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BAY-DELTA
PROGRAM

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Memorandum

Date: May 6, 1999

To: CALFED Policy Group

From: Lester A. Snow

Subject: Water Management Strategy

Summary

CALFED staff, agencies, and stakeholders are continuing to work on development of the Water Management Strategy using an adaptive combination of all of the available tools. During the past month, the work has focused on refining the water supply reliability objectives contained in the December 1998 *Revised Phase II Report* and on continued economic evaluation of water management alternatives (EEWMA). Work is also beginning on the Integrated Storage Investigations. Since these efforts are still underway, CALFED staff will present more detail at the May 13, 1999, Policy Group meeting.

Detailed Discussion

Draft Water Supply Reliability Goals and Objectives - Work is continuing on refinement of the objectives contained in the *Revised Phase II Report*. Work on defining these led to combining into three major goals, each supported by objectives. Collectively meeting the following draft goals and objectives would reduce water user conflicts and uncertainty in Bay-Delta water supplies and improve overall water supply reliability:

Goal A: Increase the utility of available water supplies (making water suitable for more uses and reuses).

Objective A-1: Achieve the objectives for agricultural water use efficiency contained in the Water Use Efficiency Program.
Objective A-2: Achieve the objectives for urban water conservation contained in the Water Use Efficiency Program.

Objective A-3: Achieve the objectives for wastewater reclamation contained in the Water Use Efficiency Program.
Objective A-4: Reduce TDS in Delta water supply, overall and at sensitive periods, to increase blending of supplies from Delta and non-Delta sources.
Objective A-5: Reduce TDS in Delta water supply, overall and at sensitive periods, to allow for increased opportunities for recycling.
Objective A-6: Reduce TDS in Delta export water supply in order to reduce need for additional treatment of industrial process water.

Goal B: Improve access to existing or new water supplies, in an economically efficient manner, for environmental, urban and agricultural beneficial uses.

Objective B-1: Secure reliable water supplies to achieve Ecosystem Restoration Program objectives.
Objective B-2: Assist water users in mitigating current or anticipated impacts of regulatory actions and other changes in water supply availability.
Objective B-3: Provide an institutional structure in which a properly regulated and protective water market will allow water to move between users, including environmental uses, on a voluntary and compensated basis.

Goal C: Improve flexibility of managing water supply and demand in order to reduce conflicts between beneficial uses, improve access to water supplies, and decrease system vulnerability.

Objective C-1: Shift timing of diversions and exports to less biologically sensitive time periods identified by the Ecosystem Restoration Program.
Objective C-2: Increase ability to interrupt or shift exports and diversions in rapid response to unforeseen biological or hydrological conditions or other circumstances.

More specific, preferably numeric, targets will be developed to complement these narrative objectives where possible. Many of the objectives will require technical efforts to evaluate assumptions such as demand schedules for water deliveries for beneficial uses, source and cost of water supply (economics), and relative impact on level of beneficial use. Some objectives will be more specifically defined through ongoing work within the program elements, such as the CALFED Water Use Efficiency Program.

Economic Evaluation of Water Management Alternatives (EEWMA)

Summary

Through the development of a Water Management Strategy, CALFED is seeking to define specific water management objectives and describe how available tools might be integrated to meet those objectives. To aid in formulating and refining its Water Management Strategy, CALFED has undertaken an Economic Evaluation of Water Management Alternatives (EEWMA). The primary purposes of the EEWMA are twofold: 1) to define how assumptions could affect the selection of water management tools that define the Water Management Strategy and 2) to help evaluate the potential environmental, economic, and social benefits and impacts of alternative Water Management Strategies.

As described at the March 10, 1999 Policy Group meeting, two efforts are underway to meet the primary purposes of the EEWMA. Under a *Scenario Development* effort, CALFED is working with various stakeholder groups to define "preference sets" of water management assumptions. These assumption sets will be used to define alternative water management scenarios. The variety of preference sets provides an opportunity to assess the effects of a wide range of assumptions on the selection of water management tools. Work over the last two months has been focused on the Scenario Development effort, as summarized below.

Under the *Hydrologic-Economic Impact Modeling* effort, a number of hydrologic and economic models are being linked together to evaluate the benefits and impacts of alternative water management scenarios. As this model development proceeds over the next few months, alternative water management strategies formulated through the Scenario Development effort will be evaluated in more detail. Additional information will include assessments of groundwater impacts, Delta conveyance constraints, and regional economic impacts of alternative water management strategies.

Scenario Development

As part of the *Scenario Development* effort, CALFED is developing a range of the most cost-effective water management options (or "scenarios") to meet future California water needs in 2020. The scenarios, which include both demand reduction and supply augmentation options, will be constrained by assumptions packaged in "preference sets" developed in consultation with a variety of stakeholder groups. This variety of preference sets will allow a comprehensive assessment of the effects of assumptions on the formulation of CALFED's Water Management Strategy.

Since fall of 1998, stakeholder input has been acquired from monthly workshops, interviews with individuals representative of stakeholder groups, and comment letters that organizations have provided in response to the Department of Water Resources' Bulletin 160-98 or CALFED

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documents. Urban and agricultural demand functions have been developed based on DWR and CALFED studies and input from Dr. Richard Howitt and others. Supply data (costs and yields) for a variety of water management tools has been gathered and reviewed with water management agencies and stakeholder groups. Individual experts for each of the supply option types have been contacted and asked to review the basic supply data.

Documentation of stakeholder preference sets, demand functions and water supply data is nearly complete. Upon completion, this initial supply and demand screening analysis will be finalized. The results of the screening analysis will be presented in charts that show supply and demand functions for each of the five demand regions by stakeholder preference sets. Accompanying each chart will be a table detailing the particular water supply options including price and quantity adjustments at the destination. Example charts and tables will be presented at the May Policy Group meeting.

Preliminary findings of this supply and demand screening analysis include the following:

1. Water supply functions (quantity versus price at destination) are relatively flat. Considering the uncertainty in the estimates of cost and water supply availability of the options, there is little economic difference among many supply options.
2. Active conjunctive use and new surface storage supply options included in the scenarios (a scenario is a list of the most cost-effective water supply options necessary to meet demands subject to stakeholder preference sets) are similar across stakeholder preference sets, unless specifically excluded or included by a stakeholder.
3. Urban demand for new water supply is relatively "inelastic", such that water supply price changes have only a small effect on demand.
4. Land fallowing does not appear to a great extent in the scenarios. Water supplies from the least expensive land fallow measures are assumed to be exhausted by purchases for planned environmental restoration measures.
5. Without revised cost allocations there is minimal willingness to pay for new agricultural water supplies.
6. All stakeholder Possible methods to meet projected 2020 water quality standards for urban supplies from the Delta include reverse osmosis, other treatment technology (e.g. UV disinfection), an isolated facility, or exchange with non-Delta water. Water quality price adjustments are currently under development.

Work over the next month will focus on the price and quantity adjustments that are necessary to move water from its source location to its demand destination and the regional economic impacts associated with land fallow. A draft report on the Scenario Development effort is scheduled for completion in June.

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- Most policy assumption and preference sets result in similar arrays of available water management tools except when tools are specifically excluded.

- The cost of water from land fallowing may be higher than some water users are willing to pay.

- Due to relatively flat water supply vs. cost relationships, there may be little economic justification to implement some water management tools prior to others.

Integrated Storage Investigations (ISI) - Attached is the most recent version of the paper on the Integrated Storage Investigations.

Action

Approval of the water supply reliability goals and objectives and the Integrated Storage Investigation.

Information on the EEWMA.

Attachment