANTS (CHEMICALS AND PATHOGENS)
- EMERGING CONTAMINANTS AND THEIR RISK EVALUATION
- EMERGING TREATMENT TECHNOLOGIES
- COST-BENEFIT EVALUATIONS OF MANAGEMENT OPTIONS WITHIN THE DRINKING WATER INDUSTRY

# List of Some Key References and Documents Related to Water Quality Goals from the ROD

1. CALFED Programmatic Record of Decision, August 28, 2002  
<http://www.calwater.ca.gov/Archives/GeneralArchive/rod/ROD.pdf>  
Water Quality Program, pp. 17-18
2. CALFED Drinking Water Quality Conceptual Framework, Drinking Water Subcommittee, California Bay-Delta Public Advisory Committee, November 22, 2002 (revised December 18, 2002)  
[http://calwater.ca.gov/BDPAC/Subcommittees/DrinkingWater/DWQP\\_MeetingNotes\\_1-31-03/ELPHStrategy\\_Revised\\_12-18-02.pdf](http://calwater.ca.gov/BDPAC/Subcommittees/DrinkingWater/DWQP_MeetingNotes_1-31-03/ELPHStrategy_Revised_12-18-02.pdf)
3. CALFED Water Quality Program Plan, July 2000  
<http://calwater.ca.gov/Programs/DrinkingWater/DrinkingWaterQualityProgramPlan.shtml>
4. California Bay-Delta Program Water Quality Program, Multi-Year Program Plan (Years 6-9) (State FYs 2005-06 to 2008-09; Federal FYs 2006 to 2009)
5. Central Valley Regional Water Quality Board, Drinking Water Quality Policy Initiative,  
[http://www.swrcb.ca.gov/rwqcb5/available\\_documents/dw-policy/index.html](http://www.swrcb.ca.gov/rwqcb5/available_documents/dw-policy/index.html)

# Suggestions from the Drinking Water Subcommittee of the BDPAC to the Water Management Science Board

## **An overview of the impact of delta operations on the quality of water being exported from the Delta:**

1. Monitoring data on the upper Sacramento and San Joaquin rivers; at the points of exportation; and at selected utilities.
  - Critical parameters: salinity (bromide), DOC, nutrients, other selected compounds\* (see Water Quality Index below).
  - Evidence of degradation of water quality within the Delta and during conveyance to utilities.
  - Trends in data over the past decade or so.
  - Emerging issues based on reasonable scenarios.
2. Interviews with selected water quality directors at utilities.
3. Listing of management options for protection of Delta water before export.

# Suggestions from the Drinking Water Subcommittee of the BDPAC to the Water Management Science Board (cont)

## **Analysis of treatment challenges faced by utilities using Delta water.**

1. Review of present treatment trains and planned alterations in treatment.
2. Analysis of emerging technologies to determine potential alternative treatment regimes for Delta water.
3. Analysis of costs and benefits of different treatment strategies.
4. Comparison of costs and benefits with management options within the Delta.

# Suggestions from the Drinking Water Subcommittee of the BDPAC to the Water Management Science Board (cont)

## **Development of measures of water quality to complement bromide and DOC.**

1. Review of literature relating to water quality indices, and emerging contaminants.
2. Consider feasibility of a new method for reporting water quality that will take into account all of the important water quality issues.
  - a) Risk based
  - b) Precaution based
  - c) Combination of i. and ii.
  - d) Convene stakeholders to consider options.