

DRAFT**BDAC Assurances Work Group
Case Study
for Discussing
Assurance Needs and Issues**

It is the Assurances Work Group's task to develop mechanisms to assure implementation of the final CALFED Bay-Delta Program solution. At its November 6, 1996 meeting, the Assurances Work Group asked CALFED staff to develop an example or case study and to present assurance issues based upon that case study. An example alternative, it was hoped, would allow more specific discussions of needs and the assurances to meet those needs. The Work Group recommended that the case study be based upon a dual delta transfer facility alternative (i.e. water would be transported around the delta, as well as through the delta for exportation).

It is important to understand that a preferred alternative has not yet been identified through the CALFED Bay-Delta Program. This case study provides but one scenario of what a final solution developed through the Program might resemble. This case study should be used for illustrative purposes only. It serves as a vehicle for directly and specifically addressing some of the complex assurance issues that will face any solution reached through the CALFED Bay-Delta Program. A dual transfer alternative presents obstacles both to moving water around as well as through the delta. Because this case study raises a variety of assurance problems, insight gained in developing assurances here may be applicable to any of the alternatives.

In addition, the Assurances Work Group is primarily concerned with assuring implementation of a solution, not in defining the solution. For this discussion, assume that a solution is acceptable, provided that the CALFED Program is able to provide adequate assurances. Obviously, if the development of assurances is difficult, this could have implications for the practicality of the alternative under consideration.

Staff drafted the following case study containing example actions that could be part of a final solution. The case study is described by its program components (i.e., Ecosystem Restoration, Water Quality, Water Use Efficiency, Delta Vulnerability, Conveyance, Storage and Financing). After the Case Study staff presents a preliminary list of the assurance issues raised by this particular example. The list of assurance issues are intended to provide the basis for a more detailed discussion at the January 1997 Work Group meeting to begin assessing differing methods of meeting the identified assurance issues.

Overview of Case Study

The physical and programmatic elements of the case study are described in this section. The case study is necessarily written with a broad brush. It is designed primarily to meet the four program goals -- Ecosystem Restoration, Water Supply Reliability, Water Quality, and System Integrity. Secondly, the case study is designed to make the problem of assurances more approachable. The case study is generally consistent with CALFED draft alternative 3.

The **Ecosystem Restoration Objective** is addressed by: (1) a major habitat restoration program in and above the Delta (including both specific actions and an adaptive management program); (2) improvements in flow and diversion timing patterns (made possible by new storage, efficiency improvements, water purchases, and the construction of multiple export intakes); (3) improvements in diversion screening; (4) increased flexibility in the location of diversions (made possible through the construction of multiple export intakes); and (5) improvements in water quality.

The **Water Supply Reliability objective** is addressed by: (1) new storage elements managed partly for increased out-of-stream supply; (2) construction of the dual Delta transfer facility to allow more efficient and more frequent movement of water across the Delta; and (3) the water efficiency and water market elements.

The **Water Quality objective** is addressed by: (1) specific actions and programs designed to improve water quality in and above the Delta and (2) the construction of a dual transfer facility to improve export water quality

The **System Vulnerability objective** is addressed by: (1) programs to protect and upgrade existing levees and (2) a program to upgrade emergency response to levee failure.

The case study incorporates two main provisions specifically designed to make the assurance problem more manageable. The first provision is the adaptive management program. Considering that there is considerable uncertainty in our ability to predict which restoration activities will be most beneficial, the inclusion of a high quality adaptive management program will significantly increase the likelihood that the solution will achieve meaningful restoration at a reasonable cost. The second provision has to do with the selection of a dual transfer facility, as opposed to a completely isolated Delta transfer facility for this example. A dual transfer facility with limited capacity in the isolated component may reduce concerns that export interests will seek to reduce expenditures on levee, water quality, and environmental protection in the future, particularly when the isolated component is too small to carry projected levels of exports.

If the case study spurs fruitful discussions of assurance issues, the Work Group may wish to increase the complexity of the case study in future iterations. The case study was designed to bring to light significant and difficult assurance issues, however it will probably not bring to light every conceivable assurance issue.

1. Ecosystem Restoration
 - a. Specific commitments
 - i. Enhance existing habitat
 - ii. Convert existing land uses to habitat
 - (1) Create meander zones
 - (2) Enhance vegetation on levees
 - (3) Levee setbacks
 - (4) Buffer habitat on the inside of levees
 - (5) Convert agricultural land to managed wetlands
 - (6) Convert Delta land to shallow habitat
 - iii. Screen certain local intakes
 - iv. Alter flow and temperature patterns to provide net fishery benefits. Flow benefits generated through combination of rules (changed flow/X2 standards) and market mechanisms.
 - b. Programmatic commitments
 - i. Set long term restoration goals and objectives
 - ii. Create a mechanism designed to meet long term goals and objectives, while allowing discretion as to the means.
 - iii. Establish monitoring and evaluation process
2. Water Quality
 - a. Specific commitments/ programmatic commitments
 - i. Undertake pollutant source control actions (agricultural and urban)
 - ii. Increase remediation of mine drainage
 - iii. Implement watershed protection programs
 - iv. New regulatory requirements to protect beneficial uses
3. Water Use Efficiency
 - a. Programmatic commitments
 - i. Standardized rules for water transfers
 - (1) Define transferable water
 - (2) Mitigate local third party and environmental impacts
 - (3) Streamline approval process
 - ii. Water Reclamation
 - (1) Define BMP
 - (2) Eliminate institutional barriers to implementation
 - iii. Urban Water Conservation
 - (1) Define BMP
 - (2) Quantify targets
 - iv. Agricultural Water Efficiency
 - (1) Define EWMP
 - (2) Define local planning process
 - (3) Create incentive process

- v. Refuge Efficiency
 - (1) Define BMP
 - (2) Create Incentive process
- 4. Delta Vulnerability
 - a. Specific Commitments
 - i. Target levees for maintenance, repair, upgrades
 - b. Programmatic Commitments
 - i. Establish and implement emergency response program
 - ii. Establish and implement long-term maintenance plan
- 5. Conveyance
 - a. Specific Commitments
 - i. Construct dual conveyance facility.
 - ii. Size the isolated portion of dual facility from 5,000 cfs to 15,000 cfs.
 - (1) Screen intake
 - (2) Operational rules -- new rules designed to meet ecosystem needs while simultaneously improving supply reliability
 - (a) Operate to meet any new Delta flow requirements
 - (b) Operate to meet existing Delta water quality requirements
 - (c) Operate to meet export standards
 - (d) Operate in real time to protect fish etc. near intakes
 - (e) Coordinate project operations with other user and environmental controlled water (market transfers, discretionary environmental supplies, etc.)
 - iii. Through Delta portion
 - (1) Screened intake on Sacramento River
 - (2) Operational rules as with isolated portion
 - b. Programmatic commitments
 - i. Mechanisms to change operational rules as understanding of biological needs changes.
- 6. Storage Facilities
 - a. Specific commitments
 - i. Construct 1 million acre feet offstream storage facility north of the Delta.
 - (1) Operations: Facility operated to benefit local users, export interests, and environment.
 - (a) Fill during periods of low environmental impact, e.g., during falling limb of pulse flows
 - (b) Water user share of storage operated to boost reliability for local and export uses, e.g., release storage to boost water supplies during dry years
 - (c) Environmental share of storage operated to boost environmental flows during key periods, e.g., release storage to support flows during dry years

- ii. 200,000 acre feet of conjunctive use storage north of the Delta
 - (1) Operations: Description similar to upstream storage
 - iii. 200,000 acre feet storage in Delta island(s).
 - (1) Operations: Description similar to upstream storage
 - iv. Construction of local facilities to maximize groundwater storage potential within Kern Fan (via conjunctive use, percolation, etc.).
 - (1) Operations: Description similar to upstream storage
 - b. Programmatic commitments
 - i. Mechanisms to alter storage operations based upon changing needs of users and changed understanding of environmental needs. Could lead to changed diversion patterns and/or changed discharge patterns in order to meet simultaneously optimize environmental protection, restoration, and water supply reliability.
7. Funding
- a. Specific elements
 - i. Detail allocation of funding needs
 - b. Programmatic elements
 - i. Mechanisms to alter funding or benefit patterns, based upon various contingencies
 - (1) Reductions in funding after environmental goals and objectives achieved
 - (2) Mechanisms to cope with possible future new endangered species.

Preliminary List of Assurance Issues Raised by the Case Study

Following is a preliminary list of assurance issues raised by the case study. Several patterns emerge from an analysis of assurance needs. One is that assurance needs can be divided into two classes: (1) assurance that actions promised in the solution will occur and (2) assurance that possible negative repercussions of the solution will not occur. Another is that while provision of assurances is not simply a zero sum game, it is also true that absolute assurances cannot be simultaneously granted to all interests. Thus, for example, it will be necessary to balance the need for certainty against a willingness to pay into the solution. Finally, many issues raised by this case study would probably be raised by many other scenarios. In the future, if the Work Group is able to craft adequate assurances for these issues, the assurances will probably be applicable to any solution that is selected.

1. Ecosystem Restoration

- o That the specific habitat restoration actions will be implemented.

Which entities implement the various portions of habitat restoration?

Under what authority and organizational structure do these entities operate?

Has adequate and secure funding been provided?

Will necessary permits and approvals will be granted expeditiously?

What if a specific project cannot be implemented?

What happens if the needed expenditures exceed funding allocated?

Will local concerns be weighed by the implementing entities?

If local agencies implement specific restoration actions (e.g., improved screening), who assumes the cost if new actions need to be taken in the future (e.g., if the screens need to be upgraded)?

o **That instream flows and delta outflow will be provided.**

What entities will secure the changes in flow and diversion patterns?

What authority, funding, and organizational structure will these entities possess?

Under what conditions can these flow and diversion patterns be modified?

Can commitments for specific flow and diversion patterns be maintained should future development greatly increase the demand for water upstream?

How will third parties and local environments be protected?

Will the environmental flows interfere with the exercise of water rights in the future?

Will increased environmental flows place existing users at greater risk by lowering average reservoir levels or by inducing groundwater overdraft?

o **That the adaptive management program will be implemented and durable.**

How does the program assure stable goals and objectives?

Can the program be insulated from future political interference?

Is there adequate and secure funding?

Does the entity that directs the adaptive management program have adequate authority and an organizational structure that will operate efficiently over time?

What mechanisms are in place to assure the scientific integrity of the program?

How will program goals be prioritized (e.g., as between supporting commercial fishing versus supporting endangered species)?

What will prevent the adaptive management program from allocating resources poorly, such that external mechanisms kick in and reduce benefits to other interests (e.g., could the program allocated funds to salmon population improvement, allowing another species to become endangers, triggering an endangered species act listing and new regulations on flows and exports.)?

How will the program coordinate operations with other parties?

What if the goals and objectives of the program cannot be met without additional funds?

2. Water Quality

- o **That the specific water quality actions and programs are implemented.**

What entities are charged with securing the improvements in water quality?

Do these entities have adequate authority and funding?

How are these entities organized?

What if the needed expenditures exceed funding allocated?

Can commitments for specified water quality standards be maintained should future development greatly increase the demand for water?

How can water quality actions be coordinated with ecosystem and water supply actions to assure that limited financial resources are spent effectively?

3. Water Use Efficiency

- o **That efficiency programs for urban, agricultural and environmental uses will be implemented.**

What mechanisms will assure that reclamation, urban BMPs, agricultural plans, agricultural EWMPs, and refuge efficiency BMPs will be implemented?

What is the assurance that the efficiency programs will be upgraded as technology advances?

Are there standardized rules for water transfers adequate to assure that a vigorous market will develop and that third party impacts will be minimized or mitigated?

4. Delta Integrity**o That actions to maintain delta levees and channels will be implemented.**

What entities will implement the various elements of an emergency management and response plan?

What entities will implement the remainder of the plan?

Do these entities have adequate authority and funding?

Will necessary permits and approvals will be granted expeditiously?

What if a specific project is blocked?

What if the needed expenditures exceed funding allocated?

How will coordination take place between the ecosystem restoration programs (both specific actions and adaptive management) and the levee stability programs?

5. Conveyance**o That conveyance actions are implemented.**

How does the program assure that new conveyance facilities will be permitted, funded and constructed?

How does the program assure that a new conveyance facility will be operated as agreed?

Are there compensatory mechanisms if a promised facility is not built?

How does the program assure that foreseeable changes in regulatory constraints will not impair or preclude conveyance facilities or operations?

What entities operate new conveyance facilities?

How does the program assure a new facility will be operated as agreed?

What are the assurances that new markets made possible by new conveyance will not damage rural economies or environments or that appropriate mitigation is implemented?

Does a smaller isolated facility pose a smaller threat than a large one, for the environment, Delta farmers, and upstream interests?

What institutional and financial barriers exist to prevent expanding the size of the isolated facility, once it is built?

6. Storage Facilities**o That storage actions are implemented.**

How does the program assure that facilities will be permitted, funded and constructed?

How does the program assure that foreseeable changes in regulatory constraints will not impair storage improvements?

How does the program assure that conjunctive use and banking programs will not impair local economies or environments, or that appropriate mitigation is implemented?

What entities will manage the facilities?

How does the program assure that the facilities will be operated as promised?

How will three separate interests (local, export, and environmental) be able to cooperatively manage a facility?

7. Finance**o That financing actions are implemented.**

How does the program assure that financing for each program element will be identified and provided?

8. General**o That a process be developed to address unforeseen circumstances that prevent key elements of the solution from being implemented or operated as agreed.****o That the program not alter the water rights system.****o That mitigation and monitoring be implemented.****o That public participation be provided throughout implementation.****The Need to Recognize Linkages**

Uncertainties in the relationship between future actions and future outcomes cause assurance problems which ripple through the program. For example:

- o Uncertainty about how best to restore the ecosystem implies that the CALFED Program must include an adaptive management element in its solution. But if the ultimate shape of the ecosystem restoration program (including habitat restoration, screening, improvements in water quality, changed flow and diversion patterns, etc.) is uncertain, then future land use and water diversion patterns are also necessarily uncertain. This complicates the development of assurances for the "water reliability" goal and the "no significant redirected impacts" solution principle.
- o If the amount of money that will be needed for ecosystem restoration (including protection of endangered species) is left open to reduce environmental uncertainty, then the ultimate costs to water users and the general public is uncertain. If the ultimate cost of ecosystem restoration is capped up front, funders will have greater certainty, but the likelihood of successfully meeting ecosystem goals and objectives is reduced.
- o If the behavior of any institution in the future is uncertain (the institution could act in unexpected ways), one way to reduce institutional uncertainty is by hardwiring specific actions into the CALFED Program -- specific mandates to reduce discretion or physical solutions which reduce the ability of any institution to use its discretion. But reducing agency discretion before optimal operations are known reduces the chances that the solution will be able to generate all the benefits possible.

Thus, it is somewhat artificial to discuss the assurance implications of the example component by component, because assurance needs in one area are generally closely related to assurance needs in other components. On the other hand, using the component framework will allow discussion of assurances in a systematic way.

Crafting Assurances for the Case Study

Because even the preliminary list of assurance issues raised by this case study is lengthy, staff suggests identifying three related actions requiring particularly complex and/or contentious assurance issues as the foundation for discussions at the January 14, 1997 Work Group meeting. Staff suggests that the three pieces of the case study most central to the development of a comprehensive set of assurances for the case study are the following:

- o construction and operation of an isolated facility with 5,000 to 15,000 cfs capacity;
- o implementation of an adaptive management program; and
- o construction and operation of a 1 million acre feet storage facility north of the Delta.

Identifying assurance issues and crafting assurances for each of the three elements of the case study described above and in this paper provide significant materials for discussion at the next Work Group meeting.