STRATEGIES FOR PHASED IMPLEMENTATION

INTRODUCTION

The objective of CALFED's Water Quality Program is to provide good water quality for all beneficial uses - urban, agricultural, industrial, environmental and recreational. This objective will be carried out by phased implementation of the water quality actions that have been identified to address parameters of concern. Each water quality action has been subdivided into specific objectives that will be part of a long-term adaptive management process to improve water quality. Following initial implementation, the effectiveness of each action will be evaluated and the implementation program for the action will be modified, as necessary, to better achieve the objectives of the CALFED Water Quality Program.

In Phase II, all components of the CALFED Bay-Delta Program are being developed and evaluated at a programmatic level. The complex and comprehensive nature of the Bay-Delta issues requires a ~~response~~ solution that is composed of many different programs, projects, and actions - all of which will be implemented in an integrated approach. This section on phased implementation provides a programmatic overview of the intended approach to implementing the WQPP. Over the estimated 20- to 30-year period during which the majority of the actions will be implemented, the adaptive management process will be employed to refine and refocus actions, when necessary, to better achieve improvements in water quality.

The actions included in the WQPP are the result of a comprehensive process for holder input, advice, review As described earlier, this technical experts, from stakeholder groups, and LFED agencies have played ue to play a major role in valuating program better achieve increases in

concept of a suite of actions - determine which will be implemented

The development of the programmatic set of water quality improvements identified in the WQPP resulted from analyzing which water quality parameters are of concern to beneficial uses of the waters of the Bay-Delta.

RANKING OF WATER QUALITY ELEMENTS AND SETTING IMPLEMENTATION PRIORITIES

The WQPP is structured to provide improved water quality for all beneficial uses in the Bay-Delta system. The impacts of parameters of concern on beneficial uses are many. The proposed methods of achieving the water quality benefits may

impact different stakeholders differently, involve difficult technical or operational decisions, and require the significant expenditure of capital and operating funds. Moreover, many of the actions involve treatment techniques, enforcement measures, and incentives that have not been fully tested in complex estuaries like the Delta.

The WQPP has been developed at the programmatic level of detail - much work remains to identify the specific projects, activities, management actions, and other implementation measures needed to achieve the desired improvements in water quality. During the next phase of the CALFED program, the water quality activities will be further developed, refined, and evaluated before any specific improvement methods are adopted. The four cornerstones of the process that will be used to determine specific water quality strategies and actions include the following:

- Continued stakeholder involvement to ensure that the WQPP focuses on the highest priority water quality activities most affecting beneficial uses of the Bay-Delta
- Additional research concerning the relationship between parameters of concern and beneficial uses
- Further development of strategies, actions, and methods of implementation, so that the items affecting the benefit and cost of an action may be compared to other actions that would achieve similar results
- Monitoring of efforts - following Adaptive Management Principles being employed on all CALFED Program elements

These four cornerstones will be used to develop a phased implementation program that will achieve, in measurable steps, improved water quality for all beneficial uses.

Figure 6 shows the implementation process that will be applied to each of the proposed actions described in the WQPP. The right-hand side of the figure describes the progressive series of evaluations that will be performed on each action before implementation. The left-hand side of the figure diagrams the extensive effort to seek both expert and public input at every step of the process.

The implementation process has been designed to provide a logical and scientifically-supportable basis for the actions while providing stakeholders, public, experts, and regulatory agencies numerous input opportunities. A detailed implementation plan, further defining the steps outlined in the figure, will be prepared early in Phase III.

The WQPP is comprised of many component parts. Included are actions for each of the following:

- Mine Drainage
- Urban and Industrial Runoff
- Wastewater and Industrial Discharge
- Agricultural Drainage and Runoff
- Water Treatment
- Water Management
- Human Health
- Toxicity of Unknown Origin

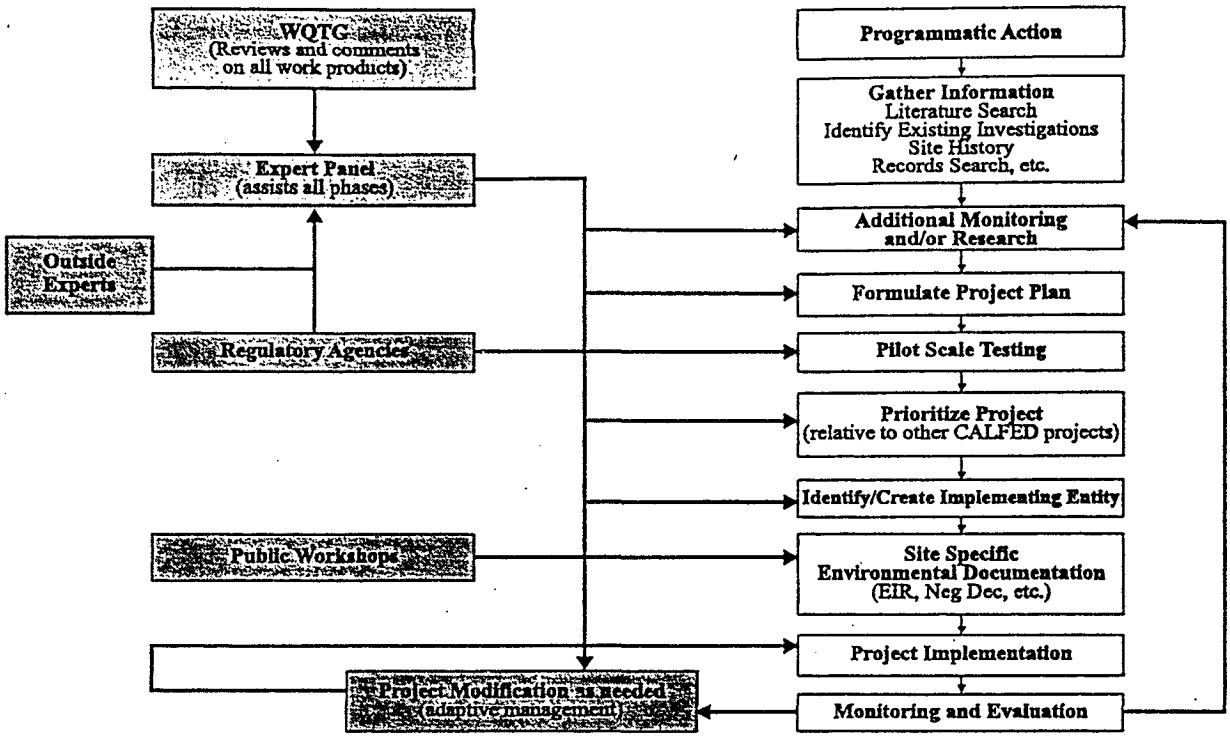

Figure 6. CALFED Water Quality Program Implementation Scheme.

Each action has differing implementation methods, performance targets (quantifiable reductions of parameters of concern), and indicators of success (attainment of water quality objectives). The actions will vary in cost, technical feasibility, and organizational responsibility for implementation and time schedule. Components of the actions will be subjected to pre-feasibility analysis and pilot scale evaluation to determine how best to implement programmatic actions.

MINE DRAINAGE

Two specific mine drainage actions are included in the WQPP. The first action is to reduce toxic effects of metals (principally, cadmium, copper, zinc) contained in waters of the Delta and Sacramento River regions. The principal method for reducing the metal inputs is by source control or treatment of mine drainage at inactive or abandoned mine sites. Actions are targeted at sites on the Upper Sacramento River and its tributaries that are major contributors of metal loadings. Successful implementation will bring the concentration of the parameters into compliance with basin plan objectives. The second action is to reduce the toxic effects of mercury loadings to the Delta, Sacramento and San Joaquin River regions. Mercury levels would be reduced by employing source control and treatment of mine drainage at inactive and abandoned mine sites.

Both actions propose controlling the discharge of the metals from mine sites and/or treating mine drainage waters to prevent metals from entering water bodies. The second action includes the development of applied research programs to better

determine sources, treatment methods and impacts on beneficial uses.

URBAN AND INDUSTRIAL RUNOFF

Urban and industrial runoff improvements will be accomplished under five specific actions. Similar to the mine drainage, the first action is to reduce toxic effects of metal (principally, cadmium, copper, zinc) substances contained in the Delta, Sacramento River, and San Joaquin River regions. The action will be accomplished by enforcement of existing source control regulations and by providing incentives for entities that achieve additional runoff controls.

The second action is to reduce toxicity from pesticides in the Delta, Sacramento River and San Joaquin River regions. Both regulatory and financial incentives will be employed to improve source control measures. The third action is to reduce the effects of nutrient loadings which lead to oxygen depletion in the Delta Region. This condition is especially apparent in the Stockton area. Proposed implementation methods include enforcement of source control regulations and provision of best management practices to further reduce runoff.

Reduction of the amount of sediments discharged to the Delta and Sacrament River regions is the subject of the fourth action. This action will be accomplished by better enforcement of the existing runoff controls at construction sites and education of construction personnel.

The fifth action is to evaluate loadings of TOC, salinity and pathogens to determine the need for source control. This action will be accomplished by monitoring stormwater and dry season runoff as part of CMARP, and evaluating the relative loading of these parameters in urban runoff, wastewater discharges and agricultural drainage discharges. Appropriate actions will be developed to reduce TOC, salinity and pathogen loads to the Delta and its tributaries.

WASTEWATER AND INDUSTRIAL DISCHARGE

Methods to reduce the effects of wastewater and industrial discharge on beneficial uses involve combinations of actions which include: source control, enforcement measures, incentives and technological advances. To protect the beneficial uses of the Bay-Delta system, specific actions are proposed.

Boat discharges will be controlled to reduce the impact of domestic wastes on drinking water, environmental, and recreational beneficial uses within the Delta Region.

Source control and improved treatment techniques will be applied to waste discharges to the Delta Region that contain oxygen depleting substances (focus will be placed on discharges to the lower San Joaquin River).

The toxic impacts of selenium discharges will be reduced by applying source control and treatment techniques to targeted industrial

discharges impacting Suisun Bay and Carquinez Strait areas.

Improved treatment techniques will be instituted to reduce the effects of ammonia entering the Delta.

AGRICULTURAL DRAINAGE AND RUNOFF

Agricultural drainage and runoff can affect the Bay-Delta system due to agricultural operations on upstream lands and farming practices within the Delta. Agricultural drainage actions are focused on reducing th toxic effects of those actions. Specific actions include the following:

- Reducing selenium loadings to the San Joaquin River Region and Delta Region
- Lowering salinity levels in the Delta Region due to agricultural practices in the San Joaquin River Region
- Reducing pesticide-caused toxicity in the Delta Region
- Lowering agriculture-caused elevated levels of sediment discharges
- Controlling the high TOC discharges from Delta islands
- Reducing toxicity by lowering nutrients and ammonia levels in agricultural drainage water
- Minimizing pathogen loads entering the Delta Region by controlling discharges from confined animal facilities or rangelands

why the change in format from sentences to bullets? The sentence format adds more detail + understanding for the reader. No discussion of methods.

WATER TREATMENT

Improving the quality of drinking water provided to the 20 million people who rely on the Delta as a source of all, or part, of their drinking water supply requires two major actions:

- Application of state-of-the-art treatment techniques to Delta waters and
- [illegible] and operating domestic water takes to reduce the effect of s in Delta water quality.

ER MANAGEMENT

anagement strategy involves luce the effect of salinity on es of the system. Two actions :

- Reducing the salinity concentration entering the Delta using water management techniques; and

- Reducing the effects of elevated salinity levels on beneficial uses of water in the South Delta.

HUMAN HEALTH

Human health concerns due to consumption of fish and shellfish containing elevated levels of DDT, chlordane, toxaphene, mercury, PCBs and their derivatives will be reduced through enforcement of existing source control regulations, incentives for additional source control and cooperative efforts between the Department of Public Health, Office of Environmental Health Hazard Assessment, and Department of Fish and Game.

TOXICITY OF UNKNOWN ORIGIN

This strategy continues efforts to identify and find solutions to Delta, Sacramento River and San Joaquin River regions toxicity events (affecting aquatic organisms) that cannot be attributed to other causes.