# WORK PLAN

# DEVELOPMENT OF DRINKING WATER POLICY
# CENTRAL VALLEY REGION BASIN PLAN

**Prepared by**
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**January 14, 2003**

# INTRODUCTION

The Sacramento River and San Joaquin River watersheds and the Sacramento-San Joaquin Delta provide drinking water for over two thirds of the people in California. Most of Southern California, a major portion of the San Francisco Bay Area, parts of the Central Coast, and many Central Valley communities rely on these watersheds for their drinking water. The Sierra tributaries to the Sacramento and San Joaquin rivers are high quality sources of drinking water. As the water flows out of the foothills and into the valley, pollutants from a variety of urban, industrial, agricultural and natural sources affect the quality of the water. The California Regional Water Quality Control Board, Central Valley Region (Regional Board) has designated municipal and domestic supply (MUN) beneficial uses for many waterways in the Central Valley. Water quality objectives are used as a regulatory tool to protect designated beneficial uses. Narrative water quality objectives for the Sacramento and San Joaquin rivers are specified in the Water Quality Control Plan for the Sacramento and San Joaquin rivers (Basin Plan) to protect human health. However, numeric water quality objectives are not in place for a number of pollutants that may adversely affect drinking water supplies such as organic carbon and specific pathogens.

This Work Plan lays out a technical and administrative process to establish either numeric or modified narrative objectives for drinking water constituents as elements of an overall drinking water policy for the Central Valley. New or modified objectives must be adopted by the Regional Board in a Basin Plan amendment. The adoption of water quality objectives must be performed in compliance with the requirements of the California Water Code. The Water Code requires consideration of various factors, including the means by which the objectives can be attained, economics, the need for housing and others. This Work Plan includes the development of an implementation plan to demonstrate the means by which proposed objectives will be achieved and other information to fulfill Water Code requirements. Federal law requires treatment of surface waters prior to their use as drinking water. Therefore, the Work Plan includes an assessment of the ability to control sources of key drinking water constituents that are discharged to ambient waters and the ability to remove the constituents in water treatment plants. The feasibility, costs, and risks of both approaches will be evaluated.

The Record of Decision on the CALFED Programmatic Environmental Impact Statement/Environmental Impact Report (EIS/EIR) requires the California Bay-Delta Authority (CBDA), with the assistance of the Department of Health Services (DHS) to coordinate a comprehensive source water protection program. One element of this source water protection program is to "establish a comprehensive State drinking water policy for Delta and upstream tributaries by the end of 2004." This Work Plan is consistent with that action and with the Drinking Water Conceptual Framework adopted by the Bay Delta Public Advisory Committee (BDPAC) Drinking Water Subcommittee.

The Work Plan lays out a series of tasks to be completed over a five to six year period that will culminate in the adoption of a Basin Plan Amendment. Table 1 presents an estimated budget to complete the work plan and Figue 1 is a schedule. Figure 2 is a schematic of the tasks and how they relate to each other. It is anticipated that the Work Plan will be dynamic and will be

modified, possibly on an annual basis, as data and information are gathered and assessed. It is also anticipated that not all of the drinking water constituents of concern will be addressed by this work plan. Due to data, economic, and technical constraints, it will be necessary to identify a priority list of constituents for which objectives will be established. This will be an on-going process with additional Basin Plan amendments required to include other constituents of concern in the future.

## TECHNICAL ANALYSIS TO SUPPORT DEVELOPMENT OF DRINKING WATER POLICY

### Task 1. Program Management

**Scope** - The Work Plan will be implemented by a Drinking Water Policy Work Group (Work Group), consisting of representatives from CBDA, DHS, the Regional Board, and affected stakeholder groups. The Work Group will direct the effort and make decisions on funding and consultant selection. The technical analysis will be managed by a Program Manager who is a DHS employee funded by CBDA. The BDPAC Drinking Water Subcommittee will provide a forum for communicating with the stakeholder community on the progress on the work plan. It is anticipated that this program will become a regular agenda item for Drinking Water Subcommittee meetings.

In addition to program management, this task includes the identification of stakeholders to participate in the Work Group and the identification of funds to support the effort. Currently the Work Group consists of agency representatives and representative from California Urban Water Agencies (CUWA) and Sacramento Regional County Sanitation District (SRCSD). An effort is underway to identify stakeholders from the agricultural and urban runoff communities to participate in the Work Group. Other stakeholder groups may be identified in the future.

A critical element of program management is to identify and obtain funds to support this effort. The agencies listed above are currently providing some staff time to support the effort and CBDA may be able to provide limited funding. CUWA and SRCSD have agreed to provide start-up funding for 2003.

**Responsible Party** – Work Group and CBDA Program Manager

**Estimated Budget** – $0 (Covered by CBDA and agency budgets of Work Group members.)

**Schedule** – On-going for duration of project.

**Deliverables** –Monthly reports to BDPAC Drinking Water Subcommittee
Identification of potential funding sources

### Task 2. Identify Existing Data

**Scope** - Develop a comprehensive inventory of existing major water quality databases, water quality reports, sanitary surveys, discharger reports, and other information sources on the following categories of constituents:

- Disinfection by-product (DBP) precursors such as total organic carbon (TOC), dissolved organic carbon (DOC) and bromide, and indicators of the potential to form DBPs such as ultraviolet light absorbance ($UVA_{254}$), specific ultraviolet light absorbance (SUVA), and trihalomethane formation potential (THMFP);

- pathogens, including *Giardia lamblia* and *Cryptosporidium parvum* and surrogates such as total coliforms, fecal coliforms, enterococcus and *Escherica coli*;

- dissolved minerals, such as total dissolved solids and chloride;
- nutrients;
- rice pesticides, including those used in the past and the present;
- flow data at selected locations in the watershed to enable loading estimates.

One of the initial steps in this task will be to meet with modeling experts to determine if there are "signature constituents" that should be included. The focus will be on data collected downstream of the major dams on the Sacramento and San Joaquin rivers and their tributaries. As an initial step, develop a matrix showing agencies or groups performing monitoring, time period covered, monitoring locations, constituents, and frequency of monitoring. Also, summarize the metadata for each of the identified monitoring programs, describing sampling and analytical methods, detection limits, and other important data quality characteristics. Develop data quality criteria for use in the determination of suitable, high quality data for the Drinking Water Policy development effort. Prepare a summary report identifying the data sets that are available, those data sets that will be used in this project, and contact information for data managers for each data set.

**Responsible Party** – Consultant under direction of Work Group

**Estimated Budget** – $25,000

**Schedule** – Initiate Task – Feb 2003
Draft Matrix – Apr 2003
Draft Report – May 2003
Final Report – Jul 2003

**Deliverables** – Summary matrix
Report identifying data that are available and may be of use

**Task 3. Develop Conceptual Models and Identify Analytical Tools**

**Scope** –

Task 3a. Develop Preliminary Conceptual Models. For each of the water quality constituents identified in Task 1, develop a preliminary conceptual model of the sources, behavior, fate, transport and effect. Develop a preliminary conceptual model for flow, identifying the major inputs and diversions from the system.

As a first step, a literature search and networking task shall be performed to identify existing conceptual models for these constituents applicable to the Central Valley watershed. One or more conceptual model experts shall be identified for each constituent. Using readily available information from the literature search and Task 1, identify what is known and not known about significant factors affecting each constituent, focusing on baseline ambient data, source loadings and linkages, in-system changes, and effects on beneficial uses. Develop a list of key questions that will have to be answered about each constituent and each significant potential source. Conduct a one-day workshop to critique the conceptual models, discuss information needs, and to reach agreement on the criteria for selection of constituents to be included in the initial drinking water policy. Criteria may include the importance of the constituent to drinking water suppliers, the extent of knowledge on sources, transformations in the system, controllability of sources and ambient levels, whether the constituent is being addressed in another forum (e.g. nutrients), the opportunity to coordinate with other efforts, and the potential effects of the constituent on beneficial uses. Based on the criteria identified in the workshop, develop a priority list of water quality constituents to be included in the drinking water policy. A list of constituents that will not be included in the policy at this time and the rationale for not including them will also be developed. It is anticipated that these constituents may be included in future Basin Plan amendments.

Task 3b. Develop Preliminary Loading Analysis and Identify Analytical Tools. For each of the priority constituents selected for detailed analysis and inclusion in the drinking water policy effort, use available data to quantify mass loads from the key point and non-point sources based on the conceptual models. Determine if there are representative data sets that can be used in these initial loading estimates to represent particular categories of sources (e.g. is Sacramento area urban runoff data representative of runoff in the other urban areas of the Central Valley). Identify key receiving water quality locations that will serve as benchmarks in the loading analysis (e.g. downstream of each major dam, major tributary to the Sacramento and San Joaquin rivers, and major agricultural drains). Identify the best available analytical tools and models that will be used to develop the more detailed loading, transport and effects analysis for each of the priority constituents and determine the data needs for each of the tools. It is anticipated that the

conceptual models and analytical tools will be refined as more data are gathered and assessed. Summarize the results of this task in a technical report.

**Responsible Party** – Consultant with assistance from Work Group and other experts such as the CBDA Drinking Water and Science Programs, United States Geological Survey (USGS), California Department of Water Resources (DWR), and the University of California (UC).

**Estimated Budget** –

Task 3a. - $30,000

Task 3b. - To be determined (include $50,000 allocation which may increase depending on decisions reached on the level of effort to be expended).

**Schedule –**

Task 3a. - Initiate Task – Feb 2003
Workshop – Apr 2003
Draft Report – May 2003
Final Report – Jul 2003

Task 3b - Initiate Task - May 2003
Draft Report – Nov 2003
Final Report – Jan 2004

**Deliverables –**

Task 3a - Report identifying priority constituents.

Task 3b - Report identifying conceptual models and analytical tools.

**Task 4. Develop Database of Key Information for Use in Policy Development**

**Scope** – Based on the clearly defined data needs identified in Task 3b, work with the Regional Board, DWR and other parties to develop a functional and efficient database that will include water quality and flow data and other information on point and non-point sources of drinking water constituents in the Central Valley. The purpose of the database is to provide a tool for performance of loading analyses, source control evaluations, and other analytical work to support development of the Drinking Water Policy. Based on the results of tasks 1 and 2, the water quality constituent data and specific monitoring program data to be included in the regional database will be identified. Existing and historic water quality and flow data for known or suspected point and non-point sources of the pollutants of concern will be evaluated for

suitability for entry into the database. The database shall be maintained and updated as additional data become available (Task 5).

**Responsible Party** – Consultant with assistance from Regional Board and DWR.

**Estimated Budget** – $50,000 (This cost could be low, depending on the data formatting and data entry requirements.)

**Schedule** – Initiate Task – Feb 2003
Existing Data in Database – Jul 2003
All Data in Database – Jul 2005

**Deliverables** – Functional database

**Task 5. Identify Essential Monitoring Needs and Develop Monitoring Program**

**Scope** – The focus for this task is to identify "essential" monitoring activities that can be performed within a short time frame (less than one year). Using the conceptual models, available data, identified data gaps, and the other information identified in Task 2b, identify essential receiving water quality, pollutant sources, pollutant loading, or other data that are needed to significantly reduce uncertainty in the pollutant loading and transport analysis. Develop a proposed monitoring plan, including monitoring locations, constituents to be analyzed, analytical methods, detection limits, number of samples and monitoring frequency. Contact other major monitoring programs (e.g. IEP, DWR, SWAMP, Sacramento River Watershed Program) and determine whether the proposed monitoring can be dove-tailed with one or more existing monitoring programs to achieve efficiency and desired data quality. Document the detailed elements of the proposed monitoring effort in a Quality Assurance Program Plan (QAPP) for the proposed monitoring effort. Implement the monitoring plan in accordance with the provisions of the QAPP.

**Responsible Party** – Consultant with assistance from Drinking Water Policy Work Group and other experts (USGS, DWR, UC, CALFED, Sacramento River Watershed Program, Regional Board)

**Budget and Funding Source** – $50,000 (This cost could be low.)

**Schedule** – Initiate Task – Oct 2003
Draft Report – Jan 2004
Final Report – Mar 2004

**Deliverables** – Proposed Monitoring Plan and QAPP

**Task 6. Conduct Essential Monitoring**

**Scope** - Implement the monitoring program identified in Task 4. Work includes the development of contracts with groups or contractors to perform the sampling and analytical work, coordination of the work with other programs, management of the monitoring activities, data quality evaluations, data transfer into the data base, data analysis and report preparation.

**Responsible Party** – Work Group will determine after completion of Task 5. Depends upon ability to work with existing programs.

**Estimated Budget** – Unknown until Task 5 is completed.

**Schedule** – Initiate Task – Feb 2004
Complete Monitoring – Apr 2005

**Deliverables** – Essential Data

**Task 7. Identify Range of Potential Water Quality Goals and Policy Elements**

**Scope** – For each of the selected priority constituents, review and summarize existing Basin Plan water quality objectives and policies established for MUN or other beneficial uses. Conduct interviews with drinking water suppliers who treat water from the Sacramento and San Joaquin rivers and the Delta and determine desired source water quality goals and the basis for those goals. Conduct a literature review to determine if receiving water standards aimed at drinking water protection have been established in other states or countries and to document the basis for each of those established standards. Review and evaluate the U.S. Environmental Protection Agency's work on water quality criteria for drinking water constituents based on public health protection needs and health effects information under the Clean Water Act and the Safe Drinking Water Act. Based on these sources of information, develop a range of potential water quality goals and policy elements with supporting documentation and an assessment for each of the priority constituents. The assessment of potential goals and policies shall include consideration of risk at the point of use and consideration of other beneficial uses (e.g. aquatic life uses). The range of potential goals and associated documentation and assessments shall be summarized in a technical report. Organize and conduct an expert peer review workshop to review the content of the report and to discuss the risk-based and legal considerations that should go into the selection of appropriate drinking water quality goals and enforceable drinking water quality objectives for the priority constituents in the Central Valley. Summarize the results of the workshop in a revised draft technical report. Obtain comments on the revised draft report from the expert peer review group and interested parties and prepare a response to those comments. Finalize the workshop technical report.

**Responsible Party** – Consultant under direction of Work Group

**Budget and Funding Source** - $75,000

**Schedule** – Initiate Task – Feb 2003
Draft Goals Report– May 2003
Expert Peer Review Workshop - Jun 2003
Revised Draft Goals Report - Jul 2003
Final Goals Report– Sep 2003

**Deliverables** – Draft and final reports identifying goals and supporting data.

### Task 8. Conduct Refined Pollutant Load Evaluation

**Scope** – Using the tools identified in Task 3 and the data obtained from Task 6, refine the estimate of pollutant loads of each priority constituent from each of the major sources in the Basin. As a first step, prepare refined versions of the conceptual models using data collected in Task 6. On the basis of the conceptual models and available data, select analytical model(s) for use in the assessment of the fate of pollutants after discharge. Use the selected model(s) to identify relationships between discharged contaminant levels and ambient receiving water concentrations over a range of seasonal and annual flow conditions. Based on this analysis, identify the major point and non-point pollutant sources within the region that could potentially be managed to achieve ambient water quality goals identified in Task 7. Prepare a draft report describing the data and analytical model(s) used in the analysis and the major findings of the analysis. Submit the draft report to the Drinking Water Policy Work Group for review and comment. Prepare a final report that contains a detailed response to comments received on the draft report.

**Responsible Party** – Consultant under direction of Work Group

**Budget and Funding Source** – $100,000

**Schedule** – Initiate Task – Jun 2005
Draft Report – Dec 2005
Final Report – Feb 2006

**Deliverables** – Draft and final reports identifying point and non-point sources of concern.

### Task 9. Identify Potential Control Alternatives

**Scope** - For each priority constituent, identify available control strategies (influent or effluent treatment, receiving water management, land use controls, containment or diversion strategies, regional water management actions, or other potential control strategies) for reducing constituent discharges or controlling constituents within receiving waters, or controlling constituents at water treatment plants. The focus shall be on control strategies which (1) apply to the most significant sources with the greatest impact on ambient conditions and/or (2) are cost-effective. Conduct outreach and conduct facilitated workshops with potentially affected parties within the Central Valley to receive input on the costs, benefits and viability of identified control

alternatives. Establish a stakeholder working group to develop a report of viable control strategies and associated feedback as an outcome of this data collection effort.

**Responsible Party** – Consultant under direction of Work Group

**Budget and Funding Source** – $100,000

**Schedule** – Initiate Task – Jan 2006
Draft Report – Apr 2006
Final Report – Jun 2006

**Deliverables** – Report identifying viable alternatives.

### Task 10. Evaluate Potential Control Strategies

**Scope** – Prepare a screening level estimate of the amount of pollutant load reduction projected to be achieved from each viable control strategy identified in Task 9. Estimate the costs and benefits associated with implementing the various viable strategies. Use this information to reduce the list of alternative strategies to those that have the greatest load reduction benefit or are otherwise cost-effective. Assess and compare individual and combinations of these remaining strategies to determine which are (1) consistent with state and federal water quality policies, and (2) projected to lead to cost-effective regional compliance with various potential water quality goals and policies. Prepare a draft report which summarizes the methodology and outcomes from this analysis. Submit the draft report to the Work Group and the Stakeholder Working Group for review and comment. Prepare a final report that includes a response to comments on the draft report.

**Responsible Party** – Consultant under direction of Work Group

**Budget and Funding Source** –$100,000

**Schedule** – Start Date – May 2006
Draft Report – Oct 2006
Final Report – Dec 2006

**Deliverables** – Draft and final reports summarizing costs and benefits of alternatives and impacts on water quality objectives.

## POLICY ANALYSIS TO SUPPORT DEVELOPMENT OF DRINKING WATER POLICY

The Basin Plan amendment process must be performed in concert with the requirements of Section 13241 of the Water Code. Water quality objectives must be adopted in accordance with the specific provisions of Section 13241. Additionally, the overall policy must provide reasonable protection of drinking water and other beneficial uses.

Policy development shall be consistent with the themes and concepts contained in the Drinking Water Quality Strategic Plan that the BDPAC Drinking Water Subcommittee is developing and the CALFED ROD. In particular, the ROD noted that it might not be practical to achieve specific numeric limits in the Delta. The development of this policy will focus on an approach that is the most effective in achieving stakeholder support for a plan for water quality improvement in the Bay-Delta system.

**Task 1P. Select Proposed Numerical Objectives and Control Strategies**

**Scope** – Use the information developed in prior tasks in the development of the policy. Determine proposed new numerical or narrative receiving water quality goals or objectives necessary to maintain and enhance existing and proposed beneficial uses. Develop a draft Policy and Implementation Plan which identifies the reasonable and appropriate control strategies (consistent with State and federal water quality policies) required to achieve compliance with the proposed water quality goals or objectives.

Federal law requires treatment of surface waters prior to their use as drinking water. Therefore, the work plan includes an assessment of the ability to control sources of key drinking water constituents that are discharged to ambient waters and the ability to remove the constituents in water treatment plants. The feasibility, costs, and risks of both approaches will be evaluated.

**Task 2P. Adopt Drinking Water Policy and Implementation Plan as a Basin Plan Amendment**

**Scope** – Prepare the documentation necessary for the adoption of a Basin Plan amendment that describes the proposed Drinking Water Policy. Complete the Basin Plan amendment process, including notifications, documentation, public participation and public hearing. A description of the Basin Plan amendment process is included in Attachment

**Table 1. Estimated Budget for Drinking Water Policy Tasks**

| Task | Estimated Budget, $ |
|---|---|
| **Technical Tasks** | |
| 1. Program Management | 0 |
| 2. Identify Existing Data | 25,000 |
| 3. Develop Conceptual Models and Identify Tools | |
| 3a. Preliminary Models | 30,000 |
| 3b. Loading Analysis and Tools | 50,000 |
| 4. Develop Regional Database | 50,000 |
| 5. Identify Needs and Develop Monitoring Program | 50,000 |
| 6. Conduct Essential Monitoring | unknown |
| 7. Identify Water Quality Goals | 75,000 |
| 8. Conduct Pollutant Load Evaluation | 100,000 |
| 9. Identify Potential Control Alternatives | 100,000 |
| 10. Evaluate Potential Control Strategies | 100,000 |
| **Policy Tasks** | |
| 1P. Select Numerical Objectives and Control Strategies | |
| 2P. Implement Objectives and Implementation Plan | |

## APPENDIX A

## REGIONAL BOARD BASIN PLAN AMENDMENT PROCESS

1. Develop draft basin plan amendment (BPA) and California Environmental Quality Act (CEQA) Functional Equivalent Document (FED).

   The work conducted under the previous workplan tasks will be used to develop these documents.

   Variable

2. External scientific peer review of BPA and FED.

   60 days

3. Respond to scientific peer review comments in staff report. Revise staff report as necessary.

   14 days (minimum)

4. Distribute staff report and associated documents for public comment.

   This step begins the formal public comment period. During this time, a public hearing must be held to receive additional comments.

   45 days

5. Respond to public comments.

   14 days (minimum)

6. Notice Board Meeting and distribute response to comments.

   45 days (minimum)

7. Board Meeting to consider adoption of amendment.

   If adopted, then the amendment must be approved by the State Water Resources Control Board, the Office of Administrative Law (OAL) and U.S. EPA. If not adopted, then staff could be redirected to revise aspects of abandon the project.

If approved, then:

8. Assemble administrative record.

In practice, assembling the administrative record occurs concurrently with the other steps. The administrative record must be indexed, in chronological order, fully paginated, and include, at a minimum:

- Copies of all hearing notices and notices of filing, signed and dated;
- Draft and final staff report(s) including detailed rationale for any changes between version of the reports;
- The completed CEQA checklist;
- Documentation of peer review, including all correspondence, peer reviewers' comments and staff responses;
- Copies of written public comments and written responses;
- Board Hearing and Meeting agendas;
- Hearing agenda items (summary, draft resolution and amendment, attachments, etc.);
- Copies of all hear4ing exhibits, by staff or the public;
- Direct transcript, or electronic recording and transcription of the elctronic recording of the adoption hearing and any additional Board meetings;
- Typed interested parties lists;
- Copies of all documents that were relied on by the Board in adoption of the amendment. If only a portion of the document is relevant to the case, such as an article in a scientific journal, only the relevant portion, along with the title page, need be included. A document was relied on if you would want it to be available in court to support he amendment;
- The amendment as adopted; and
- The signed resolution.

9. Submit amendment to SWRCB for approval.

- Notice Board workshop and comment period.
  45 days (minimum)
- Board workshop/close comment period.
- Respond to comments
  14 days
- Notice Board hearing and distribute response to comments
  45 days (minimum)
- Board hearing
- If adopted by SWRCB, then the BPA is submitted to OAL for approval.
  ~42 days
- If approved by OAL, then the BPA is submitted to U.S. EPA. This step includes consultation with the U.S. Fish and Wildlife Service or the National Marine Fisheries

Service.
90-135 days