# PART A. Cover Sheet

#### A1. Proposal Title: CMARP Phase III Technical Support

#### A2. Lead Applicant or Organization:

Contact Name: San Francisco Estuary Institute Address: 7770 Pardee Lane, 2<sup>nd</sup> Floor, Oakland, CA 94621 Phone Number: 510-746-7334 Fax Number: 510-746-7300 E-mail:

#### A3. Project Manager or Principal Investigator

Contact Name: Dr. Mike Connor Agency/Organization Affiliation: San Francisco Estuary Institute Address: 7770 Pardee Lane, 2<sup>nd</sup> Floor, Oakland, CA 94621 Phone Number: 510-746-7359 Fax Number: 510-746-7300 E-mail: mikec@sfei.org

#### A4. Cost of Project: \$104,827

#### A5. Cost Share Partners:\*

The Interagency Ecological Program (IEP) and its member agencies will be contributing staff time and management to this project. It is not possible to calculate the exact contribution in terms of dollars but it will be in excess of \$50,000.

#### A6. List of Subcontractors:\*

Contact Name: Dr. Nadav Nur Agency/Organization Affiliation: Point Reyes Bird Observatory Address: 4990 Shoreline Hwy, Stinson Beach, CA 94970 Phone Number: (415) 868-1221 Fax Number: 415) 868-1946 E-mail: nadavnur@prbo.org

#### A7. Other Cooperators:\*

(If applicable)

#### A8. Project Topic Area\*

Primary: Environmental Water Management Secondary: Ecosystem Water and Sediment Quality

#### A9. Project Type\*

Primary: Planning Secondary: Monitoring

# PART B. Executive Summary

**B1. Proposal Title:** Technical Assistance in Drafting a Supplemental Monitoring Program for Meeting CALFED Bay-Delta Program's Long-term Monitoring Mandates

#### **B2.** Project Description:

SFEI proposes to provide research, writing, and graphical assistance to the IEP Coordinators for the development of a long-term ecological monitoring program based on past work (e.g., CMARP, TAMP, AMP, etc.) and existing monitoring programs to implement the CALFED Bay-Delta Program's aquatic monitoring mandates. In general, the project will build on former and ongoing efforts such as CMARP, TAMP, and IEP efforts to develop a comprehensive salmonid monitoring program, and the IEP and Pelagic Organisms Decline reviews. Recent CALFED PSPs from the ERP and Science Program will also be reviewed to glean information related to CALFED monitoring needs. Finally, salmonid monitoring needs will be based on efforts being undertaken by the IEP salmonid escapement project workteam and results of an August 2005 salmonid monitoring workshop sponsored by CALFED and the USFWS.

SFEI will work directly with the interagency CMARP III steering committee (formerly IEP plus) led by Dr. Randy Brown. SFEI's specific work will change at the direction of Dr. Brown and the steering committee, but we anticipate the following tasks:

- Inventory existing monitoring efforts in the CALFED region and make monitoring information and data publicly available by bringing the CMARP website online..
- Incorporate material provided by committees led by Roger Fujii (Water Quality), Bellory Fong (CALFED mandates), and Alice Low (salmonids) into a master document for the CMARP III process, and fill in gaps in the report.
- Coordinate and collaborate with CALFED agencies, stakeholders, scientists, and others to refine overall monitoring goals and objectives.
- Update conceptual frameworks/models for understanding factors affecting CALFED actions relative to monitoring needs of the Bay-Delta, its watershed, and ocean conditions.
- Help design a Long-term Monitoring Program implementation structure (including management, scientific oversight and review, data transfer using CEDEN (BDAT), GIS and web based formats, data gaps analysis, data interpretation and review, programmatic review and reporting).
- Subcontract with specific individuals and organizations as needed to design the comprehensive monitoring program. For example, SFEI will be contracting with the Point Reyes Bird Observatory to inventory existing avian monitoring programs and propose long-term monitoring needs.

# PART C. Work Plan

#### C1. Project Background and Information:

#### Background

The IEP was initiated in July 1970 by a Memorandum of Agreement between four State and Federal agencies (DFG, DWR, USBR, and USBSFW-now FWS). During the first 10 years of the program, goals and objectives were clear and studies were focused. The focus of the early studies was on striped bass, with the assumption that ecological conditions that promoted survival during the early life history stages would also be conducive to the ecological health of the system. River flows and pumping, in particular during the spring were the environment variables of most interest.

Engineering and biological studies were directed towards solving problems that were prohibiting full development of the State and Federal water projects, with the provision that full development had to include measures to prevent, minimize or mitigate for environmental impacts. These efforts culminated in the recommendation that a peripheral canal be constructed to allow full development of the projects with substantial environmental protection. In 1982, a failed initiative process resulted in peripheral canal planning be stopped. IEP monitoring and special studies then focused on better understanding the existing system, and its environmental impacts, with the goal of modifying operations or facilities to provide environmental protection.

Since 1982, three additional State and Federal agencies (SWRCB, USGS, and USACE) have joined IEP, the budget has increased, and new study elements were added, while old ones continued. In 2000, USEPA and NOAA Fisheries joined the IEP to bring more scientific and management knowledge to the Program. More recently, CALFED and SFEI have become part of the IEP giving the Program additional capability. In addition to expanded agency participation, the complexity of the environmental issues associated with water project operations has greatly increased. The introduction of the Asiatic clam in 1986 appears to have altered the estuarine system dramatically and is but one of many exotic species that have affected the estuary, Listing of several plant and animal species (for example, winter Chinook salmon and delta smelt), made species protection and monitoring even more important to the water projects. With salmon, the geographic area to be monitored expanded from the estuary to the Central Valley and even the adjacent coastal ocean. CALFED documented the need for sensitive species monitoring in its Multi-Species Conservation Strategy (MSCS).

In the more then 35 years of its existence, the IEP has remained the scientific basis for aquatic monitoring in the San Francisco Bay-Delta and continues to strive for efficiency and effectiveness in addressing environmental information needs. The greatest revisions came after a major review of the program in 1993. The main goal of the 1993 revision was to streamline the existing program for more efficient budget and resource allocation. In 2001-2002, the IEP underwent another major programmatic review resulting in a stronger science-based monitoring design. The creation of CALFED in 2000, and the release of its Record of Decision (ROD) and

other documents, expanded the monitoring needs – geographically and ecologically – beyond what the IEP had traditionally done.

#### **Problem and Need**

The existing IEP monitoring is not nearly adequate to meet all regulatory and planning information needs. For example, the MSCS and program-level approvals issued to CALFED under the Federal Endangered Species Act and the Natural Community Conservation Planning Act require a comprehensive aquatic and terrestrial monitoring program to be in place to establish baseline conditions and abundance trends and other indicators of ecosystem health – with the ultimate goal of assessing the benefit of CALFED sponsored ecosystem restoration actions. In addition, the draft Memorandum of Understanding regarding CALFED Bay Delta Program activities in the estuary commits the signatories to developing and implementing a comprehensive monitoring program to fully evaluate progress towards achievement of the CALFED Program goals.

Much of the aquatic monitoring and research required for the MSCS was expected to be implemented through components of the Comprehensive, Monitoring, Assessment and Research Program (CMARP) that address monitoring and research requirements for the ERP and other CALFED program elements. The 2000 CALFED ROD notes that implementation of the CALFED Science Program includes implementation of the CMARP, under the direction of the interim lead scientist. To date, such a monitoring program necessary for ERP and MSCS purposes, as stated in the programmatic biological opinions and NCCP approval, has not been completely developed or implemented. A draft Terrestrial and Amphibious Monitoring Plan (TAMP) was developed for CALFED, but was not finalized and implemented. A draft Aquatic Monitoring Plan (AMP) was also not finalized and implemented. It should be noted that there are various parts of CMARP and TAMP underway but on an ad hoc basis and there is no adequate record of what is being monitored, who is doing it, the techniques being used, the fate of the data and the prospects for future funding.

A comprehensive monitoring plan is a critical requirement under state and federal law to fully evaluate progress towards achievement of CALFED goals including restoration and recovery targets for MSCS at-risk species. A long-term monitoring program also needs to incorporate existing conceptual models and adaptive management principles in a collaborative process while fully coordinating the elements of existing monitoring and special studies programs such as the IEP, SFEI Regional Monitoring Program, the CALFED Operations Group Real-time Monitoring, the Vernalis Adaptive Management Program (VAMP), the Sacramento Watershed Group, salmonid monitoring in Central Valley streams, and other environmental monitoring activities.

Finally, CALFED's approach to restoration is based on an adaptive process that includes continual updates of our conceptual models of the Central Valley and estuarine ecosystem structure and function and the effects of specific actions on this system. Monitoring attributes (or metrics) of the ecosystem, completing focused research of monitoring metrics, and phasing implementation of actions based on information gained are all key to revising the conceptual models and manage the ecosystem adaptively. The proposed program will include numerous assessments (performance measures, indicators, metrics) and feedback loops so that management

decisions are based on an extensive information base. It must be pointed out that this comprehensive program is geared to tracking system changes and may not be adequate for evaluating the impacts or benefits of specific actions or facilities. In addition, monitoring is not designed to determine the cause of observed trends (although correlation analysis may provide clues). Thus, monitoring must be accompanied by specific assessments and research and special study programs to determine what is causing an observed trend.

#### **C2.** Project Goals and Objectives:

The overall goal of the IEP/CMARP III effort is the development of a long-term ecological monitoring program that will meet most of CALFED's monitoring mandates and information needs. As with the CALFED restoration program, long-term ecological monitoring is an adaptive process and will be modified as we learn more about the system.

#### C3. Approach/Methodology:

SFEI proposes to provide research, writing, and graphics support to the CMARP III steering committee led by Dr. Randy Brown. Our specific work will change at the direction of Dr. Brown and the work group, but we anticipate conducting the following tasks:

- Inventory existing monitoring efforts and make them publicly available by bringing the CMARP website online.
- Incorporate material provided by committees led by Roger Fujii (Water Quality), Bellory Fong (CALFED mandates), and Alice Low (salmonids) into a master document, and fill in gaps in the report.
- Coordinate and collaborate with CALFED agencies, stakeholders, scientists, and others to refine overall monitoring goals and objectives.
- Update conceptual frameworks/models for understanding factors affecting CALFED actions relative to monitoring needs of the Bay-Delta, its watershed, and ocean conditions.
- Help design a Long-term Monitoring Program implementation structure; including management, scientific oversight and review, data transfer using CEDEN (BDAT), GIS and web based formats, data gaps analysis, data interpretation and review, programmatic review and reporting.

#### C4. Tasks and Deliverables:

The tasks and deliverable for this proposed project are outlined in Table 1. The Task and Subtasks enumeration reflects the structure that is required in Schedule B.

Table 1. Tasks and Deliverables					
Task-	Deliverables	Estimated Completion-Dates <sup>*</sup>			
<u>Subtask</u>					
1	Semi-annual report - SFEI	July 10, 2006, and January 10, 2007			
4	Long-term monitoring program proposal -IEP coordinators	10 mo. after contract start			
4-1	Program proposal subelement: plan for monitoring endangered bird species – (PRBO)	3 mo. after contract start			
4-2	Inventory of existing monitoring goals and objectives - SFEI	8 mo. after contract start			
4-3	Master list of long-term monitoring goals & objectives -SFEI	9 mo. after contract start			
4-4	Draft proposal –SFEI	10 mo. after contract start			
5	CMARP website	8 mo. after contract start			
5-1	CMARP draft website online - SFEI	3 mo. after contract start			
5-2	CMARP official website online - SFEI	8 mo. after contract start			
6 -1	Draft Report (master document incl. gap analysis) - SFEI	10 mo. after contract start			
6 -2	Final Report to Dr. Randy Brown	11 mo. after contract start			
7	Project Closeout Report	10 mo. after contract start			

#### **C5.** Subcontractors:

Point Reyes Bird Observatory: develop monitoring program for endangered bird species associated with Bay-Delta estuary habitats.

#### C6. Work Schedule

The anticipated starting date for this project is February 1, 2006 and the ending date is December 31, 2007.

#### C7. Special Equipment and Supplies Required:

#### **C8.** Project Impacts (beneficial or adverse):

A comprehensive monitoring, assessment, and research program (CMARP) is an important part of the CALFED 10 Year Action plan and necessary for the CALFED program to succeed and meet its goals. This planning project supports the coordination and implementation of CMARP. The anticipated benefits of a well designed, well coordinated monitoring program include improved water management and ecosystem restoration capabilities in the Bay-Delta estuary region.

#### Adverse: none anticipated

#### C9. Stakeholders and Interested Parties: IEP agencies and CALFED program.

#### C10. Consistency with CALFED ERP Goals:\*

1). Identify Project Applicability to Eco-Elements Primary: Essential Fish Habitats Secondary: Freshwater Fish Habitats

2). Identify Project Applicability to ERP Goals and Objectives: This project is applicable to ERP Goals 1-6 and their respective objectives.

3). Identify Project Applicability to Environmental Water Quality Constituents: Primary: Other – All the water quality constituents in Table C2 apply to this monitoring project. Secondary:

#### C11. Related Projects\*

1). If this project is related to another restoration project, identify other projects by number and program (e.g. CALFED, CVPIA), and if CALFED, identify that relationship by category:

#### C12. References

Armor, C., Baxter, R., Bennett, B., Breuer, R., Chotkowski, M., Coulston, P., Denton, D., Herbold, B., Kimmerer, W., Larsen, K., Nobriga, M., Rose, K., Sommer, T., Stacey, M. 2005. *Interagency ecological program synthesis of 2005 work to evaluate the pelagic organism decline (POD) in the Upper San Francisco Estuary* (draft). CALFED Science Program – Interagency Ecological Program Pelagic Organism Decline Workshop 2005 Support Material.

Brown, R., Brown, L., Fong, B., Herbold, B., Hymanson, Z., Johnston, M., Nichols, F., Smith, L., Stine, P., Winternitz, L. 1998. *A proposal for a comprehensive monitoring assessment and research program*. Final Report of the CMARP Steering Committee prepared for CALFED.

CALFED Bay-Delta Program. 2000. CALFED Record of Decision (ROD0 for Northern California. .

CALFED Bay-Delta Program. 2000. Multi-Species Conservation Strategy. Final Program EIS/EIR Appendix .

California Fish and Game. 1991. Natural Community Conservation Planning Act. California Fish and Game Code Section 2800-2835

Endangered Species Act of 1973. U.S. Code: Title 16, Chapter 5.

Herrgesell, P. L., Kjelson, M. A., Arthur, J., Winternitz, L., Coulston, P. 1993. *A review for the interagency ecological program and recommendations for its revision*. Prepared by the Ad Hoc IESP Review Team for the Coordinators of the Interagency Ecological Study Program.

IEP. 1998. Recommendations regarding comprehensive aquatic monitoring in the Sacramento-San Joaquin Delta. IEP Technical Report 58.

Lehmann, P. 1998. Phytoplankton Species Composition, Size Structure, and Biomass and Their Possible Effect on Copepod Food Availability in the Low Salinity Zone of the San Francisco Bay Estuary. IEP Technical Report 58.

# PART D. Budget Summary

#### D1. Budget

#### Overall Budget: \$105,025

Labor		Rate	Months	Total	
Scientist - Connor	Task 1	\$150,000 annually \$48,500	1	\$12,500	
Scientist - Jabusch	Task 1	annually	1.5	\$6,063	
	Task 4 (2-4)	·	3	\$12,125	
	Task 6		4	\$16,167	
		\$48,578			
IT Analyst.	Task 5	annually	1	\$4,048	
Contract		\$46,350			
Administrator.	Task 1	annually	1	\$3,863	
Environmental		\$40,561			
Analyst.	Task 4	annually	1	\$3,380	
Environmental					
Analyst.	Task 6		1	\$3,380	
•	Labor Subtotal:			\$61,526	
	Benefits (25.29% o	of labor)		\$15,560	
	Labor: total direct	t cost (TDC)		\$77,086	
	Overhead (12.2%	of TDC)		\$9,405	
	Subtotal:				\$86,490
Tasks 1, 4-2, 4-3, 4-4,	5, and 6				,
Travel (30 trips to Sac	ramento @ 180 mile	s \$0.34/mile)			\$1.836
Office Supplies	<u> </u>				\$500
Printing					\$500
Workshon Sunnlies					\$500
workshop Supplies	Subcontractor				\$500
	Subcontractor.				
•					
Task 4-1	Dr. Nadav Nur, PI	RBO			\$15,000
	200 hrs * \$75/hr				
		<b>Final Total</b>			\$104,827

# PART E. Project Location Information

#### E1. Project Location:

This project is inclusive of the entire CALFED region; i.e. this project includes the Sacramento and San Joaquin Rivers and their tributaries, and the upper San Francisco Estuary, which includes the Delta and Suisun Bay.

E2. County or Counties Project is Located In: not applicable

E3. ERP Eco-Region, Eco-Zone, and Eco-Unit Project is Located In:\* not applicable

#### **E4.** Project Centroid:

Latitude/Longitude Coordinates: not applicable

**E5. Project Map:** not applicable

#### E6. Digital Geographic File:\*

The Eco-Region is Program-Wide

#### E7. Congressional District: not applicable

# PART F. Environmental Information

### F1. CEQA/NEPA Compliance

1). Will this project require compliance with CEQA, NEPA, both, or neither: neither

2). Is your project covered by either a Statutory or Categorical Exemption under CEQA or a Categorical Exclusion under NEPA: yes (U.S. FWS Manual at 516 Dm 6 Appendix 1.4 Categorical Exclusions Section B Resources Management: (1) Research, inventory, and information collection activities directly related to the conservation of fish and wildlife resources. CEQA exemptions: 15262 Feasibility and Planning Studies and 15306 Information Collection).

3). If your project requires additional CEQA/NEPA analysis, please indicate which type of documents will be prepared:

- Initial Study/Negative Declaration
- Environmental Assessment/FONSI
- EIR/CEQA Findings of Fact
- EIS/ Record of Decision

4). If the project will require CEQA and/or NEPA compliance, identify the lead agency(ies).

- CEQA Lead Agency:
- NEPA Lead Agency (Must be a Federal Agency):

5). If your project is not covered under items 2 or 3, and you checked no to question 1, please explain why compliance is not required for the actions in this proposal:

6). If the CEQA/NEPA process is not complete, please describe the estimated timelines for the process and the expected date of completion:

7). If the CEQA/NEPA document has been completed, what is the name of the document:

#### F2. Environmental Permitting and Approvals

Please indicate what permits or other approvals may be required for the activities contained in your proposal and which have already been obtained. Please indicate all that 1) are needed, and 2) if needed, have been obtained:

1). Local Permits and Approvals

- Conditional use permit
- Variance
- Subdivision Map Act
- Grading permit
- General plan amendment

- Specific plan approval
- Rezone
- Williamson Act Contract cancellation
- Other
- 2) State Permits and Approvals:
  - Scientific collecting permit
  - CESA compliance: 2081
  - CESA compliance: NCCP
  - **1**601/03
  - CWA 401 certification
  - Coastal development permit
  - Reclamation Board approval
  - Notification of DPC or BCDC
  - Other

3) Federal Permits and Approvals:

- ESA compliance Section 7 consultation
- ESA compliance Section 10 permit
- Rivers and Harbors Act
- CWA 404
- Other

# PART G. Land Use Questionnaire

#### G1. Land Use Changes

1). Do the actions in the proposal involve physical changes in the land use, or potential future changes in land use (Yes/No):

- If yes, describe what actions will occur on the land involved in the proposal.
- If no, explain what type of actions are involved in the proposal (i.e., research only, planning only).

2). How many acres of land will be subject to a land use change under the proposal: 0.

3). Is the land subject to a land use change in the proposal currently under a Williamson Act contract (Yes/No):

4). For all lands subject to a land use change under the proposal, describe what entity or organization will manage the property and provide operations and maintenance services.

5). Does the applicant propose any modifications to the water right or change in the delivery of the water (Yes/No):

If yes, please describe the modifications or changes:

#### G2. Current Land Use and Zoning

1). What is the current land use of the area subject to a land use change under the proposal:

2). What is the current zoning and general plan designation(s) for the property:

3). How is the land categorized on the Important Farmland Series (IFL) maps (published by the California Department of Conservation):

- Current land use:
- Current zoning:
- Current general plan designation:
- Mapping Category on the IFL Series Map:

#### G3. Land Acquisition

1). Will the applicant acquire any land under the proposal, either in fee or through a conservation easement (Yes/**No**):

- If yes, describe the number of acres that will be acquired and whether the acquisition will be of fee title or a conservation easement:
- Total number of acres to be acquired under proposal:
- Number of acres to be acquired in fee:

• Number of acres to be subject to conservation easement:

2). For land acquisitions (fee title or easements), will existing water rights be acquired (Yes/No):

#### G4. Land Access

1). Will the applicant require access across public or private property that the applicant does not own to accomplish the activities in the proposal (Yes/No):

If yes, attach written permission for access from the relevant property owner(s).

# PART H. Qualifications

### H1. Qualifications

(List professional qualifications of all participating researchers). See attached Cvs

#### 1. Mike S. Connor, PhD

Principal Investigator/Project Manager

2. Thomas Jabusch, PhD

Scientist

#### Budget Detail

#### Exhibit-B Attachment 1

	_														
							FY 05/06						FY 06/07		
							1 05/00						1 1 00/07		
	A	Annual	Total	Y1						Y2					
Personnel Services	5	Salary	Months	Months	Task 1	Task 4	Task 5	Task 6	Task 7	Months	Task 1	Task 4	Task 5	Task 6	Task 7
					AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT		AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
Scientist- Connor	\$	150,000	1.00	1.00	\$12,500	\$0	\$0	\$0	\$0	0.00	\$0	\$0	\$0	\$0	
Scientist - Jabusch	\$	48,500	8.50	8.50	\$6,063	\$12,125	\$0	\$16,167	\$0	0.00			\$0		
IT Analsyt - avg.	\$	48,578	1.00	1.00			\$4,048			0.00					
Contract Admin- avg.	\$	46,350	1.00	1.00	\$3,863					0.00					
Env Analyst - avg	\$	40,562	2.00	2.00		\$3,380		\$3,380		0.00					
			0.00	0.00						0.00					
			0.00	0.00						0.00					
			0.00	0.00						0.00					
			0.00	0.00						0.00					
Sub-Total Personnel Services			13.50	13.50	\$22,425	\$15,505	\$4,048	\$19,547	\$0	0.00	\$0	\$0	\$0	\$0	\$0
Benefits (Rate)					\$5,671	\$3,921	\$1,024	\$4,943	\$0		\$0	\$0	\$0	\$0	\$0
Total Personnel Services					\$28,096	\$19,426	\$5,072	\$24,490	\$0		\$0	\$0	\$0	\$0	\$0
Operating Expenses			0												
General Expense			0												
Software			500		500										
Training			500		500										
*Traval and Par Diam			1 826		612		\$612.0	\$612.0							
Minor Equipment			1,850		012		\$012.0	\$012.0							
Software and Supplies			0												
Rent			0												
Printing / Misc			500		500										
Workshon Supplies			500		500										
Nets & Seines			0		200										
Sub-Contract			15 000			\$15,000									
Total Operating Expense			\$18,336		\$2,112	\$15,000	\$612	\$612	\$0		\$0	\$0	\$0	\$0	\$0
Subtotal Operating Expenses and															
Personnel Services			\$18,336		\$30,208	\$34,426	\$5,684	\$25,102	\$0		\$0	\$0	\$0	\$0	\$0
Ormatica di Carta (C. 1220)			60 407		62 420	£2.271	6(10	62.000	¢o		¢o	60	¢0	¢o	60
Overnead Costs @ 0.122%			\$9,407		\$3,429	\$2,371	\$619	\$2,989	20		20	20	20	20	\$0
0.122 Total by Fiscal Vear					\$22.627	\$26 707	\$6 202	\$28.001	\$0		\$0	\$0	\$0	\$0	\$0
Contract Total by FY			\$27.743		\$55,057	\$50,797	\$104 827	\$28,091	<b>\$</b> 0		30	30	\$0 \$0	50	30
	1		φ <u>2</u> ,,, <b>4</b> 5				\$104,027						Ψ0		
Contract Total Amount						\$104	4.827								

\* Indicate Rate in Column A/Row 50

Exhibit A Budget Detail Project #

\* Travel Expenses and per diem rates set a the rate specified by the Department of Personnel Administration for employees. (See Attachment 3 -Travel guildlines). The contractor is required to maintain travel receipts and records for auditing purposes. No travel out-side of the state of California shall be reimbursed unless prior written authorization is obtabained form the State.

#### EXHIBIT B SCHEDULE AND LIST OF DELIVERABLES

# CMARP Phase III Technical Support

<u>Task</u>	<u>Task Title</u>	Deliverable	Estimated Completion Dates
1	Project Mgmt & Adm	<ul> <li>Semi-Annual Progress Report</li> <li>Monthly/Quarterly Invoice</li> <li>Subcontract documentation</li> </ul>	Semi-annual report through out the contract term. Due 10 <sup>th</sup> of July, Jan.
2	Long-term monitoring program proposal	<ul> <li>Monitoring plan for endangered bird species</li> <li>Inventory of existing monitoring goals and objectives</li> <li>Master list of long-term monitoring goals &amp; objectives</li> <li>Draft proposal</li> </ul>	<ul> <li>3 months after contract execution</li> <li>3 months after contract execution</li> <li>8 months after contract execution</li> <li>9 months after contract execution</li> </ul>
3	CMARP website	<ul><li>Draft website online</li><li>Official website online</li></ul>	<ul> <li>3 months after contract execution</li> <li>8 months after contract execution</li> </ul>
4	Draft and Final Report	<ul><li>Draft Report</li><li>Final Report</li></ul>	<ul> <li>22 months after contract execution</li> <li>24 months after contract execution</li> </ul>
5	Project Close Out	<ul><li> Project Close Out Report</li><li> Final Invoice</li></ul>	<ul> <li>30 days prior to end of the contract term</li> <li>30 to 60 days after Final Report is approved</li> </ul>

# Thomas Jabusch, PhD

Environmental Scientist San Francisco Estuary Institute 7770 Pardee Lane Oakland, CA 94621

#### (510) 746-7340 thomasj@sfei.org

#### Summary of Relevant Experience

#### Water Resources Planning and Management

Currently SFEI's technical support liaison to IEP. Previous work experience at Great Lakes Commission in water resources management and strategic planning within multiinstitutional frameworks. The work scope included strategic plan and master document drafting, science/policy analysis, project management, interagency coordination, and communications.

#### Water and Sediment Quality

Currently working as Environmental Scientist in SFEI Contaminant Monitoring & Research and Regional Monitoring programs. Previous experience includes research related to pesticide fate, PCB bioaccumulation, and trace metal uptake and toxicity. Graduate studies in water resources science and limnology.

#### Education

Ph.D. 2002	Water Resources Science Program University of Minnesota, Twin Cities, MN
M.S. 1995	Faculty of Biology (Major Subject: Limnology) University of Freiburg, Freiburg i. Br., Germany
B.S. 1991	Biology, University of Freiburg, Freiburg i. Br., Germany

#### **Professional Positions**

Environmental Scientist, San Francisco Estuary Institute, Oakland CA, 2005-present.

Technical support liaison to IEP. Project Scientist in Contaminant Monitoring & Research and Regional Monitoring programs.

*Postdoctoral Researcher,* Department of Environmental Toxicology, University of California, Davis, CA, 2004-05.

Studies of pesticide environmental fate and dissipation kinetics in rice field conditions.

Sea Grant Fellow/Research Associate, Great Lakes Commission, Ann Arbor, MI, 2002-03.

Project specialist in Regional Coordination, Transportation and Sustainable Development, and Data and Information Management programs. Co-authored a strategic planning document identifying priorities for Great Lakes restoration, protection and management with a focus on roles for the U.S. Army Corps of Engineers. Developed a flowchart-based annotated bibliography to support a regional guideline for testing and evaluation of Great Lakes dredged material for upland uses. Prepared Great Lakes daily news digest for Great Lakes Information Network. *Research Assistant,* Environmental Health Sciences, School of Public Health, University of Minnesota, Twin Cities, MN, 1997-2002.

Experimental research evaluating mechanistic assumptions in current foodweb bioaccumulation models about the uptake of PCBs and other organochlorine contaminants by phytoplankton.

*Communication Assistant,* Water Resources Center, University of Minnesota, Twin Cities, MN, 1998-2000.

Web development, brochure design, technical writing.

*Research Assistant*, Department of Biology, University of Minnesota, Duluth, MN, 1996– 97.

Method development to study the viability of *Salmonella* under environmental conditions.

*Visitation/Research Assistant*, Swiss Federal Institute of Environmental Science and Technology (EAWAG), Dübendorf, Switzerland, 1994-95.

Research on speciation and bioavailability of trace metals to freshwater phytoplankton.

*Research Assistant*, Institute of Limnology, University of Konstanz, Konstanz, Germany, 1993.

Dept. of Biological Sciences, Brock University, St. Catharines, Ontario, Canada, 1992.

Institute of Zoology, University of Freiburg, Freiburg, Germany, 1991.

#### Scientific Publications

Jabusch, T.W., and R.S. Tjeerdema. 2005. Partitioning of penoxsulam, a new sulfonamide herbicide. Journal of Agricultural and Food Chemistry 53(18): 7179-83.

Jabusch, T.W., and D.L. Swackhamer. 2005. Partitioning of polychlorinated biphenyls in octanol/water, triolein/water, and membrane/water systems. Chemosphere 60(9): 1270-1278.

Jabusch, T.W., and D.L. Swackhamer. 2004. Subcellular accumulation of polychlorinated biphenyls in the alga Chlamydomonas reinhardtii. Environ. Toxicol. Chem. 23(12): 2823-2830.

Knauer, K., Jabusch, T., and L. Sigg. 1999. Manganese uptake and Mn(II) oxidation by the alga Scenedesmus subspicatus. Aquat. Sci. 61: 44–58.

#### **Technical Reports**

U.S. Army Corps of Engineers. 2005. John Glenn Great Lakes Basin Program Strategic Plan (Draft). Great Lakes Commission, Ann Arbor, MI.

Great Lakes Commission and Great Lakes Dredging Team. 2004. Upland Beneficial Use of Dredged Material Testing and Evaluation Annotated Bibliography. Great Lakes Commission, Ann Arbor, MI.

Great Lakes Commission and Great Lakes Dredging Team. 2004. Testing and Evaluating Dredged Material for Upland Beneficial Uses: A Regional Framework for the Great Lakes. Great Lakes Commission, Ann Arbor, MI.

#### **Other Publications**

Lower Minnesota River Watershed Website. A networking spot for the diverse group of people concerned with water quality in the Lower Minnesota River Watershed. <u>wrc.coafes.umn.edu/ lowermn</u>. Water Resources Center, St. Paul, MN.

The Great Mississippi. 1999. A brochure describing the benefits of the Mississippi. Water Resources Center, St. Paul, MN.

LiMNology: New initiative aimed at graduate education. Main article in Minnegram March 1999. Water Resources Center, St. Paul, MN.

Freelance journalisitic contributions in Laborjournal, 1995-96. (www.biotech-europe.de)

#### Abstracts (National and International Meetings)

Jabusch, T.W., and R.S. Tjeerdema. 2005. Dissipation of penoxsulam, a new sulfonamide herbicide, in simulated rice field conditions. Presented at the SETAC North America 26th Annual Meeting, Baltimore, MD, USA.

Jabusch, T., and D.L. Swackhamer. 2001. The Role of Lipid Membranes in the Bioaccumulation of PCBs in Phytoplankton. Presented at the SETAC North America 22nd Annual Meeting, Baltimore, MD, USA.

Jabusch, T., and D.L. Swackhamer. 2001. Bioaccumulation of PCBs in Phytoplankton: Mechanistic Investigations on the Cellular Level. Presented at the 2001 Aquatic Sciences Meeting of the American Society of Limnology and Oceanography, Albuquerque, NM, USA.

Jabusch, T., and D.L. Swackhamer. 2000. Predicting Bioaccumulation of Organic Chemicals in Phytoplankton: Measurement and Evaluation of Octanol/Water and Lipid/Water Partitioning Coefficients. Poster presented at the Gordon Research Conference on Environmental Science—Water, Holderness School, Plymouth, NH, USA.

#### **Financial Support**

The Environmental Fate of Pesticides Important to Rice Culture (with R.S. Tjeerdema), UC Rice Research Board, \$48,598, 2005.

#### Other Experience

#### Financial acquisition

Proposal draft for NSF grant award no. 9975410, The Biological and Chemical Processes Controlling the Bioaccumulation of Organic Chemicals by Phytoplankton (\$200,000), 1999.

Mini-proposal to obtain an internal grant allocation at the Swiss Federal Institute of Technology (EAWAG) for studies of trace metal uptake and speciation in freshwater phytoplankton (sFr 3,000).

Solicitation of sailboat and equipment donations, Sailing Club at the University of Minnesota (\$ 6,000), 2000-2001. Fundraising coordination (\$3,000), 1998.

#### Teaching

*Guest Lecturer,* Environmental Chemistry course, Environmental Health Sciences, School of Public Health, University of Minnesota (Minneapolis, MN), 1999-2001.

*Course Participant*, Teaching in Higher Education, Preparing Future Faculty Program, Graduate School, University of Minnesota, 2001

#### Service

Reviewer for Environmental Pollution (2005).

*Planning Committee Member*, Environmental Challenges of the 21<sup>st</sup> Century: Great Lakes Experiences and Global Applications, Great Lakes Commission and International Lakes Environment Committee Special Joint Symposium, ILEC/IAGLR Large Lakes Conference, Chicago, IL, 2003.

*Reviewer*, SOLEC Success Story awards selection committee, *State of the Lakes Ecosystem Conference*, Cleveland, OH, 2002.

#### Team Building

Vice-Commodore, University of Michigan Sailing Club, 2002-03. Commodore, Sailing Club at the University of Minnesota, 2000. Vice-Commodore, Sailing Club at the University of Minnesota, 1998.

PC Skills

MS Office (Excel, Word, PowerPoint, Access), SigmaPlot, SPSS, JMP, Acrobat (PageMaker, Professional, GoLive CS), FrontPage, CorelDraw, Photoshop, HTML.

#### Awards and Fellowships

Great Lakes Commission – Sea Grant Fellowship, 2002. ACS Environmental Chemistry Award for Graduate Students, 2001. European Community Research Fellowship (ACTIVE program),1995.

#### **Professional Memberships**

American Chemical Society Society of Environmental Toxicology and Chemistry