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April 4, 2008

To: IEP Directors

From: Jeff Mount, Chair 
CALFED Independent Science Board

RE: Moving the Interagency Ecological Program into the Future

As part of its mandate to oversee the quality and use of Science in the Bay-Delta system, the CALFED Independent Science Board (ISB) has been conducting a broad review of the Interagency Ecological Program (IEP). The goal of this effort is to promote innovation in and modernization of the program as well as integration with efforts outside of the Delta. Most importantly, the ISB feels strongly that on-going planning efforts such as Delta Vision and the Bay-Delta Conservation Plan must begin incorporating monitoring and research in general, and the IEP specifically, into their strategic planning. We encourage you, as IEP Directors, to engage with Delta Vision, BDCP and the CALFED Science Program in this regard.

The attachment details several recommendations. In summary, these are:

- The Bay-Delta system needs (and currently lacks) a comprehensive and integrated monitoring program. The IEP should form the foundation of this program.
- The IEP program should become more anticipatory, hypothesis-driven and comprehensive, focusing on promoting understanding of the entire Bay-Delta system.
- Recent progress in encouraging data analysis and publication of results should be supported and expanded.
- IEP should seek greater integration and collaboration with monitoring and research programs both within and outside of the Delta in order to promote greater understanding and innovation. Collaboration with groups involved in developing new observational networks as a part of national programs will enhance IEP's capabilities in data management.
- The IEP program needs a strategic analysis of its current sampling protocols and locations, with the goal of evaluating their effectiveness and design.
- There is high value in periodic, independent review of the program and assessment of the response of the program to those reviews.
- It is worthwhile, as part of on-going planning efforts, to evaluate the efficacy of current funding and governance structures for IEP and whether different approaches might improve performance and stability of resources.

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The ISB feels that the IEP has served and will continue to serve a vital role in managing the Bay-Delta system and looks forward to working with agencies, Delta Vision, BDCP, and the CALFED Science Program in this regard.

Attachment

cc: IEP Coordinators

Mike Chrisman, Secretary for Resources

Joe Grindstaff, Deputy Secretary for Water Policy and Director
of CALFED Bay-Delta Program

Mike Healey, CALFED Lead Scientist

Attachment: Moving the Interagency Ecological Program into the Future

Monitoring done by the Interagency Ecological Program (IEP) has provided the observational foundation for the current scientific understanding of ecological conditions in the Bay-Delta ecosystem. Recognizing the crucial role played by monitoring in assessing ecosystem status and trends and in evaluating consequences of management actions, CALFED's Independent Science Board (ISB) conferred with IEP scientists and examined previous program reviews. We offer the following general observations and suggestions to the IEP Directors and Coordinators, IEP Lead Scientist, IEP Program Managers, and CALFED Lead Scientist as they continue to develop their program to adapt to new challenges, opportunities and priorities.

- A comprehensive and integrated monitoring and assessment program is essential for the Bay-Delta system. The IEP is and should remain a critical component of such a program, which should also include collaborators from universities and other institutions doing research and monitoring in the system. The current analyses being done by the POD team is an example of the kind of collaborative effort that is needed in all aspects of monitoring. The Bay-Delta system currently suffers from the absence of a truly comprehensive and integrated monitoring program.
- The IEP monitoring program should be an anticipatory, goal-oriented, hypothesis-driven, ecologically-based comprehensive monitoring and evaluation program that documents ecological status and trends, facilitates evaluation of policy alternatives, promotes understanding of the entire Bay-Delta system, and collaborates with other scientists working in the region. IEP currently serves multiple purposes: developing information on status and trends that provides initial insights into cause and effect, and monitoring for compliance. Improving integration of those two aspects of the program is essential so that mandates for compliance monitoring are grounded in current scientific understanding of processes driving the system.
- As has been emphasized in past reviews by IEP's Science Advisory Group, resources must be provided to make data analysis, interpretation, synthesis, and peer-reviewed publication an integral part of the program's culture. Data collection is not sufficient. Although the program has made progress in this regard, top priorities for the IEP lead scientist should be promote analysis and publication as part of participation in the program, and identifying and supporting individuals and groups to do it.
- The IEP program appears to be insular and needs to extend its interaction and collaboration with research and monitoring programs within the Bay-Delta, its tributaries, other parts of the State, and nationally. In addition to sharing

information and coordinating monitoring activities, these interactions will strengthen the monitoring program. The current IEP collaboration with the National Center for Ecological Analysis and Synthesis (NCEAS) is an example of the advantages of such engagement with the broader scientific community. Enhancing these types of activities and creating a culture of collaboration that encompasses the entire monitoring program will result in a more effective program.

- It is essential that IEP collaborate with groups involved in developing new observational and analytical technologies as part of national oceanic and ecological observatory networks. There have been major developments in distributed data management systems by several federal agencies and the National Science Foundation in the past five years. These systems leave the responsibility of managing the data with individual agencies, but facilitate the synthesis, display and retrieval of data. The ISB recommends that IEP conduct an evaluation of the various systems (specifically, USGS, NOAA and NSF Environmental Observatories) and determine what might work best in the CALFED setting.
- The ISB recognizes the value of the long-term monitoring that has been conducted; however, there are now major new policy directions for the Bay-Delta and contributing watersheds. The IEP monitoring program would benefit from a strategic analysis of its current sampling sites and procedures in light of growing scientific understanding of Bay-Delta ecosystems, projected activities with potential impacts on those ecosystems, and innovations in technology and approaches to data analysis and management. This analysis also requires coordination and collaboration with the activities of other monitoring and research groups in the region. It could be accomplished using appropriate workshops or groups of experts. Modifications of the design of IEP monitoring programs should be based on exploratory studies to ensure that appropriate parameters (e.g., indicators) are monitored to address relevant questions. This requires a transparent effort that recognizes that research and monitoring are integrated activities along a science-information gradient. Strategic selection of communities or ecosystem processes to monitor is critical to all monitoring efforts as it is not possible to monitor all species and processes. Strategic analysis will require acceptance of possible changes or evolution in the program: what, where, when and how selected parameters (e.g., ecosystem state variables and functions including hydrodynamic characteristics and background water quality measures that include key organic and inorganic substances, as well as biological species) are monitored, and perhaps major redesign of some of the monitoring programs.
- Continuing periodic review (as has been done by the Science Advisory Group) should be an essential feature of the program. Regular reviews of IEP should include not only what is monitored and monitoring protocols, but also

a review of commitment of resources to achieve the program, how decisions are reached to allocate those resources, and the response of IEP to previous reviews.

- IEP should consider expansion of its monitoring, analysis, and research functions in collaboration with other scientists in the region to better support management of the entire Bay-Delta *system*. Design of monitoring protocols and interpretation of resulting data should include cross-analyses among findings to assure a comprehensive understanding of (a) the functioning and response of the many Bay-Delta ecosystems; (b) drivers for those functions and responses that lie outside of the Delta itself, such as the streams and catchments that feed them; and (c) the response of the Delta and water resources to management actions. IEP activities should be tightly integrated with the other organizations that have a monitoring function in the Delta as well as in its tributaries and watersheds. Only through such integrated studies will decision-makers have the information necessary to guide the reconfiguration of the Delta and to provide wise management for it in the future. In other words, the future IEP should become a crucial – perhaps the primary – organization of its type serving the Bay-Delta management teams, and it should be organically integrated with other similar organizations in the public and private agencies that provide monitoring, analysis and related research on the Bay-Delta system.
- Keeping IEP running through changing policies, budgets and management priorities has been a real achievement, and the managers in the contributing agencies are to be commended for their foresight. Yet it is not clear that the current budgetary and administrative structure of the IEP will enable it to meet future information needs. Different funding and administrative structures should be considered. Is it beneficial to establish priorities based on consensus of participating agencies, each with somewhat different missions? Or would a more centralized funding source enable IEP to be more nimble and efficient in establishing priorities? What administrative structure will enable a monitoring program to provide the information and analyses needed to make critical policy decisions for the Bay-Delta system?

Current planning efforts, including Delta Vision and the Bay-Delta Conservation Plan, are just beginning to evaluate how science will be used to support management of the Bay-Delta system. It is the view of the Independent Science Board that IEP and its related programs must be explicitly factored into the thinking of both efforts. It is, in our view, unwise to leave the details of integration of science and science institutions to some future date. With oversight and direction from its Science Advisory Group, the IEP should be an active participant as proposals related to the future of the Delta move forward. The IEP has a grand reputation and a tradition of cooperation between its participating agencies. We anticipate that IEP will continue this tradition while evolving to

meet the Bay-Delta's future demands for data collection, analysis, synthesis and publication.