

Agenda Item: 14-4

Meeting Dates: April 13 and 14, 2005

JOINT MEETING WITH BAY-DELTA PUBLIC ADVISORY COMMITTEE

CALIFORNIA BAY-DELTA AUTHORITY INDEPENDENT SCIENCE BOARD REPORT

Summary: The Independent Science Board (ISB) of the California Bay-Delta Authority is actively examining the use of science to support decision-making within the CALFED Program, including work on levees, performance measures, and monitoring and modeling. The following provides a brief update on ISB activities and highlights two specific areas of investigation: levees and monitoring/data assimilation. ISB anticipates providing more detailed reports and specific recommendations to the Authority on Delta levees in June 2005.

Recommended Action: This is an information item.

Background

The updated 2005 ISB Work Plan is attached. The recent meeting (February 2005) addressed several topics as described in the Key Outcome Memo to be posted on the ISBs website at: http://science.calwater.ca.gov/sci_tools/isb.shtml and as described below:

1. Delta Improvements Package (DIP). ISB is examining the science currently being used to support decision-making and considering both short- and long-term science needs for Delta management. In collaboration with the Water Management Science Board, ISB has developed an initial list of research questions that need to be considered to fully evaluate probable changes in water delivery and flow characteristics. ISB is also working in collaboration with the California Water and Environment Modeling Forum (CWEMF) to examine the use of modeling to address the DIP hypothesis that increased pumping capacity will provide flexibility that will facilitate meeting water quality and ecosystem restoration goals. Two central technical issues to the DIP are also being examined by ISB in the context of system monitoring and data assimilation (see below).
2. Performance Measures - An ISB subcommittee is examining the use of performance measures within the CALFED program and exploring guidelines and a possible decision tree for developing and evaluating potential performance measures.

3. Science Agenda - At the request of the Lead Scientist, ISB will provide assistance in developing the science agenda for the Science Program. The ISB will offer input on two aspects of the agenda: research and information transfer.
4. Assessing Science Needs - ISB will be providing an evaluation of the use of proposal solicitation packages as an approach for addressing the science needs of the CALFED Program.

ISB is also working on scientific questions regarding levees and the utility of more comprehensive system monitoring and data assimilation. Specific observations and proposed ISB activities regarding these two topics are described in more detail below.

1. Levees. In 2004 an ISB fact-finding team conducted an initial investigation regarding levee integrity in the face of changing conditions in the Delta and produced a report entitled, *Subsidence, Sea Level Rise, Seismicity in the Sacramento-San Joaquin Delta: Report to the Levee Integrity Subcommittee of the California Bay-Delta Authority Independent Science Board* (presented to the Authority by Dr. Jeffery Mount in October 2004). The report notes that subsidence, combined with rising sea level, earthquake-induced levee failures, and large floods are likely to result in dramatic changes to the Delta levee network with impacts to tidal prism dynamics, water quality, and water supply reliability if current practice and policy continues.

In response to this report, ISB formed the Levees Subcommittee to collect more information and formulate recommendations to the Authority about what technical studies need to be performed to assess the significance of subtle, long-term, large-scale changes occurring in the landscape of the Bay-Delta. The ISB Levees Subcommittee is still conducting its investigations, but has identified the following as items of concern that might warrant additional attention. ISB expects to present recommendations to the Authority at its June 2005 meeting.

- **Risk Assessment.** An assessment of current understanding and assessment of risks associated with the consequences of levee failure both in the short- and long-term on all aspects of the CALFED Program (agriculture, water supply, environmental water quality, storage, etc) may be needed.
- **Cost-Benefit Analysis.** Additional work may be needed to develop a clear, science-based understanding of the consequences of levee failure, including a comprehensive cost-benefit analysis on future maintenance of the Delta levee system.
- **Subsidence Management.** The potential effects of various ecosystem restoration actions and other land management practices on future subsidence rates needs to be clarified.

- **Peer Review and Publication of Results.** The degree to which past and present analyses by Authority agencies associated with levee management can be peer-reviewed and made broadly accessible should be examined.
 - **Review of Policies.** The subcommittee is reviewing existing policies regarding levee maintenance.
2. Utility of System Monitoring and Data Assimilation. ISB conducted a preliminary survey of existing monitoring programs in the San Francisco Bay-Delta and its tributaries to assess their utility in: (1) addressing selected hypotheses underlying the CALFED Bay-Delta Program; and (2) evaluating program performance. The following summarizes preliminary observations of ISB and outlines a conceptual proposal for further examining the applicability and use of existing monitoring data relative to key management decisions, including the value and design of an integrated observation and forecasting system.

Findings

- A diverse and extensive array of monitoring programs are in place in the San Francisco Bay-Delta and its tributaries; yet coordination and communication among programs appears to be limited.
- An integrated conceptual model to guide a comprehensive monitoring program has not been identified. Such a model would enable monitoring to better inform policy decisions and assess CALFED's progress toward meeting its goals.
- Integration of monitoring and modeling is not addressed in the monitoring documents examined thus far by ISB.

Proposed Next Steps

ISB proposes to sponsor a work session (or series of work sessions) to review existing monitoring efforts within the CALFED Bay-Delta Program in order to evaluate how system monitoring and data assimilation (e.g., linking models directly with monitoring data in real-time to provide synoptic assessments and predictions) could be designed to aid decision-making and assess progress toward Program goals. For each topic, the work sessions will examine the use of existing monitoring and modeling, and the potential utility of an integrated observation and forecasting system. CBDA and other agency staff familiar with on-going monitoring programs will be invited to participate in the work sessions.

The work session(s) will be organized around two topics that are relevant to policy decisions associated with the DIP:

- 1) South Delta Barriers, and
- 2) Salt Management in the San Joaquin River.

The first work session focusing on South Delta Barriers is planned to occur during ISB's May 10-11, 2005 meeting. To prepare and plan, an ISB South Delta Barriers Team will review the experience of how monitoring and data assimilation have been used in the installation and maintenance of the current temporary barriers, as well as what plans already exist for monitoring and data assimilation in the design and operation of the new permanent barriers.

List of Attachments

Attachment 1 – 2005 Independent Science Board Work Plan (Updated February 2005)

Contact

Dr. Johnnie Moore
Lead Scientist

Phone: (916) 445-0463

INDEPENDENT SCIENCE BOARD 2005 WORKPLAN
 (as updated at February 2005 ISB Meeting)

Topic	Planned Activity	Timeframe for Completion	Action Product ¹
<p>Delta Improvements Package</p> <p>Continuing activity – 2005 activities focus on two questions.</p>	<p>What science is currently being used to support decision-making and what could be used, both in the short-term and the long-term?</p> <p>Current</p> <ul style="list-style-type: none"> • Identify and appraise sources of information, e.g., IEP, draft EIS/EIR • Work with WMSB & ERPSB to explore the scope of issues necessary to fully evaluate changes in water delivery and flow characteristics. <p>Future</p> <ul style="list-style-type: none"> • Work with CWEMF to plan workshop (Fall 2005) to explore use of modeling in determining the role in inc. pumping rates in allow more flexible approaches to water quality management and ecosystem restoration. 	<p>Initial eval. May 2005 Continue throughout EIS/EIR process</p> <p>Initial report September 2005</p> <p>December 2005</p>	<p>Commentary</p> <p>Original Approach</p> <p>Original approach</p>
<p>Lead Scientist/Authority Requests</p> <p>ISB Review of Science Agenda</p>	<ul style="list-style-type: none"> • Review and refine draft Science Agenda. <ul style="list-style-type: none"> ○ Research ○ Information Transfer 	<p>Spring 2005.</p>	<p>TBD</p>

¹ Actions/products identified under the "Planned Activity" column in the table refer to specific deliverables as defined in the draft Operating Guidelines for the ISB. Abbreviated definitions for these six types of activities are provided at the end of table.

Topic	Planned Activity	Timeframe for Completion	Action Product ¹
System Monitoring and Data Assimilation	<ul style="list-style-type: none"> • Survey existing monitoring programs and assess their utility in addressing selected hypotheses underlying the program. • Explore use of monitoring and data assimilation to address specific management and policy questions regarding: <ul style="list-style-type: none"> ○ Permanent operable South Delta Barriers ○ Salt management in San Joaquin • Explore the formation of technical panel to evaluate potential for an integrated observation and data assimilation system for the Bay-Delta and its watershed. 	February 2005 – Completed May 2005 Working session Sept. 2005 Working session Fall 2005	Original approach
Assessing Science Needs	<ul style="list-style-type: none"> • Evaluate PSP approach as a tool for addressing the scientific needs of the Bay-Delta Program <ul style="list-style-type: none"> ○ Other programs funding proposals ○ Contracting challenges ○ Science timeline vs. decision timeline 	May 2005 interim report September 2005	
Integrated Use of Environmental Water	<ul style="list-style-type: none"> • Subcommittee to begin evaluation of use of current resources including EWP, EWA, CVPIA b2 & b3 water 	Update May 2005	Commentary
ISB Annual Report	<ul style="list-style-type: none"> • Prepare annual report summarizing 2004/5 activity of the ISB. 	Draft September 2005 Final December 2005	Original Approach
Levees	<ul style="list-style-type: none"> • Subcommittee to prepare ISB recommendation based on work of Mount/Twiss/Keller and additional fact-finding. 	May 2005	Original approach
Performance Measures	<ul style="list-style-type: none"> • Conduct fact finding to understand status of PM and their relationship to goals and objectives • Develop standardized methodology to guide assessment of performance measures • Finalize methodology • Recommend performance measures for: <ul style="list-style-type: none"> ○ Science Program ○ Water Quality Program 	May 2005 report on status Draft May 2005 September 2005 September 2005	Briefing Original approach Original approach

Actions/Products

Consultation: Oral advice on a technical issue prior to having staff begin substantive work on that issue.

Advisory: Written advice on technical works-in-progress.

Review: Assessment on the application of science within CBDA, including how scientific reviews are organized and how recommendations are used.

Commentary: Forward-looking comment in the form of a short communication.

Original Approach: Original ideas and suggestions developed by the ISB regarding emerging or overarching scientific or technical issues.

Briefing: Presentation and other information provided to the ISB regarding pertinent scientific and technical issues and activities.