

Observations and Recommendations Concerning the Delta Improvements Package
Prepared by the Independent Science Board of the California Bay-Delta Authority
May 19, 2004

Introduction

The purpose of this memo is to convey initial thoughts of the Independent Science Board (ISB) regarding the development and future implementation of the Delta Improvements Package (DIP). The memo also identifies areas where the ISB could provide input to the Authority in the coming months regarding elements of the DIP, including the 8,500 cfs pumping capability and the South Delta Barriers. At this initial stage, our observations and recommendations do not address the specifics of the proposed changes. Rather, our comments address issues we believe are of general importance for the CBDA to consider as the DIP develops in the future. The ISB expects to receive regular briefings regarding the DIP, and will report further observations and recommendations to the Authority as they develop in the future.

The comments provided herein are based on recent briefings and discussions, our knowledge of CBDA activities from our service within the program (e.g., EWA, ERP), and our experience with natural system dynamics and large-scale water management within California and in other regions of the country such as the Appalachian-Chattahoochee-Flint system in GA, the Colorado River, and the Mississippi River. We are not experts on the specific proposed changes associated with the DIP, but we have experience that can assist the Authority in ensuring the highest quality of science is used in the DIP.

Observations

Interconnections within the Program

There is considerable overlap between the DIP and other components of the CALFED Program, specifically the EWA and the ERP. It is critical that the DIP planning documents clearly state and address the relationships between DIP activities and planned EWA and ERP activities. For example:

- How do DIP activities relate to ERP projects that are also designed to improve water quality and fish habitat in the Delta?
- Are there ways to coordinate EWA water use with DIP so as to better manage and protect endangered species and provide opportunities to test and evaluate DIP proposals and activities?
- How can information learned from past and anticipated experiences with EWA and ERP be used to ensure that the present and future expected operational benefits of the DIP are realized?

Interconnections beyond the Program

The planning effort for DIP provides an excellent opportunity for the CBDA to consider how major changes in water project operations could affect the functioning of the entire ecosystem. *The ISB is concerned that the DIP planning is currently focused too narrowly on the local near-term effects, rather than the long-term broader ecosystem implications. It is essential to*

view the changes associated with the DIP in the context of changes in upstream tributaries, the Sacramento River, and the downstream bay environment.

An even broader perspective will eventually be needed that views changes like those with the DIP in the context of projected changes in human population and climate. For example, during the 20th Century, the temperature in the western United States increased by 2 to 5°F. This temperature increase has had a major effect on snow pack and the timing of snow-melt runoff. Various models suggest that the temperature in California could warm an additional 5°F in the present century. Such increasing temperatures may have serious implications for natural supply rate, storage, and transport of water throughout California.

Our experience working in other systems indicates that a broad view frequently leads to alternative interpretations of the effects of individual actions. Broad scale implications of individual actions are often not apparent at the site-specific level of planning.

Questions for Further ISB Consideration

The ISB has identified several overarching questions that the ISB intends to pursue during its forthcoming meetings:

1. What is the Program-wide vision for the Delta? Do current references in the ROD and planning documents reflect current knowledge of how the Delta functions affect water quality, food for valued fish species, etc.; or is updating and revision in order? How do changes associated with the DIP relate to that vision?
2. What and how can CBDA learn from operational changes, such as changed pumping rates and barrier operation? Can changes that have been made and that are planned be used to learn more about how the Delta functions?
3. Are there any irreversible or serious implications of the DIP for other Program elements or other aspects of the ecosystem?

Recommendations

1. Monitoring

Existing monitoring programs should be assessed, reinforced as necessary, and new approaches developed to provide the information necessary for a full evaluation of the effects of the DIP on local and system-wide attributes.

The ISB recognizes the importance of long-term data sets such as those developed under the Interagency Ecological Program. It is a false economy to scale back such efforts when major operational changes are being considered. Monitoring and interpretation of monitoring data are crucial to evaluating DIP in the context of spatial and temporal variability, and to assessing ongoing risks to water quality and ecosystem goods and services.

2. Modeling

Continue, and where appropriate initiate, the development and coordination of a series of nested and interconnected local and system-wide models to provide the Authority with forecasts of the potential benefits and risks of the DIP to ecological function, water quality, and water supply.

It is important to consider the DIP with respect to the entire ecosystem and in the context of long-term changes such as climate change and population growth. The complex linkages among water supply, conveyance, and ecosystem health require a modeling effort beyond that undertaken to support any individual program element; one which is able to examine the cumulative effects of different delta configurations, DIP operating principles, and climate regimes.

3. Sound Science Practices

Develop guidelines for incorporation of current scientific knowledge and thorough scientific procedures into all technical documents supporting Authority decisions.

The ISB believes it is important that all technical documents informing the Authority be based on sound science (e.g., clear statement of hypotheses, thorough data analyses, assimilation of up-to-date understanding of natural processes, acknowledgment of key assumptions, identification of uncertainties and data limitations) and on adaptive management principles. Mechanisms should be put in place (e.g., external peer review) to ensure that all technical documentation supporting Authority decisions adheres to these guidelines.