

San Francisco



BayKeeper

F1-258

July 29, 1997

Kate Hansell
CALFED Bay-Delta Program
1416 Ninth Street, Ste. 115
Sacramento, CA 95814

Dear Ms. Hansell,

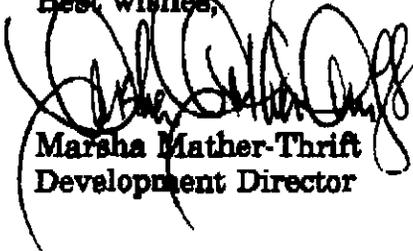
In looking over our grants submitted to you, I discovered that one of our proposals had a couple of typos on the first page. I am faxing you a copy of a corrected first page and will put ten copies in the mail. I apologize for this oversight and hope that you will be able to add the corrected pages.

We sent you three proposals as follows:

- 1) Delta Toxicity Monitoring Project - Grant Request \$984,900/two years (this is the one which needs the corrected Page One).
- 2) Endangered Tributaries Monitoring - Grant Request of \$244,000/two years
- 3) Pilot Study - Delta Toxicity Monitoring - Grant request \$50,000/one year

If you need any additional materials, please give me a call at (415) 567-4401, extension 19. I look forward to your response to these proposals.

Best wishes,



Marsha Mather-Thrift
Development Director

Building A Fort Mason
San Francisco
CA 94123 1382

Printed on recycled paper ♻️

Telephone: 415 567 4401
Facsimile: 415 567 9715
Hotline: 1 800 KFFPRAY
Email: Baykeeper@aol.com

PROPOSAL - DELTA TOXICITY MONITORING PROJECT EFFECTS ON ESTUARINE AND ANADROMOUS SPECIES

BACKGROUND: In January 1996, BayKeeper launched a new project called DeltaKeeper, headquartered in Stockton, which monitors the Delta and its tributaries. DeltaKeeper identifies pollution incidents and conducts ongoing water quality analysis. Since its inception, DeltaKeeper has been working with university experts, the Central Valley Regional Water Quality Control Board aquatic toxicology staff, and the U.C. Davis Toxicology Laboratory, among others, to establish a Delta Toxicity Monitoring Project designed to provide significant data on the impacts of contaminants on fish species and other aquatic organism. The Delta Toxicity Monitoring Project is underway with an initial appropriation of \$20,000 from an EPA 319h grant to Placer County Resource Conservation District. DeltaKeeper is working with the County to develop materials and training for a demonstration volunteer monitoring program designed to use citizen volunteers and successfully employ QA/QC (quality assurance/quality control) monitoring procedures. Establishment of such a training program provides the groundwork for use of volunteers as an effective, low-cost force aiding in the collection of scientific data. DeltaKeeper has also been awarded a \$50,000 challenge grant from the David Gold Foundation for an initial toxicity monitoring study, using DeltaKeeper's trained staff, volunteers and the newly-developed volunteer resources provided by the 319h grant. The Gold grant is contingent upon raising another \$50,000 by November 1, 1997.

PROJECT DESCRIPTION AND GRANT REQUEST: BayKeeper requests a grant of \$984,900 from the Cal-Fed Bay Delta Ecosystem Restoration Program to conduct a two-year study which will establish baseline toxicity data for the Delta and complement similar efforts, such as Sacramento River Watershed Project and the Monitoring Program conducted for the San Francisco Estuary by the San Francisco Estuary Institute. This project will provide data on specific toxicants impacting overall waterway and ecosystem health and the health of Priority Species such as fall-run chinook salmon, splittail, and striped bass. This project will also provide important information, useful in strategy development and implementation of DeltaKeeper's on-the-water boat patrol and toxic discharge education programs. DeltaKeeper's proposed study will provide comprehensive baseline toxicity data at 12-14 sites, second-stage studies at sites throughout the Delta, and Toxic Identification Evaluations to document specific contaminants present and impacts on local species of concern. The U.C. Davis Toxicology Laboratory will provide scientific services and scientific reporting at very low cost. Although initial isolated studies have been conducted, no comprehensive monitoring program has been implemented despite compelling evidence that toxicity has reached serious levels.

This project is divided into two Project Component parts for purposes of grant consideration. Comprehensive baseline monitoring and analysis and full project coordination will require a two-year grant of \$676,900. Additional studies to isolate

PROPOSAL - DELTA TOXICITY MONITORING PROJECT EFFECTS ON ESTUARINE AND ANADROMOUS SPECIES

BACKGROUND: In January 1996, BayKeeper launched a new project called DeltaKeeper, headquartered in Stockton, which monitors the Delta and its tributaries. DeltaKeeper identifies pollution incidents and conducts ongoing water quality analysis. Since its inception, DeltaKeeper has been working with university experts, the Central Valley Regional Water Quality Control Board aquatic toxicology staff, and the U.C. Davis Toxicology Laboratory, among others, to establish a Delta Toxicity Monitoring Project designed to provide significant data on the impacts of contaminants on fish species and aquatic organisms. The Delta Toxicity Monitoring Project is underway with an initial appropriation of \$20,000 from an EPA 319h grant to Placer County Resource Conservation District. DeltaKeeper is working with the County to develop materials and training for a demonstration volunteer monitoring program designed to use citizen volunteers and successfully employ QA/QC (quality assurance/quality control) monitoring procedures. Establishment of such a training program provides the groundwork for use of volunteers as an effective, low-cost force aiding in the collection of scientific data. DeltaKeeper has also been awarded a \$50,000 challenge grant from the David Gold Foundation for an initial toxicity monitoring study, using DeltaKeeper's trained staff, volunteers and the newly-developed volunteer resources provided by the 319h grant. The Gold grant is contingent upon raising another \$50,000 by November 1, 1997.

PROJECT DESCRIPTION AND GRANT REQUEST: BayKeeper requests a grant from \$ 984,900 from the Cal-Fed Bay Delta Ecosystem Restoration Program to conduct a two-year study which will establish baseline toxicity data for the Delta and complement similar efforts, such as Sacramento River Watershed Project and the Monitoring Program conducted for the San Francisco Estuary by the San Francisco Estuary Institute. This project will provide data on specific toxicants impacting overall waterway and ecosystem health and the health of Priority Species such as fall-run chinook salmon, splittail, and stiped bass. This project will also provide important information, useful in strategy development and implementation of DeltaKeeper's on-the-water boat patrol and toxic discharge education programs. DeltaKeeper's proposed study will provide comprehensive baseline toxicity data at 12-14 sites, second-stage studies at sites throughout the Delta, and Toxic Identification Evaluations to document specific contaminants present and impacts on local fish species of concern. The U.C. Davis Toxicology Laboratory will provide scientific services and a scientific reporting at very low cost. Although initial isolated studies have been conducted, no comprehensive monitoring program has been implemented despite compelling evidence that toxicity has reached serious levels.

This project is divided into two Project Component parts for purposes of grant consideration. Comprehensive baseline monitoring and analysis and full project coordination will require a two-year grant of \$676,900. Additional studies to isolate

contaminant effects on species of concern will boost the total grant request to \$984,900. The study costs for specific impacts on individual fish species are itemized and can be funded individually.

As a highly-skilled nonprofit citizen monitoring organization, DeltaKeeper can conduct such a study in a low-cost highly efficient manner. Grant funds would be used to support 1) hiring of a Project Coordinator, 2) project development and oversight by BayKeeper Michael Lozeau and DeltaKeeper Bill Jennings, 3) operation of the DeltaKeeper boats to gather samples, 4) analyses and reporting performed by the U.C. Davis Aquatic Toxicology Laboratory, 5) hiring of technical consultant(s), 6) project overhead, including copying printing, utilities and telephone, 7) volunteer coordination, 8) database management to compile data on sampling and study activities, and 9) educational mailings and public education outreach (disseminating information from this project) to build a more aware constituency for Delta protection.

In late 1996, DeltaKeeper conducted a major citizen monitoring effort during peak season storms. Sampling and followup analysis documented a prolonged sag in dissolved oxygen levels and serious concentrations of diazinon, chlorpyrifos and other toxic chemical substances in all streams sampled. These conditions resulted in a substantial fish kill. The proposed Delta Toxicity Project will involve a 12-14 site monitoring program at selected sites throughout the Delta and East Side Tributaries (sites selected with UCD and RWQCB staff). Special studies will also be conducted at additional sites. Special studies include bioassays to assess impacts of toxicity on reproduction, and toxic identification evaluations to identify specific contaminants and impacts on specific species. Species tested will include the EPA's selected three species, others such as rainbow trout and zooplankton, and CalFed Priority Species, including splittail, San Joaquin and East-side Delta tributaries fall-run chinook salmon, and (secondary priority) striped bass).

BIOLOGICAL/TECHNICAL JUSTIFICATION AND PROJECT APPROACH

Riverine and Delta populations of phytoplankton, zooplankton and several fish species Striped Bass, Delta Smelt, Split Tail, and Salmon are in decline. In recent years, the number of striped bass and the ocean harvest of salmon has dropped precipitously. The presence of contaminants is one of the factors that have been suggested to account for this. For example, Striped Bass and their primary food source *neomysis* have been shown to exhibit toxicity to rice field effluent. And, a recent study showed that water in the San Joaquin River was toxic to aquatic life in 50% of the samples taken over the course of a year. The USGS has also documented pulses of toxicity from stormwater coursing through the Delta in both the Sacramento and San Joaquin River channels, and yet there has been no further work, such as studies on dispersal rates, residence times, or impacts on local species. Clearly, more work is needed with key species, to determine which toxicants may be responsible for declines in Delta fish and food species.

In the last three years, some toxicity assessment work has been done in the Delta thanks to short-term funding from the Bay Protection and Toxic Cleanup Program, which is now in its final months. New funds need to be obtained to continue monitoring the health of this critical habitat. The Sacramento River Toxic Pollutant Control Program will focus on contaminant effects in the Sacramento River Watershed only. Similarly, the San Francisco Estuary Institute conducts the Regional Monitoring Program for the Estuary itself, but no comparable program exists for the Delta, a critical missing link.

Toxicity is routinely detected in the Delta, in the Sacramento and San Joaquin Rivers, and in East Side tributaries, which provide the majority of freshwater flows to the Delta, and ultimately to San Francisco Bay. Toxicity has been detected using the EPA protocols, which rely on three indicator species: the fathead minnow, *Ceriodaphnia dubia* (zooplankton) and *Selenastrum capricornutum* (phytoplankton). Several studies have linked observed toxicity to pesticides, and established the presence of unidentified toxicity. Identification of the specific contaminants is essential if strategies are to be developed to reduce the level of toxicity. Finally, although the existence of toxicity to indicator species is commonly-known, no landscape assessment of toxicity or "map" of toxic discharge points in the Delta exists. Impacts on local species have also not been clearly-defined. **Where feasible, toxicity testing and toxicant identification need to be conducted with Priority Species which are currently in decline in order to develop toxicity reduction strategies that prioritize effectively, pinpointing ways to reduce contamination from toxicants impacting sensitive species.**

Once contaminant types and sources are identified, a comprehensive and coordinated campaign can be mounted to develop Best Management Practices, reduce or eliminate runoff, direct discharge, overspray practices, stormwater overflows and other sources which, when added together produce massive contamination that threatens the increasingly precarious health of Delta waterways.

The total Delta Toxicity Monitoring Project will be conducted jointly by highly-experienced major partners. Staff from the Central Valley Regional Water Quality Control Board have provided background data and technical advice in developing the project to this point, and will continue to advise as needed:

1) BayKeeper/DeltaKeeper will coordinate all aspects of the project, training skilled volunteers through college credit and other courses, mounting regular tributary monitoring patrols, setting up sampling stations, providing resources for water sample collection, and coordinating volunteers, staff and consultants who will conduct this work; 2) the University of California at Davis Aquatic Toxicology Laboratory and Dr. David Hinton will provide scientific services, conduct bioassays, develop analyses and complete reporting of scientific results for the project.

The project being proposed by BayKeeper is designed as a complementary project to others which have been undertaken with the goal of linking the Sacramento Watershed, the Delta, and the Bay. **The BayKeeper project is intended to ensure that significant information can be gathered, analyzed, and reported with final conclusions despite the uncertain life expectancy of other monitoring programs.** The project does not duplicate existing activities. Instead, it extends them and ensures completion. Other currently existing projects include:

- * Placer County and the Central Valley Regional Water Quality Control Board
- * The Bay Protection and Toxics Cleanup Program for Region 5 - ending 1997
- * State Board Trends Monitoring Program - (also ending after 1996-97)
- * The Sacramento River Watershed Protection Program -(one-year support currently)

PROJECT WORKPLAN: The proposed program will consist of the following parts, conducted in two phases:

1) A regular monitoring program using the EPA 3 species protocols to monitor for toxicity at 12-14 sites throughout the Delta and East Side tributaries for 12 months. Sampling stations will be established at each of the sites. Samples will be regularly collected and analyzed for toxicity, aiding in the establishment of trend data related to various seasons of rainfall, agricultural pesticide spraying, and other activities. The Monitoring Program is being designed with assistance from DeltaKeeper's Advisory Committee, which includes highly-experienced scientists from universities and the private sector, such as private consultant and engineer Dr. G. Fred Lee and Dr. Gary Litton, Terry Strange, and Dr. Dale Sanders, who are part of the teaching staff at the University of the Pacific, Delta College, and U.C. Berkeley, respectively.

2) The conducting of Toxicity Identification Evaluations on samples exhibiting acute toxicity.

a) During the striped bass spawning and early recruitment period, an intensive special study will be conducted to determine the toxicity of Sacramento River water samples to Striped Bass. Main drains and the River will be sampled several times each week. The effects of river and drain water on fertilization success and early development will be determined.

b) During the splittail spawning and early recruitment period, an intensive special study will be conducted to determine the toxicity to splittail of water samples collected from key habitat areas. The effects of these waters on fertilization success and early development will be determined.

c) During the four periods of Salmon spawning, a special study will be conducted in the upstream tributaries of the Sacramento River. Rainbow trout fertilization and early development tests will be conducted.

d). During the special study periods, concurrent with the fish testing, toxicity tests will also be conducted with key zooplankton species.

Studies proposed include bioassays of three selected local species (splittail, striped bass, and rainbow trout) during fertilization and larval stages. Testing would focus on eggs and sperm collected from the fish during these periods to determine their viability in relation to varying levels of contaminants in water collected at certain peak periods. Events of special focus would include dormant spray periods (Jan-Feb), alfalfa periods (March), urban runoff impacts during high intensity storm periods (Nov-May), rice production (April-June), and impacts throughout the year evaluated from routine sample collection. In addition to the three local species being evaluated tests would be done on rotifers, which provide an essential foodsource to all fish in the first month of life.

A consultant would be hired to assist with both phases and to work with Dr. David Hinton and the staff at the U.C. Davis Center for Aquatic Toxicology. The consultant would assist DeltaKeeper in designing protocols and assessing additional studies or sample collection work which might be needed.

ANTICIPATED BENEFITS: The proposed project would provide vital information now missing in attempts to stop the decline of local fisheries. Evidence suggests that pesticides and unidentified contaminants are a significant source of toxic pollution in Delta tributaries and waterways, but no conclusive work has yet been done. This project would fill in the "information gap" which now exists between EPA surrogate fish species studies and local fish species and provide vital information to be used in improving water quality and reversing the decline of these important fisheries. It is likely that a number of factors contribute to the decline of key species. Several years will be needed to determine the role of toxics relative to other factors. We would anticipate a need to continue studies beyond the two years, but believe this two-year project will provide important information not now available, encourage public interest in this crucial project, and focus attention on the critical plight of water quality in Central Valley Rivers. Information provided would also be utilized by the BayKeeper/DeltaKeeper Toxic Reduction Program to develop strategies for more effective direct action to reduce contamination from pollutants.

PROJECT MANAGEMENT AND IMPLEMENTATION: The major partners in this project have extensive complementary skills and a significant history in successful management of projects of this kind. For ten years, the U.C. Davis Aquatic Toxicology laboratory has collaborated with the Central Valley Regional Water Quality Control Board staff to identify toxic pesticides associated with the use of dormant spray insecticides. They have conducted studies on insecticide problems in the Colusa Basin Drain caused by rice crops and affecting Neomysis and striped bass. U.C. Davis laboratory staff have also worked with CVRWQCB staff to develop Toxic Identification Evaluation (TIE) techniques for agricultural and urban

stormwater runoff. In addition, the laboratory has extensive experience in testing with the EPA's 3 species (fathead minnow, *Ceriodaphnia*, and *Selenastrum*). They also have developed the ability to conduct toxicity testing for zooplankton such as *Neomysis* and for Rotifers. Preliminary work has also been done on techniques for successfully spawning and rearing larval splittail, striped bass, and rainbow trout. Dr. David Hinton is well-known for his expertise on effects of contamination on various species. The U.C. Davis Aquatic Toxicology Laboratory staff are uniquely qualified to conduct toxicity assessments and determine contaminant effects. All studies, protocols, and materials needed to implement this study are being transferred from the Central Valley Regional Water Quality Control Board to BayKeeper and DeltaKeeper.

IMPLEMENTATION ISSUES: The BayKeeper Toxicity Monitoring Project began in part in 1996 with monitoring of toxicity from stormwater outfalls during peak rain events. Grants of \$20,000 have now been awarded and for this work and an additional \$50,000 challenge grant will be awarded if matching funding is confirmed available by November 1, 1997. Although the U.C. Davis Aquatic Toxicology Laboratory has an outstanding record and highly experienced scientists, unforeseen circumstances may arise. Local species studies are contingent upon the ability to acquire eggs, sperm and fish as needed. First year lab work will be developmental, i.e. designed to acquire some data and develop strategies to deal with any problems. Second year lab work will provide the most conclusive data. Studies of winter-run chinook salmon, spring-run chinook salmon and late-fall run chinook salmon will also be conducted if eggs can be acquired. Winter-run salmon are expected to be extremely difficult to acquire.

EVALUATION: BayKeeper and DeltaKeeper will evaluate the project on a quarterly basis and conduct a full evaluation at the end of each one-year portion of the study. Criteria for evaluation of project success will include:

- * Number of sites and number of samples taken at each over a specified period
- * Number of bioassays conducted
- * Number of TIE's conducted
- * Measurable results indicated in the studies themselves
- * Number of individuals receiving public information material
- * Other studies prompted by this project
- * Number of contaminant types and sources identified
- * Develop Best Management Practices to reduce or eliminate specific, high priority, toxic discharges.

SUMMARY: We hope that the Cal Fed Bay/Delta Program will choose to provide a grant to support this important work.

PROJECT TIMETABLE AND DELIVERABLES

SCHEDULE MILESTONES

AUG-SEPT 1997	Refine monitoring plan and develop additional components. Hire additional staff as funds are available and conduct volunteer training.	Complete Project Plan
OCT 97 TO OCT 99	Regular water sample collection during key periods. Bioassays conducted with key indigenous species	
OCT 97 TO OCT 99	Continued sample collection on a routine basis, evaluation of any additional sites or studies needed. Toxic Identification Evaluations conducted. Dissemination of public education materials about toxicity in the Delta.	Quarterly reports of Toxicity Testing Results.
AUG 98	Summary of Year One findings and results.	Year One Report on Bioassay Results, Study Methods, TIE's
2nd year 1998- 99	Major focus on Toxic Identification Evaluations.	Study results
AUG-SEPT 99	Writing of final report	Final Report
OCT 1999	Publication of results	Public report

PAYMENT SCHEDULE: See budget

THIRD PARTY IMPACTS: No third party impacts are anticipated in this proposal.

CONTRACT REQUIREMENTS: All terms and conditions of the contract for Nonprofit Organization under the Services/Consulting/Preconstruction/Research Contract are acceptable to BayKeeper. BayKeeper possesses a liability insurance policy of \$1 million per occurrence for bodily injury and property damage liability combined and will forward a certificate of insurance upon award of any grant.

The 3rd party bidding process will not be used for laboratory work for this project since U.C. Davis Aquatic Toxicology Laboratory is a partner and will be charging us fees much lower than we could find at any other laboratory. U.C. Davis Aquatic Toxicology Laboratory also possesses unique skills in working with fish and contaminant impacts.

VII. TOTAL PROJECT (PHASE ONE AND PHASE TWO) COSTS

AGENCY/TASK	SEPT - DEC 1997	JAN. - DEC. 1998	JAN -AUG 1999	TOTAL
BAYKEEPER				
Proj.Coord. FT 2 yrs	14,000	42,000	28,000	84,000
BayKeeper 15% FT	2,250	6,750	5,062	14,062
DeltaKeep 50% FT	7,260	22,500	16,875	46,635
Boat op costs	4,700	14,000	10,500	29,200
DBase Admin 50% FT	4,000	12,000	8,000	24,000
Benefits & Taxes @ 14 %	3,851	11,655	9,581	25,087
Overhead @ 15 %	5,410	16,334	11,703	32,817
SubTotal BayKeeper/ DeltaKeeper	41,471	125,239	89,721	256,431
U.C. DAVIS TOXICOLOGY LAB				
Monthly 3 spp tests	40,000	80,000	40,000	160,000
Zooplankton study	15,000	15,000	15,000	45,000
TIE's (Toxic Identification Evaluations)	20,000	35,000	35,000	90,000
Report preparation		10,000	10,000	20,000
Analytical chemistry	15,000	30,000	15,000	60,000
UCD overhead 10%	9,000	16,000	10,500	37,500
Subtotal U.C. Davis	\$99,000	176,000	115,500	390,500
CONSULTANT (S)				
1 FT person, 2 years	25,000	50,000	25,000	100,000
BASIC PROJECT BUDGET	\$165,471	351,239	230,221	\$746,931
MATCHING FUNDS AWARDED (INCOME)	70,000			70,000

PROJECT COMPONENT #2				
ADDITIONAL STUDIES - LOCAL SPECIES BUDGET				
Splittail Study		40,000	40,000	80,000
Rainbow Trout Study	15,000	30,000	15,000	60,000
Striped Bass Study		35,000	35,000	70,000
Salmon Study		35,000	35,000	70,000
UC Davis Overhead @ 10%	1,500	14,000	12,500	28,000
TOTAL BUDGET LOCAL SPECIES	16,500	154,000	137,500	308,000
TOTAL BUDGET (Less matching funds awarded)	111,971	505,239	367,721	984,931

Budget Narrative:

1. BayKeeper and DeltaKeeper work together to coordinate program strategy between the two groups and U.C. Davis, and develop projects. BayKeeper provides the public outreach and education component to publicize the results of studies and create grassroots awareness of environmental problems and solutions.
2. U.C. Davis will provide one-of-a-kind services as the premier scientific laboratory uniquely qualified to conduct this work. As a nonprofit, BayKeeper and DeltaKeeper are eligible for the 10% overhead rate rather than the much higher, public rate, a savings of thousands of dollars.
3. Technical advisors to date have included volunteered staff time U.C. Davis Laboratory, the Regional Water Quality Control Board, University of the Pacific and Delta College. BayKeeper also maintains an active involvement with university scientists in the Bay Area, some of whom sit on its Advisory Council. Outside technical expertise will be hired to fill this role if the study is funded.
4. Although the U.C. Davis Toxicology Lab has an outstanding record and highly experienced scientists, unforeseen circumstances may arise. Local species studies are contingent upon ability to acquire eggs, sperm and fish as needed. First year lab work will be developmental, i.e. designed to acquire some data and develop strategies to deal with any problems which may arise. Second year lab work will provide the most conclusive data.

APPLICANT QUALIFICATIONS BIOGRAPHICAL INFORMATION STAFF AND CONSULTANTS

BAYKEEPER AND DELTAKEEPER: BayKeeper and DeltaKeeper are the only on-the-water citizen monitoring organizations dedicated to reducing pollution in San Francisco Bay and throughout the vast Delta tributary region upstream from Bay waters. In just eight years, BayKeeper has mounted a highly-effective, nationally-recognized pollution reduction campaign on San Francisco Bay, and has now expanded this work into the Delta. (DeltaKeeper is engaged in, among other projects, an extensive Delta Monitoring Project supported by East Bay MUDD). DeltaKeeper patrols the Delta with its three boats, identifying pollution sources. BayKeeper and DeltaKeeper detect and seek to reduce or eliminate pollution, dredging and other activities currently causing major damage to Bay/Delta water quality and habitat. BayKeeper has been recognized for its efforts by the UN Environmental Programme, the national Management Center, and the California Environmental Protection Agency. It has also been recognized as one of the top organizations implementing the Comprehensive Conservation and Management Plan developed by the National Estuary Program for San Francisco's Bay and Delta.

In just eight years, BayKeeper has: * Responded to more than 780 incidents - working with polluters to clean up, and pursuing cases against willful violators, * Directed more than \$1.2 million in funds from successful pollution settlements to important Bay restoration projects, including fisheries enhancement, wetlands restoration, toxic discharge reduction and restoration projects employing disadvantaged youth in their own communities, * Initiated study to assess health risks of fish contamination from heavy metals and pesticides. Prompted the Regional Water Board and the Dept. of Health to undertake a full-scale study, * Developed clean water programs with dischargers and introduced them to equipment which would reduce their pollution impacts, * Begun to build an informed constituency for Bay and waterway protection through media articles and newscasts reaching millions of people across the U.S. and through dozens of presentations yearly to Bay and Delta area clubs, groups, and professional conferences, * been a founder of the 14-member National Alliance of River, Sound, and BayKeepers and the West Coast Keeper Alliance, which pursue national and coastal strategies to stop pollution.

Michael Lozeau, Esq., BayKeeper and Executive Director. J.D. Honors Rutgers University. For five years before he became Director, Mike was General Counsel and Program Director for BayKeeper. Prior to that, he was Associate Attorney at Sierra Club Legal Defense Fund and a sole practitioner, specializing in Clean Water Act and Endangered Species litigation. He has worked with a coalition of environmental groups on protection of the endangered Desert Tortoise, on opposition to a low-level nuclear waste dump in Ward Valley, CA., and as lead attorney in the Penn Mine pollution case. He has been instrumental in developing BayKeeper's highly successful Legal Program and in setting up new environmental law clinics with U.C. Berkeley and Golden Gate University.

Bill Jennings, DeltaKeeper. For the past decade, Bill Jennings has fought to protect the environment. He has served as Chairman of the California Sportfishing Alliance

and the Committee to Save the Mokelumne River, in efforts to protect water quality in rivers flowing to the Sacramento-San Joaquin Delta. He works closely with resource and regulatory agencies and was instrumental in securing the settlement agreement leading to the commitment to remediate Penn Mine on the Mokolumne. In October of 1995, Bill was hired as DeltaKeeper. Since then, he has set up the Stockton office, acquired three boats and a staff, trained a cadre of key volunteers, and kicked off a highly successful program, including an important toxicity monitoring effort aimed at determining the causes of high levels of toxins in Stockton area waterways. Bill has received numerous awards for his work protecting fisheries and the environment in California.

U.C. DAVIS AQUATIC TOXICOLOGY LABORATORY

Dr. David Hinton has over 28 years of experience in the fields of aquatic toxicology and carcinogenesis. He is a tenured faculty member of the Department of Anatomy, Physiology, and Cell Biology in the School of Veterinary Medicine at University of California at Davis. Dr. Hinton will oversee all studies and provide guidance with respect to experimental design and interpretation of data. He has served as Professor of Fish Pathology and Aquatic Toxicology in the Agricultural Experiment Station at U.C. Davis and in the Aquaculture and Fisheries Program at the University, As Associate Professor in the Dept. of Anatomy and Pathology at West Virginia University Medical Center, and Assistant Professor in the Department of Pathology at the University of Baltimore School of Medicine. Dr. Hinton holds a Ph.D. from from the University of Mississippi Medical Center.

TERRY STRANGE, INSTRUCTOR, DELTA COLLEGE: M.S. Natural Resources, Humboldt State University. Instructor at San Joaquin Delta College and University of the Pacific in Stockton. He has also taught at Sacramento City College, College of the Redwoods, and Humboldt State University. He is a fisheries biologist and wetlands specialist for the San Joaquin County Mosquito and Vector Control District.

PROJECT ADVISORS

DR. G. FRED LEE Dr. Lee is the President of G. Fred Lee and Associates and formerly Distinguished Professor, Civil and Environmental Engineering, New Jersey Institute of Technology. He has served as a Senior consulting Engineer for EBASCO-Envirosphere, N.J., as Coordinator for the Estuarine and Marine Water Quality Management Program for the New Jersey Marine Sciences Consortium Sea Grant Program and as Director of the Site Assessment and Remedial Action Division for Industry Cooperative Center for Research in Hazardous and Toxic Substances.

DR. DALE SANDERS, PH.D. Senior Planner, Physical and Environmental Planning Office, U.C. Berkeley (1987 - present). Dr. Sanders has been an instructor in Environmental Science and Conservation and Resource Studies at U.C. Berkeley, and formerly taught at California State University. He also served as Senior Planning Ecologist for the Contra Costa County Environmental Program, and has published extensively on human impacts on wildlife.

STEVE STOCKING, Instructor - Biology, Microbiology, Botany. San Joaquin Delta College, Lecturer - University of the Pacific. MA in Biology, San Francisco State University. Formerly a high school teacher and Seasonal Ranger-Naturalist at Sequoia-Kings Canyon National Parks for ten years. Board member of the Audubon Society and Sierra Club. Member San Joaquin County Habitat Steering Committee.

STAFF/ RESOURCE ORGANIZATION

The Toxicity Monitoring Project will be conducted over two years, in two phases. BayKeeper and DeltaKeeper will share technical expertise and refine the existing workplan to accomplish important objectives with available funding. Technical consultant(s) and advisors will assist in determining objectives for any part of the project where full funding is not available.

Bill Jennings, DeltaKeeper, will serve as the liaison between all partners for the Toxicity Monitoring Project. He will oversee design development for studies, consult with advisors, manage project staff, and ensure that timelines are met. BayKeeper Michael Lozeau will oversee project and fiscal activities and results, review expenditures, and provide assistance in developing Best Management practices and strategies to reduce toxicants in Delta waterways. He will also coordinate DeltaKeeper's project with activities of San Francisco Bay/Estuary groups (he is currently President of the Friends of the Estuary Board for the San Francisco Estuary Project, and works routinely with coalition groups of Bay organizations)

BayKeeper proposes to hire an additional full-time skilled staff person as Project Coordinator. DeltaKeeper currently has a new fulltime Program Assistant who will coordinate local outreach (including the school education project, StudentKeepers) and the volunteer training program. DeltaKeeper. The Project Coordinator will be responsible for all Project Management tasks, including recommendations for modifications in design of the project, acquisition of equipment, coordinating sampling schedules and activities with the laboratory, setting up sampling routines and assigning staff and volunteers, and ensuring that volunteers are meeting sampling schedules. The Project Coordinator will be also be responsible for budget management and development of public education plans.

The Technical Consultant will assist with study design, development of protocols, successful employment of QA/QC procedures, and provide a second scientific opinion on study methods, development of techniques as needed, and results. The Technical Consultant(s) will also help to resolve any issues that arise from unforeseen circumstances, aid in any necessary modification of studies, and provide expertise as needed to develop Best Management Practices for specific categories of dischargers.

BayKeeper and DeltaKeeper staff will provide administrative support to manage all project tasks, including dissemination of the public report, recordkeeping on volunteers and training, and will design and produce outreach materials as needed to aid in creating greater public awareness of impacts on Delta waterways.