Year 2000 and 2001 Priority Actions

Veale Tract Drain Relocation - 6

1. General Description of the Action

Study environmental impacts of relocating Veale Tract agricultural drains and contribute to relocation costs.

The goal is to minimize impacts of surrounding agricultural land on the drinking water intake of CCWD and biological resources.

The Rock Slough intake to the Contra Costa Canal is located in the west-central Delta in the vicinity of Knightsen in eastern Contra Costa County. The land surrounding Rock Slough is primarily agricultural. The few residences scattered in the vicinity of the intake are ancillary to agricultural operations. Water levels in Rock Slough are subject to tidal variations, and a typical daily variation is about 3.5 feet. Peaks in Rock Slough salinity are typically caused by seawater intrusion from the San Francisco Bay during periods of low Delta outflow (typically, summer and fall), or by agricultural drainage discharges from the Delta and San Joaquin River during leaching and heavy storms (typically during winters of normal and wet years).

A number of agricultural drainages discharge into Rock Slough and Contra Costa Canal. Veale Tract, an area of approximately 1,100 acres, is the largest single land area draining to Rock Slough. Drainage from Veale Tract has been suspected to be the major cause of salinity increases at the District's intake during wet winters. For example, chloride at Pumping Plant No.1 was over 100 mg/L in February and March of 1996 when the chloride level at the junction of Old River and Rock Slough was under 50 mg/L. Agricultural drainage during wet winters can lead to significant increases in the concentrations of dissolved solids, total organic carbon (TOC) and, possibly, pathogens in CCWD's drinking water supply from Rock Slough and at other urban drinking water intakes in the Delta.

2. Cost Estimates

Mobilization costs, staff costs, and laboratory costs to perform sampling and generate a conclusive summary of existing conditions and feasibility of treatment of relocation to alternative locations will cost approximately $1.0 million, which is to be expended in FY 2000. Contribution to the approximately $ 4.0 million relocation project would need to be decided.

CALFED staff would be involved in program development and the results of the study. This should be of limited time, approximately one month of staff time for FY 2000.

3. Program Administration and Governance

The CALFED Water Quality Program should oversee the scope of the project. DWR should

oversee evaluation of existing conditions and alternative impacts. The US Bureau of Reclamation should be the federal contract authority if necessary.

4. Program Coordination

Detailed monitoring is already being carried out by the Department of Water Resources (DWR), the Bureau of Reclamation (Bureau), and CCWD at several locations along Rock Slough and Contra Costa Canal. Sampled parameters include EC, chlorides, metals, pesticides, pathogens, and other constituents as part of the D1485 compliance monitoring and the Municipal Water Quality Investigation Program. However, a lack of simultaneous measurements along the length of the two channels does not allow the source(s) of degradation to be identified conclusively. CCWD would be the CEQA lead agency for preparation of the EIR.

5. Schedule

To pinpoint and quantify the sources of salt and other contaminants into Rock Slough and the Canal, simultaneous measurements along a number of locations (up to twelve) between CCWD Pumping Plant No. 1 and the junction with Old River are planned for the late fall/winter of 1999-2000.

Sampling alternative drain locations will be done at various times throughout the characterization process.

Year 2000 and 2001 Priority Actions

Low Dissolved Oxygen in the San Joaquin River near Stockton - 9

1. General Description of the Action

Identify oxygen depleting sources in the lower San Joaquin River and South Delta and compile initial strategy on corrective measures needed prior to development and implementation of BMPs.

Dissolved oxygen concentrations have decreased to below the 5 mg/l standard between June and November in the San Joaquin River near Stockton. The main channel near Stockton has been identified as a candidate Bay Protection and Toxic Cleanup Program hot spot. It appears that low dissolved oxygen concentration occurs over a ten-mile reach of the San Joaquin River and can reach as low as 2.5 mg/l in the fall. Oxygen depletion in the San Joaquin River is highest in the late summer and fall when high water temperature reduces the oxygen carrying capacity of the water and increases biotic respiration rates. Low or negative streamflow past Stockton reduce dilution and mixing, and respiration from algal blooms is high.

These low dissolved oxygen concentrations may act as a barrier to upstream migration of adult San Joaquin fall-run Chinook salmon that migrate upstream to spawn in the Merced, Tuolumne and Stanislaus Rivers between September and December. The San Joaquin population of Chinook salmon has declined, is considered a "species of concern" by US Fish and Wildlife Service and is a candidate for listing by National Marine and Fisheries Service. Low dissolved oxygen concentrations can also stress, kill or block migration of other fish. Our goal is to eliminate this impact on aquatic organisms.

Organic carbon or nutrients from algal blooms, petroleum products, wastewater effluent, urban runoff or confined animal operations and redox reactions may all contribute to the oxygen depletion in the River. In addition, San Joaquin River tributaries add oxygen-depleted water after storm water runoff events.

2. Cost Estimates

One year of sampling and analysis would cost about $1 million. Some cost sharing may be available that could decrease the CALFED portion to about $500,000.

Initiating corrective activities and continued monitoring would cost about $1.0 million each year for about 5 years. After the initial 5 years, much of the worst problems should be corrected and the municipality and the state should have ordinances and laws in place to implement final stages of correction.

Some CALFED participation in the scope of study and the implementation methods is warranted. About one month of work for CALFED staff would be necessary over the term of the first year.

3. Program Administration and Governance

The CALFED Water Quality Program should oversee the scope of the project. A stakeholder process has begun to develop process by which the problems are identified and solved. CALFED and DWR participate in the stakeholder process. DWR should oversee contracting, and sampling.

4. Program Coordination

The Department of Water Resources could perform much of the sampling in coordination with other agencies such as the Regional Water Quality Control Board and the City of Stockton. The private entity, the Delta Keeper has also, at times, participated in DO sampling. Contracting should be done by DWR and any additional help needed for the sampling should be recruited by DWR.

5. Schedule

Source identification can start as soon as possible. The Low DO conditions of concern are manifest during the months of June through November. Sampling needs to be done during this time. Provided funding is secured, sampling can be started in October and November 1999 and continue into the winter. Results of this sampling can be interpreted and new sampling plans initiated in June 2000.

Year 2000 and 2001 Priority Actions

Selinium Integrated Farm Management - 10

1. General Description of the Action

Among the most promising or popular methods for selenium control, two stand out; Integrated farm management of selenium and salinity, and modified irrigation practices coupled with real-time management. Our goal is to eliminate adverse selenium effects on fish and wildlife while preserving farming in the Grasslands area. These activities are our first steps.

Selenium is a naturally occurring salt in the western hills of the San Joaquin Valley. Selenium is a reproductive toxin at moderate concentrations and is an essential mineral in lower concentrations.

Selenium is leached from the soil in the Grasslands area because of salt build up and normal irrigation practices. There are several control techniques for selenium in the agricultural drain water. Most have good value in the short term and a few have good sustainable operating levels. Many are combined to form Integrated farm management of selenium.

Another method to control selenium concentrations is through assimilative capacity of the river. Two sloughs in the Grasslands area contribute the majority of selenium to the San Joaquin River. The theory here is to avoid exceeding a in-stream ambient water quality standard for selenium, while still allowing some discharge of selenium laden water. This discharge technique is called real-time management of selenium.

It is thought that there is no one perfect solution to the selenium issue and that several corrective measures will have to be employed to solve the situation.

Selenium reduction is being proposed to benefit the Bay-Delta ecosystem.

2. Cost Estimates

This large scale project will cost about $0.5 million for changes in operation and initiating use of Integrated farm irrigation and drain control techniques in the first year. Subsequent years may have similar costs for further testing or higher costs for basin wide implementation. Full scale implementation costs could be shared by affected parties and other interested groups.

About two months of staff time should be dedicated to program development and synthesis of the results into the water quality program actions. The results of studies like these will dictate the future of selenium control in the Central Valley.

3. Program Administration and Governance

The CALFED Water Quality Program should oversee the scope of the project and preparation of the final reports. DWR or the US Bureau of Reclamation should be the contract agency.

4. Program Coordination

The Department of Water Resources, Department of Food and Agriculture, US Bureau of Reclamation, and US Geological Survey have staff that have worked on each of these programs. DWR has agricultural engineers in the San Joaquin District that have worked on test plots of the Integrated farm management methods, contracts should be let through this office. (Vashek Cervinka, Nigel Quinn)

The Department of Water Resources' Bryte Chemical Laboratories could provide necessary laboratory testing.

The Grasslands Bypass project headed up by California Resources Agency and The Department of the Interior deals with selenium issues in the area and will be consulted as necessary during the studies. The goals of each agency's projects are to reduce selenium loading, CALFED agrees with that goal.

5. Schedule

Selection of a large test section could be accomplished by late summer 1999. Implementation of changes could be accomplished during the early fall months and the official change of operation happens during the next growing season. Since there are gradual changes using this method, the operational changes must remain in place for several years.

Year 2000 and 2001 Priority Actions

Non-Seawater Sources of Bromide - 11

1. General Description of the Action

CALFED needs to conduct an evaluation of the importance of non-ocean sources of bromide in the Delta system and estimate the potential of Water Quality actions to reduce bromide. A primary objective of this evaluation is to identify priority actions for the first stage of program implementation.

The goal is to determine the potential for limiting non-ocean sources of bromide and the potential to attain drinking water standards for brominated disinfection byproducts based on these anticipated reductions.

Bromide is present is sea water. An important mechanism for bromide entry into Delta drinking water supplies is through mixing with waters of San Francisco Bay and the Pacific Ocean. However, other sources of bromide may exist, and CALFED needs to evaluate these sources and to institute corrective actions where feasible to reduce their contributions. Organic carbon can be reduced through treatment, either at the source or at drinking water treatment facilities.

Drinking water purveyors will benefit from this study in so far as bromide reductions can be made. Ecosystem proponents will benefit from this study by providing mechanisms to reduce bromide in the south delta without using additional water from other sources.

2. Cost Estimates

Approximately $0.5 million dollars are needed each year for the study. Cost sharing might be possible through the MWQI program if funds are available.

CALFED staff requirements would amount to one staff person for about 6 months per year to analyze data and review various records from other agencies, and review studies regarding potential bromine contributors. Limited supervisory time is necessary for review of staff persons work. The remainder of the funds would be spent on sampling and analysis of samples.

3. Program Administration and Governance

The CALFED Water Quality Program should oversee the coordination of agencies and approval of funds spent. Contracts for sampling should be let through the Department of Water Resources. CALFED staff will complete the technical evaluation of the data. An alternate federal contract authority could be the US Bureau of Reclamation or USGS.

4. Program Coordination

This program involves sampling not currently performed and integration of historical data from several sources. The Department of Water Resources or the Regional Water Board would be able to do the sampling.

No other agencies are looking at this aspect of disinfection byproduct precursors. The Municipal Water Quality Program of DWR could contribute to this study, provided funds are made available.

5. Schedule

CALFED staff has already assembled some of the existing data on bromide in the Delta. Additional sampling and further study could be initialized immediately upon receipt of funding. The initial study would continue for a calendar year and be complete after evaluation of the data.

Year 2000 and 2001 Priority Actions

Barker Slough Watershed Restoration - 25

1. General Description of the Action

Implement a watershed management program within the Barker Slough watershed to eliminate to need to curtail deliveries from the North Bay Aqueduct because of elevated TOC leading to disinfection byproducts. This would lead to better health protection for the population receiving water and a more reliable quantity of water.

Solano County Water Agency and the other NBA contractors requested and received $580,000 from the SWRCB, Proposition 204 funding for the development of a watershed management program to address the drinking water contaminants in the Barker Slough watershed. These contaminants include TOC, pathogens and nutrients, and cattle control near the Barker Slough intake. A Watershed Stakeholders Group was formed to advise the NBA contractors on all aspects of the watershed management program. The tasks included identifying areas that have the greatest impact on raw water quality and designing best management practices (BMPs) that could potentially improve the quality of runoff water and the quality of water in Barker Slough at the pumping plant.

The most suitable BMPs, including both structural and non-structural, will be evaluated in pilot studies. The effectiveness of the BMPs will be ascertained through water quality monitoring. Several property owners have expressed an interest in working with the NBA contractors to study various methods of improving water quality and several site visits have been conducted. A watershed management plan will be cooperatively developed based on the evaluation of BMPs in the pilot study.

2. Cost Estimates

Some selected implementation for the 2000 can be accomplished for be about $800,000. Subsequent implementation would cost about the same each year for 5 - 10 years.

CALFED staff involvement would be limited in this program. However, CALFED staff should examine the BMPs developed through this program for possible implementation elsewhere in the Delta and through the State Water Project. Participating in the program combined with compiling these BMPs for more general distribution could take a month or two of staff time.

3. Program Administration and Governance

The CALFED Water Quality Program should oversee the scope of the early implementation. DWR should oversee contracting and funding. The USDA Natural Resource Conservation Service could be the contract administrator in lieu of DWR if necessary.

4. Program Coordination

The Department of Water Resources could coordinate the contracting and funding of different implementation aspects of the BMPs.

5. Schedule

The funding for BMP development has been let and BMPs should be forthcoming. Implementation of the BMPs in large pilot scale and watershed implementation should begin in the spring of 2000. Further implementation will continue over the next 5-10 years, depending on success of the program.

Year 2000 and 2001 Priority Actions

Drinking Water Assessments - 36

1. General Description of the Action

Assess sources and magnitudes of loadings of constituents of concern for drinking water and evaluate potential for correction.

Total Organic Carbon (TOC) is a water quality constituent that is a precursor to disinfection byproducts which are human health hazards. TOC originates from many sources including vegetation in natural channels, algae, decomposing peat soils, agricultural drain material, and treated sewage effluent. These sources and more are present in the Delta. The relative contributions of each source to the TOC levels in export pumps is not well understood.

Nutrients in the delta contribute to algae production which produces more TOC upon degradation.

High salinity in drinking water reduces the utility of the water to be recycled. The origin of the salt in the export pumps is largely attributed to the ocean. Full assessment of the methods salt is introduced and reduction of salinity are warranted.

Pathogens originate from sewage treatment plants, water craft, confined animal facilities, and urban stormwater. Determining relative contributions and implementing programs to reduce pathogen loading are warranted.

Bromide is a salt constituent that commonly originates in ocean waters that intrude on the delta. Sea water is picked up at the diversion pumps in the south delta and delivered to the San Joaquin Valley. Other sources of bromide may also contribute to south delta diversions. Sources of bromide and control options are proposed to be studied.

Both water users and ecosystem would benefit from control of bromide.

2. Cost Estimates

Monitoring studies would begin in some critical areas at a cost of about $0.5 million for the first year. As different issues are studied in greater depth, the budget should be increased to $1 million per year for a several years.

CALFED Staff for about 1/2 time would be needed to oversee priorities in studies of different areas. Additional CALFED time may be used if modeling is needed.

3. Program Administration and Governance

The CALFED Water Quality Program should oversee the priorities of individual studies and

coordination study efforts. The Water Quality stakeholder group (the Water Quality Technical Group) would be given access to results of the studies and would have input on priority criteria.

Study contracting services should go to DWR or to USGS.

4. Program Coordination

The Department of Water Resources has the research staff to conduct or contract for studies and other pilot scale projects. USGS also has scientists for studies and appropriate contract offices.

The Department of Water Resources staff and it's Bryte Chemical Laboratories could provide staff and services for sampling and analysis.

5. Schedule

Assessment structure should be designed by mid to late 1999 and studies based on priority structure could begin by January 2000.

Year 2000 and 2001 Priority Actions

Sacramento River Mercury Source ID and Control/Remediation Study - 50

1. General Description of the Action

Identify and control sources of mercury in the Sacramento River Watershed upstream of the Delta.

Mercury contamination of fish in the San Francisco Bay Delta estuary constitutes a health threat to humans. Mercury is a conservative neurotoxin that bioconcentrates through the food web. Some forms of non-bioavailable mercury is deposited in wetlands where it is converted to a bioavailable form. More or restored shallow water habitat could possibly enhance the rate at which mercury is taken up into the food web.

Mercury source control studies are being funded through the Ecosystem Restoration Program (to be let in 1999 at the $3.7 million level). An additional $3.0 million is needed to conduct early remedial activities on mercury sources that contribute to mercury in the food web of the delta.

Waste mercury, used in gold mining operations, continues to flow down tributaries to the Sacramento River, contributing to the mercury contamination problem in the delta. Industrial and municipal sources of mercury must also be studied.

This action would benefit the Bay-Delta ecosystem by reducing mercury available for fish.

2. Cost Estimates

Approximately $300,000 is needed the first year as existing data is reviewed and further study areas are identified. About $800,000 dollars could be spent each subsequent year in monitoring and remediation. Monitoring of selected mercury species should be continue for several years. These activities should be coordinated with current mercury projects funded by CALFED Category 3.

CALFED Staff costs will be for a person on a 1/4 to 1/2 time basis to oversee and participate in study design and evaluation. Much of the rest of the staff requirements will be with the Regional Water Quality Control Board, which has indicated their support.

3. Program Administration and Governance

The CALFED Water Quality Program should oversee the coordination of agencies and approval of funds spent. Contracts for work should be let through the Regional Water Quality Control Board, Central Valley Region or the US Geological Survey for the study portions.

4. Program Coordination

The State and Regional Water Boards could provide scientists to assist in stream assessment within the watershed. The Regional Board has been active with the Sacramento River Watershed Group and the Sacramento River Monitoring Program, both of which are stakeholder groups that have looked at the impacts of mercury and mercury remediation within the watershed.

The USGS has scientists that have worked on mercury issues in this and other regions.

5. Schedule

There currently exist many parcels of data that need to be analyzed to identify potential sources. Data analysis could begin in the fall of 1999. Sampling data could begin during spring runoff, the suspected largest contributor to mercury loading in the Sacramento River. As new data is analyzed, sources of mercury may be found.

If gold abandoned gold mines are found to be remedial cost effective source of mercury, the mines could be cleaned up. Partial mine remediation could encumber the State to fully remediate an abandoned mine as though the State owned it. While State Law allows a State Agency to provide corrective work on a mine site, the Federal Government has no such provision. Mine remediation should be done with a minimum of a signed "hold harmless" agreement or with Federal Environmental Good Samaritan protection.

Year 2000 and 2001 Priority Actions

Urban Pesticides BMP Development and Implementation Actions - 58 & 59

1. General Description of the Action

Diazinon and Chlorpyrifos are organophosphate pesticides that are used widely by pesticide applicators and home owners. These pesticides are popular because limit impacts to non-target organisms. Particularly, they are safe for human use and they do not kill birds or most of the insects on which they subsist. Central Valley rivers and urban creeks demonstrating toxicity associated with these pesticides after moderate rainfall. Programs are needed to eliminate toxicity in the receiving waters.

Best Management Practices (BMPs) are currently being developed for other uses of diazinon and chlorpyrifos. Additionally the Urban Pesticide Committee (UPC), an ad hoc committee of state and local agencies, has been working on toxicity issues associated with urban pesticides and has developed some conceptual models to address BMPs.

Implementation of BMPs would require surveys and publicity campaigns.

2. Cost Estimates

Development of BMPs would require about $400,000 to complete the process started by the UPC and test certain aspects of what was found.

Implementation of the BMPs with complete media and public educational components would cost about $1.6 million. Implementation and monitoring would drop to about $0.8 million in subsequent years, for a period of about 3-5 years.

Some local programs would probably be willing to contribute to the development of BMPs. The manufacturers of the chemicals would also contribute if funds are available.

3. Program Administration and Governance

The CALFED Water Quality Program should oversee the coordination of BMP development through a stakeholder process involving manufacturers, users, environmental groups, and state and local agencies. Contracts for work should be let through the Regional Water Quality Control Board, Central Valley Region.

4. Program Coordination

The Department of Pesticide Regulation needs to be involved because, ultimately, the BMP's are further descriptions of labeled use.

The Regional Water Board could assist in implementation of BMPs. Local agencies such as Sacramento County, City of Sacramento, City of Stockton, and San Joaquin County will share in the local implementation of the new BMPs. These agencies will also continue testing for the indicated pesticides and will conduct toxicity monitoring.

This is not a specific function of any other agency. However, the results of this exercise should be given to municipalities for implementation in urban stormwater programs. Every effort will be made to leverage funds spent on this proposal by participating with groups like the UPC.

5. Schedule

Initial BMPs could be developed in a few short months. Initial implementation of the BMPs would take about 5 months after BMP development. Actual results from implementation would vary depending on the BMPs and public acceptance. Monitoring to determine effectiveness would be over a three to five year span.

Year 2000 and 2001 Priority Actions

Cache Creek/Delta Mercury Source Control Projects - 21

1. General Description of the Action

Divert stormwater around mercury waste sites to preclude stormwater contribution from mercury mines to the Bay-Delta and the food web.

Mercury contamination of fish in the San Francisco Bay Delta estuary constitutes a health threat to humans. Mercury is a conservative neurotoxin that bioconcentrates through the food web. Some forms of non-bioavailable mercury is deposited in wetlands where it is converted to a bioavailable form. More or restored shallow water habitat could possibly enhance the rate at which mercury is taken up into the food web.

Mercury source control studies are being funded through the Category 3 - Ecosystem Restoration Program (to be let in 1999 at the $3.7 million level). An additional $3.0 million is needed to conduct early remedial activities on mercury sources that contribute to mercury in the food web of the delta.

Mercury removal is proposed to benefit the ecosystem and public health.

2. Cost Estimates

Approximately $3 million dollars is needed the first year. Two million dollars could be spent each year after that for 3 additional years. Full remedial activities should begin after 3 years, provided data is conclusive. Continued monitoring of selected mercury species should continue for several years. These activities should be coordinated with current mercury projects funded by CALFED Category 3.

CALFED Staff costs will be for a person on a 1/4 to 1/2 time basis to oversee and participate in remedial design and evaluation. Much of the rest of the staff requirements will be at the Department of Conservation, which has indicated their support. Some staff time would be from the Regional Water Board, we anticipate no trouble in getting a commitment from the Board.

3. Program Administration and Governance

The CALFED Water Quality Program should oversee the coordination of agencies and approval of funds spent. Contracts for work should be let through the Department of Conservation or the Regional Water Quality Control Board, Central Valley Region. Alternatively, the USDA Natural Resource Conservation Service should be the contract administrator in lieu of a state agency.

4. Program Coordination

The Department of Conservation has a Mine Reclamation unit that coordinates with owners on sites that could be reclaimed using low cost techniques. Conservation also has mapped much of the area to be used for site characterization.

The State and Regional Water Boards will provide scientists to assist in site characterization both before and after remediation.

The University of California Davis has scientists that have already worked on remedial plans for some of these mines.

5. Schedule

Some mine sites could be worked on immediately. Other sites may need a few months of reconnaissance to better determine the best methods of correction. All work can begin in mid to late 1999 and continue through 2000. Additional funding could be used to work on less critical sites over the next few years. Once preliminary remediation is complete, studies funded by Category 3 will be complete to direct the most cost efficient remediation for the future.

Mine remediation could encumber the State to remediate an abandoned mine as though the State owned it. While State Law allows a State Agency to provide corrective work on a mine site, the Federal Government has no such provision. Mine remediation should be done with a minimum of a signed "hold harmless" agreement or with Federal Environmental Good Samaritan protection.

Year 2000 and 2001 Priority Actions

Clear Lake Upper Watershed Mercury Remediation Actions - 22

1. General Description of the Action

Divert Storm water around waste rock piles and retort area and revegetate impacted areas to reduce mercury loading to the lake and reduce the health threat to the Elem tribe.

Mercury contamination of fish in Clear Lake constitutes a health threat to humans. Mercury is a conservative neurotoxin that bioconcentrates through the food web. There is a mercury mine that continues to contribute mercury to Clear Lake. The Sulfur Bank Mine is in need of reclamation to reduce its effect on Clear Lake and to reduce the health impacts it has on a Elem Indian tribe adjacent to the abandoned mine.

Waste rock piles emit some mercury through the air which is eventually deposited and later carried away by stormwater. The mercury laden dust impacts the Elem Reservation adjacent the mine. Reclamation of waste rock piles would reduce the impacts from the piles.

The mine continues to contribute mercury in the lake whenever it rains through surface water run-on and run-off of the waste piles. If stormwater could be diverted to preclude stormwater from running through the waste site, a portion of the mercury could be eliminated from entering the delta.

Mercury removal is proposed to benefit the ecosystem and public health.

2. Cost Estimates

Although many millions of dollars can be spent on these activities, a cap of **one million dollars** per year for early remediation is recommended to reduce the risk to the Elem population. Funding for this project would cease after Surperfund work begins.

Limited CALFED staff involvement would be necessary. CALFED staff would attend remediation meetings as a stakeholder. Most of what needs to be done has been discussed by a stakeholder group.

3. Program Administration and Governance

The CALFED Water Quality Program should oversee the coordination of agencies and approval of funds spent. Contracts for work should be let through the Regional Water Quality Control Board, Central Valley Region. The USDA Natural Resource Conservation Service should be a Federal agency that could let contracts in lieu of a State Agency.

4. Program Coordination

The Department of Conservation has a Mine Reclamation unit that coordinates with owners and could provide some expertise in reclamation of the waste rock piles.

The Regional Water Board or the Department of Water Resources could design and implement a stormwater diversion system.

These activities or similar activities will take place at the site sometime in the future through the US EPA. Exact activities and approximate dates are not yet available. The EPA has been through a few iterations of this remedial process over the last ten years.

CALFED's actions would complement the eventual activities of the other agencies. In Effect CALFED would be providing earlier protection for the persons living near the mine and mercury loadings in the watershed would be immediately decreased.

5. Schedule

Waste rock reclamation work is ready to begin and is awaiting funding. The site is characterized well enough to begin stormwater diversion around waste rock piles.

Work could extend into the future for a few years, doing revegetation of waste rock piles and retort areas, until the EPA funds Superfund work to complete the remedial process. Our objective is to eliminate some initial threat regardless of when the EPA gets the funding to begin, which could be several years from now.

Year 2000 and 2001 Priority Actions

Total Organic Carbon (TOC) Evaluation and Treatment - 33

1. General Description of the Action

Develop a TOC monitoring system for the Delta and conduct pilot scale treatment system studies to remove TOC from agricultural drains.

The goal to identify costs and operational constraints of treating agricultural drain water to meet future standards imposed on drinking water quality. Between pilot scale testing and area TOC monitoring, we will be able to accurately evaluate the feasibility of this option

Total Organic Carbon (TOC) is a water quality constituent that is a precursor to disinfection byproducts which are human health hazards. TOC originates from many sources including vegetation in natural channels, algae, decomposing peat soils, agricultural drain material, and treated sewage effluent. These sources and more are present in the Delta. The relative contributions of each source to the TOC levels in export pumps is not well understood.

Monitoring of TOC in delta waterways has been done on a limited basis but it needs much more refinement. Monitoring of agricultural drains could provide the information necessary to determine if moving a drain would improve export water quality without adversely impacting other beneficial uses Automated TOC samplers could be employed at various locations to get frequent data of discharges and surface water. A complete monitoring system is proposed for the 1999/2000 wet season and irrigation season.

Removal of TOC can be accomplished in a few methods, the most common of which are enhanced coagulation and microfiltration. A pilot scale treatment system is proposed for a agricultural drain from a delta island with peat soils. The pilot project would include selection of the treatment system, operation to steady state, monitoring and evaluation.

TOC removal is proposed to benefit the ecosystem and export water quality. One benefit added to the obvious benefit to water quality is the possibility of being able to use the solid treatment residue for enhancing habitat.

2. Cost Estimates

Monitoring studies of TOC in the Delta would begin at some critical locations at a cost of about $0.5 million for the first year. If the program is successful, the program could be contiued at that level or increased to $2 million per year for a several years and then decreased to about $0.5 million a year after about year 5.

The pilot scale treatment project will cost about $4.0 million dollars after design, permitting, equipment costs, energy costs, sampling, and report generation. Subsequent years may have similar costs for further testing or higher costs for full scale implementation. Full scale

implementation costs could be shared by affected parties.

CALFED Staff for about 1/4 time would be needed to oversee design and implementation as well as evaluation of the data. Additional CALFED time may be used if modeling needed to be done to extrapolate monitoring results to other parts of the delta or to different water years.

3. Program Administration and Governance

The CALFED Water Quality Program should oversee the coordination of pilot scale development and siting of the TOC monitoring locations. The Water Quality stakeholder group (the Water Quality Technical Group) would be given access to the monitoring data as well as various interested parties to independently scrutinize the results.

Design and contracting services should remain with DWR. If required, the US Army Corp of Engineers could act as the contracting agency for this work.

4. Program Coordination

The Department of Water Resources has the engineering staff to contract design and oversee delivery and installation of pilot scale test equipment and related monitoring for test verification.

The Department of Water Resources staff and it's Bryte Chemical Laboratories could provide field staff and necessary reagents for automated sampling. Bryte Chemical Labs could also provide testing for various forms of TOC in samples gathered by DWR. This new sampling program could be incorporated into a DWR sampling program if funds were made available.

5. Schedule

Design and operation of the TOC Delta monitoring system and the pilot scale treatment plant can be accomplished prior to the beginning of Fiscal 1999-2000. Implementation of both programs could begin immediately upon funding. Monitoring efforts should be expanded and extended beyond 2000.

Delays in contracting or equipment delays could slow completion. If advance authorization is given, most delays could be eliminated.

Year 2000 and 2001 Priority Actions

Reduce Impacts of Salt on Soils and Receiving Water During High Flow - 7

1. General Description of the Action

Reduce salt loading of soils during high flow periods in the San Joaquin River.

Salinity in the soils increases with brackish irrigation water and limited leaching with low TDS water. Evaporation coupled with sparse irrigation with higher TDS irrigation water can lead to salt buildup in soils. Too much salt renders the soil useless. Soils are therefore leached by applying excess irrigation water (more than necessary for crop production) to dissolve the salts and discharge salt in tail water or drain water.

Leaching of soils during low flow periods causes marked increases in receiving waters, lowering the utility of the receiving water.

Restricting the leaching process to periods of high flow, taking advantage of the assimilative capacity of the receiving streams could accomplish the reduction of salt in the soils while simultaneously minimizing salt concentrations in the river during low flow periods. The mass load of salt will probably not change using this method, however, impacts would be reduced.

Initial evaluation of this method as well as studies are proposed. Our goal is to develop a salt management method with the lowest impacts.

2. Cost Estimates

Evaluation costs will be low in comparison to study costs. The estimated cost for this evaluation would be less than $100,000 per year. The primary expenditures will be for staff time in researching scenarios of discharge during different water year types.

3. Program Administration and Governance

The CALFED Water Quality Program should oversee the scope of the evaluation methods and preparation of the final reports. The Regional Water Quality Control Board or the USDA Natural Resources Conservation Service should administer the contracts and possibly conduct the evaluation.

4. Program Coordination

The Regional Water Quality Control Board and the Department of Water Resources, Department of Food and Agriculture, US Bureau of Reclamation, and US Geological Survey have staff and data that would be used in this evaluation. The local irrigation districts should be allowed to participate in the program design and implementation. This would coordinate well with other efforts they have made in recent years.