

Agenda Items: 9
Meeting Date: June 8, 2005

JOINT MEETING WITH BAY-DELTA PUBLIC ADVISORY COMMITTEE

LEAD SCIENTIST REPORT

Summary: Recent Science Program Activities

Current Status of the Science Program Proposal Solicitation (PSP)

The Selection Panel met in early May to make strategic funding recommendations on 142 proposals, requesting over \$142 million in funds, submitted in response to the 2004 CALFED Science Program PSP. The purpose of the panel, comprised of scientists, science managers, and advisors, was to recommend a sub-set of proposals for funding by taking into consideration the technical evaluations while considering what is the best science for the CALFED Program and the citizens of California. The panel selected and streamlined the budgets of 20 proposals that total \$16.6 million in requested funds (Attachment 1).

Proposal titles, applicant names, organizations, executive summaries, reviews, and recommended funding amounts are available on the PSP website at http://science.calwater.ca.gov/psp/psp_package.shtml.

Public comments on these proposals are currently being accepted and must be received by 3 p.m. on Friday, June 17, 2005. The Selection Panel will re-convene June 28 to consider written comments and, if appropriate, revise funding recommendations to be taken before the Authority in August for its approval.

A New Vision for CALFED Science in the Face of Changing Circumstances (Attachment 2)

Summary

Many new ideas and thoughts about the CALFED Program have emerged since the release of the CALFED Finance Plan in January 2005. Limitations in funding and concerns over long-term funding strategies are driving much of the discussion, but the discussions also include concerns over program focus and priorities. These discussions include concerns raised about the role of science in the CALFED Program as a whole and the functions of the Science Program itself. Based on these and my own concerns, I have reassessed the Science Program's role and commit to the critical

science needs of the CALFED agencies and stakeholders. The Program must provide independent and credible directed scientific oversight while better facilitating and guiding multi-agency science efforts, including both monitoring and research. To do this will require a major realignment of Science Program priorities and efforts both for the near and long term. To initiate this realignment, I propose immediate implementation of a strategic plan that includes the following major components:

- Replace the long-term PSP process with a more focused annual peer-reviewed, directed action program and shift more of the responsibility for funding research and monitoring back to the other CALFED program elements.
- Consider consolidation of the present multiple science board structure into one independent science board emphasizing review and program assessment.
- Increase technical panel review efforts on emerging and long-term issues/needs and refocus Science Program efforts on science review and oversight.
- Continue promoting scientific partnerships across agencies, research institutions, and non-profit organizations through the CALFED Fellows Program.
- Consolidate the communication of scientific information to better address policy and management concerns.
- Implement a strategy for full coordination and appropriate integration with the Interagency Ecological Program.
- Increase the number of permanent State staff assigned to the Science Program from 4 to 11.
- Work with CALFED leaders and the Administration to establish a stable and secure source of Science Program funding.

The Science Program described here is reduced in scope and breadth from what is described in the CALFED Finance Plan. This realignment of the program would: 1) substantially reduce the commitment to directly invest in the scientific information needs of CALFED via the proposal solicitation process; 2) discontinue program-specific boards in favor of a single independent science board; 3) increase the science oversight and review functions of the science program, without any additional means to effect changes within the 10 CALFED program elements; and 4) reduce the suite of communication products generated through the Science Program.

The above program would require the expenditure of approximately \$10 million/year (\$1 million for staff and \$9 million for direct costs). The Science Program can meet this budget target for the next three years without any additional funds. Beyond three years, the Science Program needs continual funding of at least \$10 million/year to support the program described here.

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List of Attachments

Attachment 1 – Science Program Proposals Initially Recommended for Funding by the
Selection Panel

Attachment 2 – A New Vision for CALFED Science in the Face of Changing
Circumstances

Contact

Dr. Johnnie Moore
Lead Scientist

Phone: (916) 445-0463

Science Program Proposals Initially Recommended for Funding by the Selection Panel

#	Title	Lead Organization	Lead PI	Amount Requested	Amount Recommended (bold = modification)
Relative Stresses on Key Fish Species					
27	Interactions of Mercury and Selenium in Bioaccumulation and Toxicity in San Francisco Bay Plankton	Stony Brook University	Fisher, Nicholas S.	\$476,226	\$476,226
85	Quantitative Indicators and Life History Implications of Environmental Stress on Sturgeon	University of California, Davis	Kueltz, Dietmar	\$999,481	\$999,481
Implications of Future Change on Regional Hydrology, Water Operations, and Environmental Processes					
47	Responses of Tidal Wetlands to Invasive Cordgrass, Sea Level Rise, and Sediment Supply	University of California, Davis	Strong, Donald	\$540,656	\$500,000
84	CASCaDE: Computational Assessments of Scenarios of Change for the Delta Ecosystem	United States Geological Survey	Cloern, James E.	\$1,842,870	\$1,842,870
105	Ecological Consequences of Elevated Salinity in the Sacramento-San Joaquin Delta	San Francisco State University	Kimmerer, Wim J.	\$1,295,321	\$550,000
Processes and Factors Affecting Delta Water					
122*	Biomass and Toxicity of a Newly Established Bloom of the Cyanobacteria Microcystis Aeruginosa and its Potential Impact on Beneficial Use in the Sacramento-San Joaquin Delta	California Department of Water Resources	Lehman, Peggy W.	\$602,914	\$602,914
332	Phytoplankton Communities in the San Francisco Estuary: Monitoring and Management Using a Submersible Spectrofluorometer	California Department of Water Resources	Mueller-Solger, Anke B.	\$159,160	\$159,160
Hydrodynamic Models for Prediction, Optimization, and Strategic Assessments					
136	Hydrodynamics and Sediment Transport in a Shoal-Channel Estuary: The Cycling of Sediments in San Pablo Bay	University of California, Berkeley	Stacey, Mark T.	\$967,525	\$967,525
Salmonid Ecology					
111	Identifying the Causes of Feminization of Chinook Salmon in the Sacramento and San Joaquin River System	University of California, Berkeley	Sedlak, David L.	\$1,297,149	\$1,167,149
140	Life History Variation in Steelhead Trout and the Implications for Water Mangement	University of California, Santa Cruz	Mangel, Marc	\$1,136,095	\$1,136,095
169	Model-based Evaluation of Salmon Rearing in Tributary, Mainstem, and Delta Habitats	Humboldt State University	Wilzbach, Margaret A.	\$535,298	\$535,298

Science Program Proposals Initially Recommended for Funding by the Selection Panel

#	Title	Lead Organization	Lead PI	Amount Requested	Amount Recommended (bold = modification)
179	Chinook Salmon Rearing in the San Francisco Bay-Delta System: Identification of Geochemical Markers to Determine Delta Use	The Regents of the University of California	Ingram, B. Lynn	\$197,689	\$197,689
214	A Statistical Model of Central Valley Chinook Incorporating Uncertainty	University of California, Davis	Botsford, Louis W.	\$754,631	\$754,631
299	Review of Four Juvenile Salmon Coded Wire Tag Experiments Conducted in the Delta	United States Fish and Wildlife Service	Brandes, Patricia L.	\$83,100	\$83,100
313	Survival and Migratory Patterns of Central Valley Juvenile Salmonids	University of California, Davis	Klimley, A. Peter	\$2,150,766	\$1,300,000
318	Are 'Apparent' Sex Reversed Chinook Salmon A-Symptom of Genotoxicity?	University of California, Davis	May, Bernie	\$143,735	\$143,735
Delta Smelt Ecology					
106*	Modeling the Delta Smelt Population of the San Francisco Estuary	San Francisco State University	Kimmerer, Wim J.	\$1,107,027	\$1,107,027
107*	Foodweb support for the threatened delta smelt and other estuarine fishes in Suisun Bay and the western Sacramento-San Joaquin Delta	San Francisco State University	Kimmerer, Wim J.	\$1,306,500	\$1,170,000
Implications of Habitat Restoration					
246	BREACH III: Evaluating and Predicting 'Restoration Thresholds' in Evolving Freshwater-Tidal Marshes	University of Washington	Simenstad, Charles A.	\$2,232,035	\$1,500,000
295	How Abiotic Processes, Biotic Processes, and Their Interactions Sustain Habitat Characteristics and Functions in River Channels and their Floodplains: An Investigation of the Response of a Gravel-Bed Reach of the Merced River to Restoration	University of California, Santa Barbara	Dunne, Thomas	\$2,840,520	\$1,400,000
Totals					
20				\$20,668,698	\$16,592,900

* Identified as information needs for the IEP Delta Fishes workplan

A New Vision for CALFED Science in the Face of Changing Circumstances

Dr. Johnnie N. Moore
Lead Scientist, CALFED Science Program
May 16, 2005

Summary

Many new ideas and thoughts about the CALFED program have emerged since the release of the CALFED Finance Plan in January 2005. Limitations in funding and concerns over long-term funding strategies are driving much of the discussion, but the discussions also include concerns over program focus and priorities. These discussions include concerns raised about the role of science in the CALFED program as a whole and the functions of the Science Program itself. Based on these and my own concerns, I have reassessed the Science Program's role and commit to the critical science needs of the CALFED agencies and stakeholders. The Program must provide independent and credible directed scientific oversight while better facilitating and guiding multi-agency science efforts, including both monitoring and research. To do this will require a major realignment of Science Program priorities and efforts both for the near and long term. To initiate this realignment, I propose immediate implementation of a strategic plan that includes the following major components:

- Replace the long-term PSP process with a more focused annual peer-reviewed, directed action program and shift more of the responsibility for funding research and monitoring back to the other CALFED program elements.
- Consider consolidation of the present multiple science board structure into one independent science board emphasizing review and program assessment.
- Increase technical panel review efforts on emerging and long-term issues/needs and refocus Science Program efforts on science review and oversight.
- Continue promoting scientific partnerships across agencies, research institutions, and non-profit organizations through the CALFED Fellows program.
- Consolidate the communication of scientific information to better address policy and management concerns.
- Implement a strategy for full coordination and appropriate integration with the Interagency Ecological Program.
- Increase the number of permanent State staff assigned to the Science Program from 4 to 11.
- Work with CALFED leaders and the administration to establish a stable and secure source of Science Program funding.

The Science Program described here is reduced in scope and breadth from what is described in the CALFED Finance Plan. This realignment of the program would: 1) substantially reduce the commitment to directly invest in the scientific information needs of CALFED via the proposal solicitation process, 2) discontinue program-specific boards in favor of a single independent science board, 3) increase the science oversight and review functions of the science program, without any additional means to effect changes within the 10 CALFED program elements, 4) reduce the suite of communication products generated through the Science Program.

The above program would require the expenditure of approximately \$10 million/year (\$1 million for staff and \$9 million for direct costs). The Science Program can meet this budget target for the next three years without any additional funds. Beyond three years, the Science Program needs continual funding of at least \$10 million/year to support the program described here.

Introduction

The CALFED Science Program was established by the California Bay-Delta Record of Decision (ROD). Under the ROD, the Science Program is tasked to establish unbiased and authoritative knowledge directly relevant to CALFED actions and to communicate that knowledge to scientists, agency managers, stakeholders and the public. There are four broad objectives for the Program:

- 1) Provide a comprehensive and integrated scientific context for CALFED activities.
- 2) Ensure continuous advancement of credible scientific information that will guide regulatory decisions and water project operations.
- 3) Establish a framework to identify and articulate areas of scientific uncertainty relevant to key issues both before and after actions.
- 4) Develop strategies to reduce uncertainties and track performance and progress toward CALFED goals.

The Lead Scientist's job is to guide this program and, with the help of the Independent Science Board, to regularly assess its effectiveness. After almost one year in the job, I offer this brief review, including some recommendations for a new Science Program vision. This review and the recommendations for change are motivated by the rapidly changing circumstances for the CALFED program and my own concerns about the function of the Science Program. If implemented, these recommendations will require significant reorganization of the Program and the establishment of new priorities.

Problem Statement

To be successful, the science conducted throughout CALFED needs to meet three criteria. First, *things need to be done right*, i.e., scientific projects need to be objective, timely, and rigorous. Second, CALFED programs must be seen as *doing the right thing*. This entails identifying and resolving the science behind key management and policy issues. Third, and probably most difficult but also the most important, the science done by CALFED programs must *support good management and policy decisions*. Managers and policy makers must believe that science conducted throughout CALFED is helping them make better, more informed policy and operational choices, and stakeholders must be able to understand the scientific rationale for those choices.

Although there are some visible and important successes in meeting the above criteria, it is my view that the science implemented under CALFED has not met the expectations set out in the ROD. This stems from an inability to consistently and broadly meet the three criteria for success outlined above. At present there are no institutional and structural processes in place that will resolve this issue. With the present funding climate, the Science Program is now at a crossroad. It is time to ask hard questions about the viability of the program and more importantly, plot a course that will assure the viability of the scientific process within the CALFED Program as a whole.

Conceptual Model for Change

The Science Program must reassess its role and commit to the critical scientific needs of the CALFED agencies and stakeholders. I believe the best approach is to make the Science Program into a focused scientific oversight entity that tracks, comments on, and helps guide multi-agency science efforts, including both monitoring and research. The Program would continue to fund some new science research, but in a very targeted way and at much reduced levels compared to levels contemplated in the ROD or the CALFED Finance Plan. I am not recommending any change in the reporting relationship of the Science Program relative to the larger CALFED governance structure. I firmly believe the Program must remain independent in order to maintain credibility and objectivity. However, the functional changes I recommend will require a major realignment of Science Program priorities and efforts both for the near and long term. In my view there are seven elements of a strategic plan for this new Science Program:

1. The Science Program should discontinue the present PSP process for funding science initiatives. This approach to solving critical uncertainties for CALFED has not and, given uncertainties over future funding, will not yield the anticipated benefits in a timely manner. Rather, about \$6 million from the \$18 million in Science Program PSP funds should be allocated this year via the present PSP review process to projects that will address the highest and most immediate priority needs identified by the PSP selection panel. In each of the following two years the Program would establish and fund peer-reviewed directed research actions to spend the remaining \$12 million allocated for the PSP. By allocating these funds over a three year period the Science Program will increase its ability to respond to future needs without additional funds. No new money would be required until the fourth year. The goal of the Science Program directed research actions would be to increase the responsiveness to CALFED information needs that cannot be addressed by other programs. The Science Program would no longer solicit proposals through the PSP after this year. Funding for this directed actions program would need to remain at about \$6 million/year to justify associated program implementation costs.
2. There are some concerns that the CALFED science boards are at present costly, inefficient and slow to respond to CALFED needs. However, there is a critical need for independent, external scientific oversight of the CALFED Program. A smaller and more focused Independent Science Board with a more narrowly-defined mission may better fit the present and future needs of the program. I propose that a new ISB should have about 7-10 scientists and act as a review board set up to address the emerging issues within CALFED. The ISB should meet as needed to review research and monitoring plans, performance measures and technical advisory panel recommendations. This ISB also would advise the Director and the CBDA on issues, meeting all of the requirements laid down in the ROD. All ISB members would be given a standard stipend for meeting days and reimbursed for expenses to travel to the meeting. Total expenses for all ISB members would be kept below \$300,000/year.
3. One of the main refocused functions of the Science Program would be to perform oversight and review (e.g., following the NRC approach to specific reviews) and provide/facilitate peer review services for the CALFED Program. This would require a moderate scientific staff to do synthesis work, convene technical panels and put on workshops aimed at clarifying the state of knowledge, performance assessment and addressing emerging issues. Small technical panels (3-6 people) would be established as needed with a specific charge and duration, preferably 3-6 months, and have very specific products required. We would establish no open-ended panels. I expect 3-5 panels in operation each year. The role of the program staff will be to work with these

panels, facilitate work and bring panel reports to the ISB for final review and comment for transmittal to the Authority Board. The role of the Science Program would be to assure workshops and boards meet uniform requirements of rigor. Payment to panel members would be by stipend for a work product. I envision these panels costing no more than \$50,000 to \$100,000 per product, depending on the effort required. The total amount allocated to panels and workshops would approximate \$1 million/year.

4. The Science Program should continue to fund the CALFED Fellows Program for postdoctoral researchers who are working in all fields relevant to CALFED goals. The main goal of this program is to promote scientific partnerships across agencies, research institutions, and non-profit organizations. The emphasis is on analyzing, interpreting and/or expanding current data that has not been completely analyzed by agency or stakeholder scientists. This is a critical need for CALFED and would help address the immense backlog of data that has not been critically analyzed or used to formulate deeper understanding of water systems and biological systems. California Sea Grant will continue to administer and manage the fellowship program on behalf of the CALFED Science Program. The initial fellowships will be awarded in September of this year addressing the priority issues identified for 2005 in the PSP. Each fellowship will last 2-3 years. The entire program will last 7 years with an approximate cost of \$1.2 million/year for the next three years and less in later years.

5. The Science Program will continue to communicate scientific information through the CALFED science conference, electronic journal (*San Francisco Estuary and Watershed Science*) and scientific publications. The number of editors for the electronic journal will be decreased from three to two and the layout and preparation will be transferred to in-house staff. We also expect to expand the content of the journal to publish four issues per year and include more policy-oriented papers to better address management questions. The biennial CALFED Science Conference and the State of the Estuary Conference will continue to be sponsored in alternate years by the Science Program. It is expected that CALFED Science Conference attendance will grow and will require substantial staff support and resources that we hope to share with other programs. The yearly cost for the communication of scientific information through these venues is projected to be about \$350,000/year.

6. The Science Program must continue to work with the Interagency Ecological Program (IEP) to develop and then implement a strategy for full coordination and appropriate integration of these two programs. The Science Program and IEP should also continue to develop plans for a comprehensive monitoring and assessment program. Science Program staff and science advisor support will continue to be provided to these efforts at an annual cost of about \$100,000/year.

7. To succeed, the Science Program must have sufficient dedicated staff. All of the above recommendations for reform will fail without crucial staff support. Getting more Science Program staff directly working with other CALFED program staff is a major change envisioned in this plan. The Program will need 2 Federal positions and 11 permanent State positions, and this will require 7 additional State positions. Funding for this level of staffing is expected to run about \$1 million/year. Position summaries are as follows:

Federal Positions:

The Lead Scientist and Special Assistant to the Lead Scientist are U.S. Geological Survey positions funded through an MOU with CBDA. The Lead Scientist is charged with ensuring

application of scientific principles and promoting peer review throughout CALFED to ensure the quality of program planning, implementation and evaluation and nominates/establishes standing boards/independent review panels of experts as part of the independent science review of the entire CALFED Program. The Special Assistant to the Lead Scientist is the representative for the USGS within the Program to identify how the Science program and USGS scientists can best contribute to meeting the CALFED Program goals and objectives and further technical aspects of the Science Program and relevant programs within the USGS.

State Positions:

The Deputy Director reports to the Lead Scientist and has primary responsibility for directing Science Program staff and managing program activities to ensure efficient and effective program implementation.

Technical staff (4 positions): A technical staff will be assigned to each of the four main CALFED program areas (ecosystem restoration, water quality, levee integrity, and water supply reliability). Technical staff will have responsibility for managing review panels (e.g., develop review charge, manage product development, and manage information transfer) within the assigned program area. Technical staff will also analyze information in specific topic areas to prepare synthesis analysis, develop performance measures and undertake performance assessment activities, summarize the state of knowledge, and recommend next steps for science efforts.

Program implementation and administration staff (5 positions): Staff to: 1) plan and administer budgets, contracts, and human resources functions; 2) provide logistical support and arrangements for the technical panels and ISB; 3) implement communications functions, e.g., science journal, biannual science conference, science web site; 4) develop annual program plans and reports; and; 5) track program activities and assess program performance. These staff will work in collaboration with the assistant to the Lead Scientist to administer federally funded activities.

Secretary/office manager (1 position): This position will oversee the day-to-day activities of the Science Program office, manage appointment calendars for the Lead Scientist and the deputy director, serve as the first point of contact for anyone contacting the Science Program, and will manage the public meeting notice requirements for Science Program activities.

In summary, the above program would require the expenditure of approximately \$10 million/year: about \$9 million of direct costs and about \$1 million for staff. By reallocating funds for the PSP into directed actions spread over three years, slightly decreasing the number of CALFED Science Fellowships, and reducing expenditures on communication functions, the Science Program can meet this budget target for the next three years without new money. However, implementing these activities is critically dependent on obtaining new staff. All of the elements listed here would be severely curtailed or some not pursued in the absence of appropriate dedicated staff. In the long term, the Science Program needs to find stable funding at the \$10-\$12 million/year level to support the program described above. Additional money could be used to enhance directed actions and build a much stronger portfolio of investment in critical unknowns.