99-B06

STATE OF CALIFORNIA--THE RESOURCES AGENCY Gray Davis, Governor

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May 2, 2000

Subject: Amendment Request for Cooperative Agreement No. 99FC200241-- CALFED Directed Action #99-B06: *Assessment of Ecological and Human Health Impacts of Mercury in the Bay-Delta watershed.*

Dear Sir,

This letter is to request a minimal augment (<10%) in funding for the CALFED grant entitled "*Assessment of Ecological and Human Health Impacts of Mercury in the Bay-Delta Watershed*". We provide a description of the mercury problem in the Bay-Delta Estuary, the project's objectives, recommendations of the external Scientific Review Committee and our recommendations on how to restructure and augment the CALFED project in light of these findings.

Mercury has been designated a contaminant of concern in the CALFED water quality common program because of its presence at elevated concentrations in long-lived game fish in the Central Valley and Estuary. These concentrations have resulted in the posting of human health advisories recommending limited or no consumption of selected size classes of various sportfish. The fish tissue concentrations may also represent a hazard to piscivorous wildlife. Accumulating scientific evidence collected elsewhere suggests that several proposed anthropogenic activities in the Basin, including those of CALFED, may increase the bioaccumulation of mercury in the estuarine food chain and exacerbate the potential public health and wildlife problem. For example, shallow water habitat, as is being created by the CALFED Ecosystem Restoration Program, has been demonstrated to increase methyl mercury production and accumulation in the aquatic food chain. It is clearly in CALFED's best interest to ensure that projects they are liable for do not increase the level of mercury in fish tissues in the Bay-Delta Estuary.

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In October 1999, CALFED initiated a directed action for a consortium of governmental agencies and university experts to develop a better understanding of mercury cycling in the Central Valley and Bay-Delta Estuary, and to recommend management options to CALFED and to regulatory agencies for the control of mercury. Specifically, the mercury project was designed to give CALFED the best and most complete information on what type of projects would lead to an increase in mercury accumulation in aquatic biota. This study was originally designed to provide scientific information on how mercury is transported into the Delta, how and where it is methylated, and how it bioaccumulates through the food chain into fish and birds/waterfowl. All studies are underway now and are to be completed within two years. Some subsequent studies will undoubtedly be needed to provide specific mercury information on key CALFED projects (restoration, dredging, removing dams, etc.), however, it is anticipated that these will be done much more cheaply as the essential information on mercury cycling will already have been collected.

In August 1999, a panel of international mercury experts (the external "Scientific Review Committee" or "SRC") was assembled, as requested by CALFED Management, to critique the proposed mercury study plan. The consensus of the SRC was that all the proposed work was essential, but that a number of tasks should be expanded, and others added if the study was to accomplish its intended objectives. The SRC realized that this would mean that the project would need additional funding. The Principal Investigators (P.I.'s) met several times to develop and rank proposals to address the SRC's key recommendations.

In March 2000 a revised work plan was submitted to the Ecosystem Roundtable Amendment Subcommittee. The Committee deferred the decision until the May meeting but requested that the P.I.'s evaluate how to accomplish all the tasks of the original study plus the additional ones recommended by the SRC with no additional funds.

The P.I.'s recommend, if no additional funding is available, that the following three redirections in funding occur:

1. The SRC strongly recommended a significant increase in the overall QA/QC of the project. The P.I.'s concur that increased QA/QC is essential and recommend reducing the funding of all field tasks by about 10 percent to accomplish this. This would mean that field sampling would terminate after 18 instead of 24 months. However, it must be recognized that almost no mercury work has previously been done in the Bay-Delta Estuary and conclusions based upon limited seasonal sampling will be legitimately questioned.
2. The SRC also recommended that the project incorporate a significant modeling effort. Our present proposal is to require all P.I.'s to fund their own modeling. This will further decrease field and analytical efforts in each project by about 2-3 percent.
3. Finally, the SRC commented, based upon their own experience, that having multiple investigators with different fields of expertise was powerful in that it brought different talents and knowledge to the project, but could also be detrimental in that researchers from different fields did not naturally communicate well with each other. The SRC recommended increasing funding to the Department of Fish and Game to insure adequate coordination. If no additional funding is available then project management would be scaled back to that originally

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recommended. This level of management would include not writing midterm and final interpretative reports, not assembling a common database for all mercury results nor having a centralized data system, much less extensive QA Review, holding fewer external SRC meetings, and conducting fewer meetings and communications with P.I.'s. The reports will be a compilation of individual investigator reports with an executive summary.

As described above, we have redirected (reduced by) 10% from every PI's budget to fund the recommended additional QA/QC effort, and have also directed each P.I. to fund and submit their own modeling studies. We have also informed them that they would be responsible for completing numerous tasks that would have previously been accomplished by the DFG Project Management Team. As a result, most of the individual studies will only have an 18-month duration instead of the two-year duration needed. This will increase the risk somewhat of not obtaining accurate, representative predictive data, since most of the experiments planned for these studies depend on tracking mercury and environmental changes over seasonal cycles. Instead of tracking the changes over two winters and two summers, they will now only be able to track them over two winters and one summer.

In lieu of restructuring the existing project as proposed above, we suggest a limited augmentation request totaling $364,000. With this level of funding, we feel we can minimize the risk of not meeting the project objectives while accomplishing many of the SRC key recommendations. Please see Attachment 1 for a listing of the four augment proposals and a summation of probable benefits if they are funded, as well as a summation of probable consequences if they are not funded. We request funding for the following four tasks:

1. External QA/QC--Frontier Geosciences: $123,105: These funds would be returned to the researchers who had their budgets cut by 10% to provide for the additional QA/QC. Each project can sample 24 months instead of 18 months.

2. Project Management and Logistical Coordination--California Department of Fish and Game: $75,000. New project management tasks for DFG would include writing midterm and final interpretative reports, more extensive internal QA review on all project data, preparing combined quarterly financial and progress reports, and combining data into a centralized common database.

3. Scientific Review Committee--$48,000. This funding is necessary to bring on-site the three international mercury experts to meet and interact with in person all project PI's, as well as to be able to answer questions in person at Public Forums conducted simultaneously. As initially envisioned, these review sessions were hoped to have been able to be conducted via teleconference and mail, but it became very apparent this method would not allow the most efficient and successful interactions and dialogues for all participating scientists and the public at large. This funding would allow us to conduct a total of three review meetings in person for all project scientists with the external experts.

4. Mercury speciation--Frontier Geosciences, Inc. (Seattle, WA): $117,895. Frontier Geosciences, since development of the CALFED grant, has published a paper purporting to speciate mercury among its different oxidation states. Chemical speciation could be very useful

in predicting "hot-spots" where mercury is most likely to methylate and bioaccumulate in the food chain. This could help Managers prioritize mercury cleanup and provide information to CALFED on where it can safely locate ecosystem restoration efforts. We proposed to validate the chemical speciation method by comparing its results with methylation rate and tissue bioaccumulation data collected elsewhere in the project.

It is important to note that the funding augmentations proposed above represent only a few of the numerous additional studies and/or additions to existing tasks that were heavily recommended with strong rationale by the SRC. A very detailed package of in-depth proposals was previously submitted that would have accommodated most of the strongly recommended revisions suggested by the SRC, and that had a price tag substantially higher than those proposed herein. However, at the direction of the Ecosystem Roundtable Amendment Subcommittee, we have cut out most of those SRC-recommended proposals in order to focus on the most critical needs as outlined above. Consequently, the amount of funding we're now requesting represents only a fraction of what was originally thought necessary (and justified strongly) by the SRC to meet our original project goals and objectives.

Thank you for your consideration of this request, and please call me at 831-633-0253 if you have any questions.

Sincerely,

Mark Stephenson,
Project Manager

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Attachment 1: Funding Augmentation Request Summary

CALFED Directed Action #99-B06: An Assessment of the Ecological and Human Health Effects of Mercury in the Bay-Delta Watershed

Principal Investigators to Conduct Work & Brief Title of Proposed New Work	Brief Summary of Proposed New Work or Additional Work Within Existing Task	Funding Augmentation Requested	Probable benefits of implementing proposed augmentation work	Probable consequences of not implementing proposed augmentation work
Frontier Geosciences, Inc.	QA/QC oversight w/DFG	$123,105	These funds would be returned to the researchers who had their	P.I.'s would have to cut back their monitoring efforts from
"External QA/QC Services"	5% external QA duplicate sample analyses		budgets cut by 10% to provide for the additional qa/qc efforts.	covering a 24 month period to only an 18 month period, due
	Interlaboratory comparison exercises & reports		They can then sample a full 24 months instead of 18 months.	to having to reduce their budgets to pay for necessary
	On-site laboratory audits		External qa/qc will be funded at fully recommended level, providing	level of qa/qc.
			the highest quality data for use in all aspects of CALFED mgmt.	
California Dept. Fish & Game	Signif. increased project management and	$75,000	"New" project management tasks for DFG would developing	Reductions in management would be necessary, including:
"Project Management & Logisti-	logistical coordination duties, as strongly recommend-		and managing a centralized common database which would	Not writing midterm and final interpretative reports, not
cal Coordination"	ed by the external SRC. These duties are "new", and	Pays personnel time	provide for integrating and interpreting combined data from all	assembling a common database for all mercury results
	are above and beyond what was agreed upon in	only for Max Puckett,	project tasks and P.I.'s when preparing midterm and final	nor having a centralized data system, much less extensive
	the original CALFED proposal for project management.	increasing his PY time	interpretive reports. Would also include more extensive internal	QA Review, coordinating fewer external SRC meetings,
		from 0.5 to 0.75 PY per	QA review on all project data, and more project coordination	and conducting fewer meetings and communications with P.I.'s.
		year for each of 3 yrs.	and communication efforts than currently provided.	Many of these tasks will now have to get done by individual P.I.'s,
				rather than by DFG. The reports will be a compilation of
				individual investigator reports with an executive summary.
		DFG also contributing $50,000 cost-sharing.		
External Scientific Review	Conduct a total of three on-site Scientific Review	$48,000	Provides for face-to-face interactions and dialogues between	There would only be enough funding for one additional SRC
Committee	Committee meetings, using 3 international mercury		international mercury experts and the project P.I.'s, as well as	meeting, and it would have to be via teleconference. Dialogue
"Conduct On-site	experts brought to California to meet in person with		*enabling these experts to answer questions from the public during*	*and interaction between the external experts and the project P.I.'s*
Scientific Review Meetings"	project P.I.'s and the general public (at public forums).		public meetings held simultaneous to their on-site SRC meetings.	would be minimized, and the experts would not be able to be
	Includes travel, per diem, and honoraria.			present for any further public meetings to answer questions.
Frontier Geosciences, Inc	Would speciate mercury among its different	$117,895	Chemical speciation could be very useful in predicting "hot-spots"	Would have to continue to employ a much more costly method
& Texas A&M, Galveston	oxidative states, a process which was not being		where mercury is most likely to methylate and bioaccumulate	of determining mercury inputs from rivers, rather than being able
"Mercury speciation, diagenisis,	conducted at the time of the submission of the		in the food chain. This could help Managers prioritize mercury	to use the speciation methodology. Would not be able to provide
and bioavailability of mine tailings"	original CALFED proposal.		cleanup and provide information to CALFED on where it can safely	"hot-spot" information in a timely manner on sites where mercury
			locate ecosystem restoration efforts. Would provide a much	is most likely to methylate and bioaccumulate in the food chain.
			more cost-effective method to analyze mercury inputs from rivers.	
Total of all requested funding augmentations		$364,000		

As of May 2, 2000

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