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State Agencies

The Resources Agency:
Department of Water Resources
Department of Fish and Game
Delta Protection Commission
Department of Conservation
San Francisco Bay Conservation and
Development Commission
California State Parks
The Reclamation Board
California Environmental
Protection Agency:
State Water Resources Control Board
California Department of Food
and Agriculture
California Department
of Health Services

Federal Agencies

Department of the Interior:
Bureau of Reclamation
Fish and Wildlife Service
Geological Survey
Bureau of Land Management
US Army Corps of Engineers
Environmental Protection Agency
Department of Agriculture:
Natural Resources Conservation Service
Department of Commerce:
National Marine Fisheries Service
Western Area Power Administration

August 1, 2008

To: John Kirlin, Executive Director
Delta Vision Blue Ribbon Task Force

From: Mike Healey, Science Advisor
Delta Vision Blue Ribbon Task Force

Subject: Proposed Structure and Function of a California Delta
Center for Science in Public Policy

As requested by the Delta Vision Blue Ribbon Task Force, this memo outlines the structure and functions of a California Delta Center for Science in Public Policy. The design for this Center was developed in consultation with staff of the CALFED Science Program.

The mission of the California Delta Center for Science in Public Policy is to provide for the science needed to support implementation of the Delta Vision and Strategic Plan. We interpret science in the broadest sense to include all relevant natural science, engineering and social science. The structure and functions that we propose for the Center are based on the successful CALFED Science Program but augmented in several ways that we believe will strengthen the efficiency and effectiveness of science delivery and science interpretation for policy makers. The most important new functions that we propose for the Center are that it should be a point of access to databases for the California Delta and other major estuaries, that its scientific staff should have the capacity to undertake integrative synthesis and modeling to address ecosystem and water supply issues, and that it should be a resource center for integrating adaptive management into water and ecosystem management. Although we define the California Delta as the primary geographic focus of the proposed Center to address many Delta problems, its geographic scope will have to include the tributary watersheds, the water distribution system south and west of the Delta, Suisun Bay and Marsh, San Francisco Bay, and the coastal ocean.

This proposal addresses the science needed to implement the new Vision for the California Delta. However, there are other water and ecosystem hot spots in California that could adopt a similar approach to science. A statewide program for water and ecosystem science would be an effective way to coordinate the science needed to address these widely scattered problem areas. Under a statewide program, the California Delta Center for Science in Public Policy could become one component of a large scientific enterprise.

Functions of the Center

The California Delta Center for Science in Public Policy is designed to:

1. Facilitate access by scientists and decision makers to existing scientific data and information relevant to the California Delta;
2. Initiate new science to inform policy through improved understanding of water supply and ecosystem in the Delta;
3. Promote efficiency and accountability in water and ecosystem management through science coordination, adaptive management, monitoring and performance evaluation;
4. Provide independent scientific oversight and peer review of programs, projects and products in a timely manner;
5. Undertake scientific synthesis in response to emerging problems; and
6. Communicate and interpret science for policy makers, legislators, other decision makers and the interested public.

Each of these functions is elaborated below:

1. Facilitate access by scientists and decision makers to existing scientific data and information relevant to the California Delta

The California Delta is one of the best studied delta/estuaries in the world. Many databases, some of which span 30 years or more, are critically important to our understanding of this estuary. These databases are managed and maintained by a diversity of state and federal agencies and private companies. In addition, similar kinds of databases exist for other large estuaries that are important for comparative scientific analysis of estuary function. The California Delta Center for Science in Public Policy will include staff with the specific responsibility to be knowledgeable about what databases exist and how to access them. These staff will also be responsible for summarizing the available data in response to needs of the California Delta Ecosystem and Water Council and other clients. These databases are often the best source of information for exploring hypotheses about Delta function. By combining data from several sources and comparing the Delta with other locations, fuller insights into estuary function can be gained. These databases also often provide the only data that can be used for immediate scientific assessment of emerging problems. The Interagency

Ecological Program Pelagic Organism Decline (POD) analysis is a recent example of how historic data can be used to assess a complex problem. Much more, however, is possible. The Center will have the capacity to help researchers access these data and will undertake its own integrative analyses in consultation with the California Ecosystem and Water Council and in response to perceived policy needs.

2. Initiate new science to inform policy through improved understanding of water supply and ecosystem in the Delta

Understanding of the Delta has increased considerably over the last decade. However, there remain many gaps in knowledge as well as major uncertainties in how the Delta will respond to specific management actions. Furthermore, the Delta continues to change over time in response to changing climate and landforms and evolving human demands. We expect that the Delta of the future will not be like the Delta of today. Continued investment in new science will be necessary if management policy is to improve over time and managers are to keep abreast of the changes that are occurring. Through an annual open competition, The California Delta Center for Science in Public Policy will award grants for new research that focuses on the most pressing gaps in understanding and potentially troublesome emerging issues. Qualified researchers will be invited to submit research proposals to address a set of topics identified by the Center in consultation with decision makers and resource managers to ensure their relevance to management of the California Delta. Grants will be awarded for proposals that meet high standards of science and policy relevance.

The Center will also support a fellowship program for up to 10 highly qualified doctoral and post doctoral students each year through California Sea Grant or other institution with expertise in locating and vetting potential fellows. Fellows will be expected to conduct research on a topic relevant to the Delta and to collaborate with a scientist in one of the agencies or in the Center. A primary purpose of the fellowship program is to train the next generation of Delta scientists.

Scientists at the Center will take the lead in a limited number of highly integrative research projects such as: 1) meta-analysis of data bases to explore emerging Delta problems and issues; 2) developing numerical ecosystem models based on the Delta Regional Ecosystem Restoration Implementation Plan (DRERIP) or other conceptual models of the Delta and using those models to assess ecosystem dynamics; 3) developing and utilizing gaming tools for exploring policy implications of changing physical, chemical, and biological conditions in the Delta. These projects will generate new tools that allow Delta resource managers and policy makers to incorporate the latest science into their decisions. By conducting and publishing such highly synthetic research, Center scientists will keep at the cutting edge of their disciplines, will enhance the scientific credibility of the Center, and will contribute to a more holistic understanding of the Delta.

3. Promote efficiency and accountability in water and ecosystem management through science coordination, adaptive management, monitoring and performance evaluation

We anticipate that state and federal agencies will continue to undertake the science necessary to satisfy their individual mandates in the Delta and that academic researchers will also continue to conduct research in the Delta. The Center will take responsibility for coordinating these diverse science activities by partnering directly with agency and academic scientists and by sponsoring workshops and symposia that bring together the active researchers to report on emerging science, share ideas and develop effective collaborations.

Adaptive management is a set of tools designed to help managers improve their understanding of the Delta through their regular management programs. Managers have been gradually implementing aspects of adaptive management but more is needed if the value of this approach is to be fully realized. The California Delta Center for Science in Public Policy will have the expertise to assist managers with integrating adaptive management into their standard procedures. A few specially trained staff will help guide adaptive management planning and implementation, including providing agency staff with training on the latest technologies and modeling tools. At the request of implementing agencies, the Center will also review their adaptive management programs.

Monitoring is a critical aspect of accountability and of adaptive management. Monitoring is also the source of the information stored in various databases. Insufficient or inappropriate monitoring is often the main obstacle to evaluating the success of management actions and full implementation of adaptive management. Failure to monitor can often be more costly in the long run than committing the necessary resources from the beginning because without appropriate monitoring, it is not possible to see problems developing. Inadequate monitoring also slows the essential evolution of management in a changing world. The Center will have expertise to help agencies develop effective monitoring programs. Furthermore, through its facilitation of analysis and cross-referencing of databases, the Center will be able to alert managers to impending management problems and potential solutions.

Performance evaluation of Delta water and ecosystem restoration programs is central to accountability. Effective performance evaluation rests on a foundation of good monitoring and adaptive management. The Center will assist agencies and institutions to develop and implement effective and efficient program and project performance evaluation procedures.

4. Provide independent scientific oversight and peer review of programs, projects and products in a timely manner

Independent scientific review is a cornerstone of the scientific method, helping to ensure that science products meet accepted standards of quality and relevance to a field of study. The same process can be used to evaluate how science and scientific information are incorporated into water and ecosystem management. Through its network of specialists in a diversity of scientific fields, the California Delta Center for Science in Public Policy will assemble teams of experts to conduct in-depth science reviews of water and ecosystem management programs and projects in the Delta.

The Center will respond to requests from government agencies and other institutions to review their programs, projects or products. Where it sees a need, the Center will also initiate a review without being requested to do so. A variety of formats are possible for these science reviews and the particular format used will depend on what is to be reviewed. Regardless of format, these reviews will be open and transparent.

5. Undertake scientific synthesis in response to emerging problems

Frequently, management will benefit from an examination of what is known about the issue or an assessment of the implications of various policy alternatives before a decision is made about how to proceed. The Center will convene workshops and symposia to assess and synthesize the science relevant to significant emerging management issues either at the request of a management agency or on its own initiative. These workshops and symposia will provide an open and transparent forum for exploring science, gaps in understanding, and scientific assessment of policy alternatives.

Center staff will have the mandate to analyze and synthesize data from monitoring and research and to develop discussion papers or information papers around emerging issues. These discussion papers will inform decision makers about the current state of scientific understanding and provide background for the workshops and symposia mentioned above. From time to time, the Center may also produce substantive reviews of the state of scientific knowledge concerning an issue in the Delta. An example of such a substantive review is the State of Bay-Delta Science report currently in production by the CALFED Science Program.

6. Communicate and interpret science for policy makers, legislators, other decision makers, and the interested public

Communication between scientists and policy makers is often described as the weakest link in the policy process. Effective communication between scientists and non-scientists (including policy makers, legislators, other decision-makers

and the interested public) will be a primary purpose of the California Delta Center for Science in Public Policy. This communication will take a variety of forms, including oral briefings, briefing documents, white papers, workshop reports, internet news and regular integrated assessments of the state of the California Delta system. The objective will not be to "dumb down" the science but to find effective ways to communicate the richness and the limitations of scientific understanding. Science will be communicated in a policy neutral way but the policy implications of the science will be clearly articulated.

As part of its contribution to the scientific community, the Center will also sustain the peer reviewed, online San Francisco Estuary and Watershed Science Journal.

Structure of the Center

The Lead Scientist: Overall scientific leadership for the Center will be provided by an independent Lead Scientist appointed by the California Delta Ecosystem and Water Council. This individual will have an advanced degree in a field of science relevant to water and ecosystem management in the Delta, an outstanding international reputation as a scientist, a strong commitment to and interest in communicating science to non-scientists, and experience leading multidisciplinary teams. We recommend that the Lead Scientist be appointed for a 2 or 3-year term with option for one renewal by mutual agreement of the Council and the incumbent Lead Scientist. It should not be a permanent appointment. Having the Lead Scientist change every few years will ensure that a fresh scientific perspective is brought to the program on a regular basis and will help preserve the independence of the position.

The independence of the Lead Scientist has been a critical factor in the success of the CALFED Science Program and we feel very strongly that this independence should be a key part of the organizational structure of the California Delta Center for Science in Public Policy. In the CALFED Science Program, the independence of the Lead Scientist is assured by having the position within the US Geological Survey (USGS). As a member of the premier federal science organization, the Lead Scientist has the prestige of that organization behind him, is not answerable to any of the CALFED implementing agencies, and can concern himself entirely with the scientific credibility of the Science Program. A similar level of independence for the Lead Scientist in the California Delta Center for Science in Public Policy will ensure that the Center is concerned only with the quality of Delta science.

An agreement with USGS to support a Lead Scientist for the Center will provide the necessary degree of independence. Alternatively, an analogous agreement with the University of California system will provide a similar level of independence. The Lead Scientist should have equal status in terms of the overall organization for management of the Delta as the most senior decision maker.

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The Lead Scientist will be assisted by Deputy Lead Scientists each responsible for a specific area or areas of activity within the Center. The CALFED Science Program, for example, includes a Lead Scientist for the Interagency Ecological Program (IEP) responsible for providing scientific leadership to the IEP. Maintaining a close scientific linkage with the IEP will be equally important in the new governance system. Deputy Lead Scientists should also take particular responsibility for core activities such as scientific synthesis, adaptive management and performance evaluation. The Deputy Lead Scientists would be permanent, continuing, employees of the Center.

Linkages with State and Federal Agencies: A second critical organizational component is scientific linkages with both state and federal agencies. The support of USGS for the Lead Scientist in the CALFED Science Program provides a tangible link to the federal system even though federal agencies withdrew much of their initial support for CALFED. Establishing a significant level of federal participation is critical to the Delta Vision Strategic Plan as well. The necessary linkages with regard to Delta science can be established through both financial and organizational commitments to the Center.

To further enhance linkages with federal and state agencies, the Center will be designed to include among its staff (in addition to the core staff) a small number of state and federal agency scientists. These agency staff will be detailed to work in the Center for a period of time on a specific Center project relevant to the agency providing the scientist (such as design of an adaptive management program). The Center will also be designed to offer space and facilities to a small number of academic scientists, students, and science fellows who are collaborating with Center scientists on specific projects.

Core Staff and Administration of the Center: Except for the Lead Scientist, Center staff (including Deputy Lead Scientists) will be staff of the California Delta Ecosystem and Water Council. Center staff will have a diversity of professional backgrounds (e.g., science, engineering, economics, information technology, public policy) relevant to water and ecosystem management in the Delta and relevant to the functions of the Center. The principal administrative link between the Center and the Council will be through an Executive Director for Science. This individual will sit on the appropriate governing bodies of the Council but will also be the chief administrative officer for the California Delta Center for Science in Public Policy. The Lead Scientist and Executive Director for Science will jointly administer the Center with the Lead Scientist having primary authority over matters of science and the Executive Director over matters of finance and human resources. The Lead Scientist and Executive Director together with deputy lead scientists and program managers will constitute the management team for the Center.

As the Lead Scientist is a term appointment, the Executive Director for Science, the deputy lead scientists, the program managers and staff will provide the continuity and institutional memory of the Center.

Core Funding for the Center: Stable and reliable funding is essential to the success of the California Delta Center for Science in Public Policy. The necessary core funding for the Center should come from some assured source such as general funds, federal appropriations, water use fees, etc. The Center should not be dependent for its core funding on state bond issues. The Center should also have a statutory exemption from Department of General Services competitive bid requirements in contracting with independent scientific experts to provide advice or participate in scientific reviews. In carrying out its mission, the Science Program will be expected to provide timely, necessary and relevant scientific guidance to the Council or other elements of the Delta governance system within very short time periods. This requires frequent, short-term engagement with nationally prominent scientists who have the specific expertise needed to address critical Delta management issues. The exemption will allow the Center to access this national expertise in a timely manner.

Program Review and Assessment for the Center

Just as individual programs and projects can benefit from regular review and oversight, so will the Center. Indeed, the entire Delta management enterprise should be subject to regular high-level scientific review. We propose that an independent Delta Science and Engineering Board of 7-10 members be established with appropriate expertise to assess the broad range of activities that will be undertaken to manage water and the ecosystem in the Delta. This Board will meet annually to review all science aspects of the overall program implementing the Delta Vision Strategic Plan. We propose that the Delta Science and Engineering Board conduct an in-depth review of one or two program elements each year to ensure that each element gets an in-depth review about every 5 years (i.e., within the planning cycle for the Delta plan). In this way, the California Delta Center for Science in Public Policy will receive a thorough review at least once during each planning cycle. Given the pace of scientific discovery, more frequent review does not seem warranted. However, the California Delta Ecosystem and Water Council will have the authority to request an extraordinary review of the Center or any other program element if necessary.

In addition, science advisors appointed by the Lead Scientist will advise Lead Scientist and the Center staff concerning the quality and relevance of their scientific activities and their communications to components of the Delta governance and other agencies tasked with implementing the Delta Vision Strategic Plan. The science advisors will be natural scientists, social scientists and engineers with knowledge of the Delta and its tributaries or specific skills needed to assess and help ensure the excellence and policy relevance of Center programs and projects.

Authority of the Center for Science in Public Policy

The authority of the Center will come through the status and position of the Lead Scientist as a high level participant in the decision making team for the Delta. To retain the scientific independence of the Center, the Lead Scientist will have to be an ex-officio member of the decision making team. However, the Center, through the Lead Scientist, will be the primary authority on science that will form the basis of management decisions. The Center will also be the primary authority on design of adaptive management for water supply and ecosystem management. The Center will also have the responsibility for scientific oversight of all major projects affecting the Delta.

The Lead Scientist will offer an annual public report on the State of the Delta Science. This will be a candid assessment of how science is contributing to progress toward the goals established in the California Delta Ecosystem and Water Plan. It will assess the state of Delta science, uncertainties and gaps in understanding that are impediments to resolving problems, progress in integrating science across agencies and adaptive management, and how the Center plans to address these issues over the next year.

cc: J. Grindstaff
CALFED Deputy Directors
IEP Directors and Coordinators
BDCP Steering Committee