



July 1, 1998

Mr. Rick Breitenbach
CALFED Bay/Delta Program
1416 Ninth Street, Suite 1155
Sacramento, CA 95814

Re: Comments of the Natural Resources Defense Council on the CALFED Draft Programmatic Environmental Impact Statement/Environmental Impact Report

Dear Mr. Breitenbach:

The following represent the comments of the Natural Resources Defense Council (NRDC) on the Draft CALFED Programmatic Environmental Impact Statement/ Environmental Impact Report (DEIS/R). NRDC is a national conservation organization with over 350,000 members nationwide, including over 83,000 members in California. Our comments focus particularly on the CALFED Water Use Efficiency program, the No Action Alternative, and San Joaquin River issues. We will also be submitting, under separate cover, comprehensive comments with the Environmental Water Caucus.

NRDC recognizes the tremendous effort and resources that have gone into developing the CALFED program to date. We are pleased that CALFED acknowledges that the DEIS/R does not yet represent an adequate basis on which to select a preferred alternative, and NRDC remains committed to working with the CALFED staff to remedy remaining shortfalls in the program, fill in analytic gaps, and develop a long-term solution for restoring and managing the Bay-Delta ecosystem.

I. Overview

The DEIS/R contains numerous fundamental flaws that render it an unacceptable basis on which to select a preferred alternative.

- First, the DEIS/R fails to explore or fully analyze water management and efficiency alternatives that could provide the least cost and most environmentally sound way of meeting the CALFED program goals. By relying on an overly narrow definition of efficiency, and by failing to incorporate basic economic principles, long acknowledged to be lacking from California water policy, CALFED is missing a tremendous opportunity to create a more durable solution to conflicts over the Bay-Delta.

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- Second, by failing to include in the Ecosystem Restoration Program the mainstem of the San Joaquin River, one of the major tributaries into the Bay-Delta system, and by omitting consideration of groundwater management, CALFED fails to address fundamental problems in the Bay-Delta system and limits the potential effectiveness of the program.
- Third, by including flawed assumptions in its No Action alternative and in its impact analysis, CALFED mischaracterizes the impacts of the various alternatives, which could lead to a flawed final decision.

Below we more fully describe these concerns.

II. Water Use Efficiency Program

NRDC continues to see as a fundamental flaw that CALFED has not yet developed a vision for restoring and protecting the ecosystem while providing water supply reliability through improved water management. We believe that efficiency improvements can play a leading role in such a strategy. In many cases improving the efficiency of current water use and the operation of existing facilities may provide lower cost solutions to meeting water supply reliability goals than constructing new storage and/or conveyance facilities.

These least cost-solutions to meeting water supply reliability goals must be further evaluated and incorporated into the CALFED program. We are pleased that CALFED has now begun such a least cost analysis and strongly urge CALFED to refrain from making any final decision on a preferred alternative until this analysis is complete. This approach is consistent with the phased decision making model that CALFED is currently proposing, and could provide near term improvements to the ecosystem, water quality, and water supply reliability.

To develop a water management based solution, CALFED should first explore changes in the operation of the existing water delivery system in order to provide more protection for the environment. This may include further reducing exports during periods of highest environmental sensitivity, and providing increased instream flows as necessary throughout the Bay-Delta ecosystem. CALFED should then determine to what extent economic impacts, if any, of these operational changes can be mitigated through water conservation and recycling programs, water transfers, land retirement, conjunctive use of surface and groundwater, and floodplain restoration/storage.

The potential for conservation to play a leading role in addressing western water problems has been recognized by a variety of commissions and advisory bodies, including the Western Water Policy Review Commission, the Western Governors Association, the San Joaquin Valley Drainage Program, and others. For example, a policy statement adopted by the Western Governors Association in 1986 noted that "all western states could achieve considerable benefits by expanding existing programs for enhancing water use efficiency," and offered specific suggestions, including "adoption of clear policy statements by western states establishing water

use efficiency as a primary objective of water allocation and planning," and "expansion of programs, appropriate to each state, to encourage cost-effective water conservation and salvage through changes in water law and rate structures."¹ We attach the full text of the policy statement for inclusion in the administrative record.

More recently, the Western Water Policy Review Commission, after extensive meetings throughout the west, issued a report recommending that "water conservation, or improved efficiency of use, can have many benefits and should be the first approach considered for extending or augmenting supplies."² CALFED should heed this recommendation, which has repeatedly emerged from the many high level panels to have considered these issues.

Efficiency Concepts

CALFED will not be able to develop a meaningful and effective water use efficiency program until it acknowledges the real meaning of efficiency. Instead, CALFED invents its own limited definition of efficiency, saying "efficient water use is characterized by the implementation of local water management actions that increase the achievement of CALFED goals and objectives." (WUE Technical Appendix p. 2-1) While we support the notion of local water management actions that help achieve CALFED goals, that is certainly not synonymous with the full concept of economic efficiency.

We strongly urge CALFED to incorporate basic economic principles into its water use efficiency common program, and to subject the water use efficiency program to review by a panel of economists and other experts. The water use efficiency program will have no credibility until it reflects basic economic principles about supply, demand, and price.

The DEIS/R analysis, like the Department of Water Resources' Draft Bulletin 160-98 on which it relies, treats supply and demand as independent quantities, despite basic economic theory. Demand does not exist in a vacuum but rather is tied to willingness to pay a particular price for a particular good. Even in the regulated and often subsidized world of California water, to ignore the interrelationship of price and demand risks misrepresenting the state's water needs in a fundamental way.

The water use efficiency program inappropriately excludes consideration of pricing mechanisms to improve water use efficiency. Water users will respond to price increases in a variety of ways to reduce water use. For example, agricultural water users may invest in efficient technologies, undertake more intensive water management, fallow marginal lands, change cropping patterns, etc. As noted in the attached testimony of Drs. Michael Hanemann, David Zilberman, Gordon Rausser and David Sunding in front of the State Water Resources Control Board during the 1992

¹ Western Governor's Association Resolution 86-011.

² Western Water Policy Review Commission, *Water In the West: The Challenge for the Next Century*, (1998) p. 6-24.

Bay-Delta hearings, "with higher water prices at the margin (such as is accomplished with tiered water rates) productivity of water will increase because growers will invest in using water more wisely."

One important underlying reason for the current inefficient allocation of water in California is the extensive system of subsidies that have promoted inappropriate cropping patterns and wasteful irrigation practices. The Western Water Policy Review Commission noted that "subsidies can create significant disincentives to use water efficiently." and that "more realistic prices will lead to improved water use, without sacrificing the other social values supported by existing subsidies."

The single most important thing that CALFED can do to promote efficiency is to refrain from including in the CALFED program any new subsidized water supply projects. Creating additional subsidized water would further reduce the incentive for water users to invest in efficiency improvements, contrary to CALFED's other goals.

Agricultural Water Use Efficiency

Agriculture uses 80% of the developed water supply in California and yet produces less than 10 of the state's gross domestic product. More than half of this water goes to growing four crops: rice, cotton, alfalfa, and irrigated pasture, which collectively generate only 17% of the total agricultural value.³ If some water were moved from these crops to higher value, less water consuming crops and some water was returned to the environment, the overall agricultural sector could retain or even improve profitability. CALFED has failed to explore mechanisms for achieving these types of efficiency improvements.

The DEIS/R inappropriately excludes land fallowing or crop shifting measures from its analysis of the potential for water conservation savings. Yet according to California Water Code Section 1011 (a) "Where water appropriated for irrigation purposes is not used by reason of land fallowing or crop rotation, the reduced usage shall be deemed conservation for purposes of this section."

CALFED has based its agricultural water use efficiency program on the Memorandum of Understanding (MOU) that emerged from the AB 3616 process, despite the resounding lack of support for the MOU among the environmental community. It is inaccurate for CALFED to state that the Agricultural MOU "provides a process for balanced review and endorsement of plans and implementation progress reports" (WUE p 2-11) when almost every environmental group which works on water issues has disapproved of the MOU as inadequate. This can hardly be called balanced process and certainly does not offer the level of assurance that CALFED has acknowledged is critical to the water use efficiency program.

³ Peter Gleick, et al., *California Water 2020: A Sustainable Vision* (Pacific Institute, 1996) p. 4.

Environmentalists were involved in the early stages of developing the AB3616 MOU, but most left that process when it became apparent that the agricultural interests who were negotiating the MOU were not willing to adopt a program that would make real changes in water use efficiency, and indeed, were just looking for a public relations mechanism that would give them cover in a process such as CALFED. We are extremely disappointed that CALFED has ignored the almost universal lack of support that the AB3616 program has among environmental stakeholders.

Regardless of whether fulfilling the requirements of the agricultural MOU are voluntary or mandatory, that program will not significantly improve the efficiency of California agriculture. Assuring implementation of an inadequate program is not the same thing as assuring efficient water use. The requirements of the MOU simply are not sufficiently rigorous to require any real change in water use.

AB 3616 is a planning based program that only requires the districts to consider various measures. Furthermore, the program completely ignores farm-level conservation which is where irrigation choices and cropping choices are made and where most of the water savings are likely to occur. For a more detailed explanation of our substantive concerns with the agricultural MOU, see the attached NRDC analysis transmitted to CALFED in April, 1997, on behalf of a dozen environmental and fishing organizations.

We support CALFED's proposed addition of measurement and pricing structure criteria as preconditions to receiving CALFED program benefits. Pricing structures have been shown to be effective in motivating improvements in water use efficiency. For example, the Department of Water Resources evaluated the tiered pricing structure implemented by Broadview Water District (BWD) in the San Joaquin Valley and concluded that "Combined with drought induced water supply shortages, the tiered water pricing program instituted by BWD was instrumental in reducing irrigation water demand and the volume of salt and selenium-containing drainage water requiring management and disposal-- without reducing average crop yield. The tiered water pricing program provided additional incentives and motivated growers to improve the technology and management of on-farm irrigation systems."⁴

However, the pricing requirement, as proposed by CALFED, is not adequate. CALFED proposes that, as required by the CVP Water Conservation Criteria, that a water supplier or district must "adopt a water pricing structure for district water users based at least in part on quantity delivered." By leaving undefined the amount of revenue to be recovered in the volumetric component, CALFED allows districts to adopt a rate structure that is the functional equivalent of a non-volumetric rate. We urge CALFED to strengthen this requirement by

⁴ Department of Water Resources, Division of Local Assistance, *Summary Report: Results of Eight Demonstration and Study Projects in the San Joaquin Valley to Reduce Agricultural Drainage*, (Sacramento: 1996). p. 53.

specifying that Districts must recover all variable costs and at least 50% of fixed costs in the volumetric component of the rate structure.

Furthermore, we do not believe that measurement and pricing structure requirements alone will realize the full potential of improved efficiency, given the extremely low water prices that many agricultural districts pay. In addition to measurement and volumetric pricing requirements, we urge CALFED to develop clear goals, measurable objectives, and interim targets for the agricultural water use efficiency program. Additionally, CALFED should develop performance standards for each efficient water management practice, comparable to the standards contained in the urban MOU.

Agricultural Water Conservation Potential

We believe that CALFED has greatly underestimated the potential savings from improvements in agricultural water use efficiency and has based its estimates on incomplete data. The flaws and gaps in the analysis include the following:

1.) All savings estimates are predicated on an assumed existing average irrigation efficiency of 73%. We believe, for reasons articulated below, that this assumption, and the corresponding estimates of potential savings, are inaccurate and should be revisited.

First, the DEIS/R states that it is adopting Bulletin 160 information by assuming existing efficiency of 73% (WUE Technical Appendix p. 4-6 and 4-8). However, Bulletin 160 does not say that current efficiency is 73%. Instead, it sets 73% as the level of efficiency that will be reached by 2020.⁵ Therefore, the existing level of efficiency according to Bulletin 160 is lower than 73%, and the corresponding potential for improvement is greater.⁶

Second, DWR and CALFED's method for calculating existing efficiency is questionable. Those estimates are based on mobile lab analyses which primarily identify a single-event distribution uniformity. To calculate efficiency from distribution uniformity the lab technician must know the amount of water applied to the field (which is necessarily estimated in most cases due to lack of universal water measurement) and must know the amount of tailwater leaving the field (again, estimated). This technique obviously has a high margin of error. Furthermore, there is no evidence that the Mobile Lab data has been gathered in a controlled or consistent manner.

As noted in a report by the Central Valley Water Use Study Committee, "The actual amount of water applied to a farm, an irrigation district, or a hydrologic area is very difficult to estimate

⁵ Department of Water Resources, *Bulletin 160-98: The California Water Plan Update* (Sacramento: 1998) p 4-36.

⁶ Bulletin 160-98 does not seem to provide current average irrigation efficiency. Rather, it estimates current average distribution uniformity (DU) at 70-75%, projects future DU at 80%, which is estimated in the Bulletin to correspond to future average irrigation efficiency of 73%.

accurately. This difficulty is due to unavailable or inaccurate records of the amount of water from surface supplies and pumped from groundwater." The study further noted "Although estimates of applied water were judged to be reasonable, this use is the largest component of water in agriculture. Small errors in these estimates could result in substantial amounts of water unaccounted for in water balances."⁷

Third, the irrigation efficiency estimates are based on data from the Westlands Water District during the 1987-88 irrigation season.⁸ This is a very limited and non-representative sample. Analysis of this data was never intended to, and cannot legitimately be used to represent anything beyond the west side of the San Joaquin Valley.

For example, we question the DEIS/R assumption that the Sacramento Region has a 73 percent average irrigation efficiency. This region has cheap and abundant water supplies, and there is little, if any Mobile Lab data from this area. Similarly, the Exchange Contractors are a large component of the west side SJR region. This group has cheap and abundant water. We question the estimate of 73 percent irrigation efficiency in this area.

In light of these concerns, we urge CALFED to reexamine its estimates of current irrigation efficiency and the potential savings from future improvements in irrigation efficiency. If better information is currently unavailable then CALFED should include in early program phases the research necessary to gather such information.

2.) Also, missing from the DEIS/R is the distribution of efficiency levels around the mean. If there are a few highly efficient farms, and a large number well below the mean, then there may be greater opportunities to save water than might be presumed from looking at just the mean efficiency level. In other words, since we assume that CALFED is not going to encourage anyone to decrease their efficiency, the real question becomes how many farmers are below maximum efficiency levels.

3.) The DEIS/R estimates that conservation in the Sacramento Valley will yield zero real water savings. This directly counters claims by Sacramento Valley interests that there is substantial real water that they could generate through conservation and contribute to meeting Delta water quality standards. We urge CALFED to revise this assumption. Furthermore, the U.S. Bureau of Reclamation is involved in a hydrologic study of the Sacramento Valley to better determine a water balance for this region. We encourage CALFED to coordinate closely with this effort, ensure adequate public participation in this study and public review of the study findings, and

⁷ As cited in Charles Burt, et al, *Irrigation Efficiencies in Parts of the Selenium Drainage Area on the West Side of the San Joaquin Valley*, (CVRWQCB, 1994). p.36.

⁸ Greg Young and Steve Hatchett, "On-Farm Irrigation System Management," Technical Memorandum. June 6, 1994. p.3-1.

incorporate as appropriate any results of this study into subsequent CALFED environmental documentation.

4.) CALFED adopts Bulletin 160's flawed assumption that no savings can be achieved from changes in evapotranspiration (ET). We urge CALFED to evaluate the potential savings from reducing the evaporation ("E") and the transpiration ("T") components of ET.

Changes in evaporation, such as those that can be achieved from installation of drip irrigation or other micro-irrigation technologies, reduce the evaporation component of ET. This is a reduction in consumptive use, and should be included in CALFED's estimates of potential real water savings.

The technical memorandum cited above, on which CALFED bases its estimates of potential water savings, describes the evaporation losses from various types of irrigation systems. The estimates in this memorandum are not supported by strong data or research and are an unacceptable basis for the DEIS/R. We particularly question the non-substantiated estimates of minimal evaporation losses from furrow and board strip irrigation. Even based on this memorandum, however, there are substantial potential savings that are not reflected in DEIS/R. For example, the memorandum estimates that evaporation losses for sprinkler systems (which are currently used on approximately 35% of the irrigated acreage in California⁹) to be as high as 9%, while micro-irrigation systems are estimated to have no evaporative losses.¹⁰ Thus substantial evaporative losses can be recaptured by shifting from sprinkler to micro-irrigation systems.

Because agriculture uses such a large amount of water, a small reduction in the percentage of applied water lost to evaporation can yield tremendous water savings. Even if some of the reduction in evaporation is made up by increased transpiration, this increase is probably not one for one. CALFED should revise its analysis to reflect the potential water savings through reduction in the evaporation component of ET. If this information is currently unavailable then CALFED should include in early program phases the research necessary to determine the potential for water savings from reductions in ET.

Additionally, the DEIS/R fails to address potential water savings associated with changes in the transpiration element of ET. CALFED has inappropriately excluded from the DEIS/R analysis these potential savings, such as those associated with land fallowing or crop shifting, even though, as previously discussed, the California Water Code considers these changes to be conserved water.

⁹ David Sunding, et al. "The Costs of Reallocating Water From Agriculture,": University of California, Berkeley, 1994.

¹⁰ Young, et al. p. 3-2.

Urban Water Conservation

NRDC, along with other representatives of EWC, has been meeting with representatives of California Urban Water Agencies (CUWA) to develop a joint proposal to CALFED on the urban water use efficiency element of the program. The goal of these discussions has been to develop what would be considered the minimal requirements to meet the CALFED objective of providing a high base level of conservation, and the development of a certification and enforcement program that would assure high levels of compliance.

The DEIS/R reflects the ongoing communication between CALFED and this CUWA/EWC group, and we support the proposal as it is reflected in the DEIS/R.¹¹ However, this joint proposal, which is based on more widespread implementation of the best management practices (BMPs) contained in the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU), still leaves on the table a great deal of untapped conservation potential.

While CUWA and EWC have agreed that fulfilling obligations under the MOU is an acceptable minimum level of conservation to obtain CALFED program benefits, this does not mean that CALFED should not seek additional urban conservation. Rather, CALFED should identify the remaining conservation potential achievable by implementing BMPs above the levels specified in the MOU, or through implementation of additional conservation measures, especially those targeting outdoor water use. CALFED should offer financial assistance to help meet those higher goals, and should incorporate those higher goals into the criteria for phased decision making.

Additionally, another area not addressed in the Water Use Efficiency Technical Appendix involves the responsibility of wholesale water agencies towards encouraging water conservation in their region. Most of the BMPs in the urban MOU focus on retail agencies. Yet as some of the largest diverters from the Delta, the wholesale agencies clearly have an equal if not a greater burden to support water conservation. CUWA and EWC are finalizing the details of a menu of options that wholesalers could select from to meet their obligations for the purposes of the certification program under development. CALFED must include provisions in the water use

¹¹ A competing proposal that would disempower environmental representatives to the California Urban Water Conservation Council, and would weaken water conservation requirements is currently being circulated by Kern County Water Agency and others. NRDC does not support this alternate proposal and we urge CALFED to continue to rely upon the certification and enforcement proposal developed by CUWA and EWC, with participation from non-CUWA agencies. The success of the California Urban Water Conservation Council, and the environmental community's support of and participation in the Council, is based on the equal footing of urban agencies and environmental groups in the Council. Under no circumstances would NRDC support any certification and enforcement program that gives second class status to environmental organizations.

efficiency common program to ensure that wholesalers are committing an appropriate level of resources to water conservation programs in their region.

Urban Water Conservation Potential

CALFED incorporates many of the flawed assumption of the state Department of Water Resources (DWR) Bulletin 160-98 into its projections about current and future urban water use and the potential for water use efficiency. Additionally, because neither DWR nor CALFED reveal the assumptions underlying their analysis, it is impossible to fully evaluate the savings estimates. Some of the problems and information gaps include the following:

- DWR mischaracterizes current demand. Recent estimates by the California Research Bureau indicate that DWR overestimated urban demand by 1.6 MAF in the 1995 base year. Furthermore, DWR past projections about future water use have consistently exceeded actual use. Without an accurate baseline on existing and projected water demand, it is not possible to develop appropriate water supply reliability measures, or to accurately assess the costs and benefits of any proposed facilities or other water management actions.
- CALFED adopts from Bulletin 160 the assumption that full implementation of the urban Best Management Practices will generate 1.5 million acre feet. However, neither Bulletin 160 nor the CALFED DEIS/R provides the analysis to show how that estimate was generated. We request that in its next round of environmental review CALFED provide all of the supporting information and assumptions necessary to evaluate the accuracy of such estimates.
- In August, 1997 the Council completed a study of savings estimates for ULFT's in commercial settings, and estimated that savings from commercial retrofits ranged from 16 to 57 gallons per day (gpd), with wholesale establishments saving 57 gpd, and food stores and restaurants saving approximately 48 gpd. We request that CALFED include these potential savings estimates into its revised calculations of urban water conservation potential.
- Similarly, the Council has recently adopted a preliminary estimate of water savings from efficient washing machines. Savings from this measure should also be included in CALFED's next round of environmental documentation.
- We suspect that there may be a serious accounting error in Bulletin-160, that is carried forth into the CALFED estimates of water conservation potential. This error relates to whether conservation is credited as providing a reduction in the need for future supplies. We believe that the disparity with how inland vs. coastal conservation is counted may not be justified, and should be reevaluated.¹²

¹²This issue, which has been raised with CALFED staff, is more fully described in the attached May 20, 1998 memorandum from the Pacific Institute entitled "Application of Applied Water/Real Water/New Water Distinction in Bulletin 160-98 and CALFED DEIR/DEIS. The

- The cost estimates for conservation measures reflected in the DEIS/R appear to be far too high. We encourage CALFED to consult with a wider range of sources in developing these numbers, and also to revise the numbers to reflect that in many cases, such as in new construction, the marginal cost of choosing efficient technologies or low water use landscaping is zero.

Multiple Benefits of Water Conservation

Water conservation can have multiple benefits. In addition to improving water supply reliability for the conserving party, water conservation can potentially generate a supply to be transferred to other users, can generate water to be dedicated to instream flows, can reduce diversions and therefore reduce entrainment, and can generate significant water quality benefits. In addition, water conservation can save energy, reduce wastewater treatment costs, and reduce, postpone, or avoid water and wastewater infrastructure costs.¹³ For example, California is currently estimated to have over \$23 billion in flow-related water and wastewater infrastructure needs.¹⁴ These multiple benefits should be quantified to the extent possible, and incorporated into the CALFED modeling and impact analysis. These benefits may greatly increase the level of cost-effective conservation.

Even water that may not provide "real water" for the purposes of transfer to other uses, may provide significant environmental and water quality benefits if left in the river between the current point of diversion and reentry, or released on a different time schedule that is more fish-friendly. Although CALFED says that operational changes are not part of the water use efficiency program and that they will be considered elsewhere, the potential for such reoperation can be directly created by the water use efficiency program (e.g. by the increased flexibility introduced by reduced diversions) and should be fully evaluated. We do not see the benefits of reoperation enabled by an ambitious water use efficiency program to be covered anywhere in the DEIS/R. If it is included, it should be clearly referenced in the Water Use Efficiency Technical Appendix. If the analysis has not yet been done, we strongly urge CALFED to conduct such analysis and include it in the next round of environmental documentation.

NRDC recently completed a report documenting case studies of techniques that can improve water quality through water conservation and pesticide use reduction. For example, the West Stanislaus region has traditionally been the primary source of sedimentation into the San Joaquin

memorandum explains that the distinction between "real" and "applied" water is only relevant in situations with fixed demand. We request that CALFED carefully consider the Pacific Institute's memorandum and recalculate its estimates of conservation potential accordingly.

¹³ See for example the enclosed report by Edward R. Osann and John E. Young, *Saving Water, Saving Dollars: Efficient Plumbing Products and the Protection of America's Waters*, (Potomac Resources, Inc.: 1998).

¹⁴ *Ibid.*, p. 10.

River. As a direct result of a USDA sponsored program to reduce sedimentation, irrigation efficiency improvements have reduced water use by 18 percent, saving over 12,000 acre-feet per year and improved average irrigation efficiency from 56 percent to 80 percent. Cumulatively, the program has saved over 32,000 acre-feet of water and has prevented over 718,950 tons of sediment from entering the impaired San Joaquin River. A copy of this report is included for the record. We urge CALFED to evaluate the approaches documented in the report for their broader applicability throughout the Bay-Delta watershed.

Water Recycling

Water recycling is one of the least controversial elements of the water use efficiency program. To assure that the levels of water recycling anticipated by the CALFED program will happen CALFED funding assistance will be needed. NRDC would be willing to support public financing for water recycling, given its potential benefits to the ecosystem by reducing demands on the system.

We support the concept of a water recycling BMP, as suggested in the DEIS/R. However, CALFED should not wait for the Urban Water Conservation Council to develop and adopt such a BMP. In the past the Council has failed to adopt a BMP because the individuals involved in the Council are not the same ones as the ones in recycling, and because the Council is already occupied with implementation of the existing BMPs. CALFED should not abdicate its responsibility for assuring that recycling is given adequate evaluation by water agencies. but should instead take a leadership role in developing this BMP.

While the DEIS/R describes an "upper limit" to water recycling potential, it fails to set that recycling level as a target. In fact, the level designated as the upper limit achievable for water recycling is arbitrary and essentially meaningless. There is no reason to say that 65% rather than 75% or 85% of the total wastewater stream can be recycled. The amount that can be cost-effectively recycled will depend on many factors, including the other available water supply options. Rather than set an upper limit, CALFED should establish targets and performance standards for water recycling. The amount of water recycling is easily measurable and lends itself well to development of a performance measure. Water recycling targets should be included in any criteria used for phased decision making.

Land Retirement

The west side of the San Joaquin valley contains close to half a million acres of salinity impacted lands, many of which are also high in trace elements such as selenium. A variety of state and federal programs have authorized removing much of these lands from irrigated agriculture on a voluntary compensated basis. Despite the large amount of recent rhetoric about such voluntary land retirement programs, we have reason to believe that if the program was properly targeted to the lands with drainage problems, that there would in fact be a high level of support throughout the state for a voluntary program to purchase those lands from willing sellers. Indeed, even while individuals claiming to represent San Joaquin Valley farmers were attacking the Bureau of

Reclamation's land retirement program, many of those farmers were actually signing up for the voluntary program.

Voluntary, compensated retirement of marginal quality lands on the west side of the San Joaquin Valley is likely to have multiple benefits that could help meet the CALFED objectives in many areas, including water quality, water supply reliability, and ecosystem restoration. CALFED's preliminary analysis showed that a voluntary land retirement program could generate 1.5 million acre-feet of water at an average cost of \$150 per acre foot, which is significantly less than the cost of many other supply augmentation options under consideration. This preliminary analysis, and the more thorough evaluations which must follow it was inappropriately excluded from the DEIR. CALFED should continue to refine the analysis, including exploring mitigation of third party impacts, and should include this analysis in subsequent environmental documentation. Also, the water supply impacts of this land retirement proposal must be included when modeling system operations and water supply reliability.

Impact Analysis

The CALFED Impact Analysis, as reflected in Table 3-1 summarizing the environmental consequences of CALFED Bay-Delta Program Alternatives fails to recognize many of the benefits of water conservation programs. Specifically:

- The water quality benefits from improved water use efficiency, including reduced loads of pesticides, trace elements such as selenium, salts, and sediment, are not included under the description of how the common programs benefit water quality.¹⁵
- Under water supply and management the Table fails to include the ability of water use efficiency measures to improve water supply reliability.
- Under Agricultural Economics the analysis fails to indicate how water use efficiency measures can improve sustainability by enabling farmers to maintain the same level of economic productivity by maintaining or increasing yield even with a reduced water supply. Water use efficiency can also save costs on other inputs such as pesticides and fertilizers, by allowing more efficient applications, as well as saving on energy costs.
- Under agricultural social issues the analysis fails to account for jobs that may be created by more intensive irrigation water management.

These impacts should all be reflected in CALFED's impact analysis.

¹⁵ For more information on these water quality benefits see the enclosed copy of *Agricultural Solutions: Improving Water Quality in California Through Water Conservation and Pesticide Reduction*, (by Ronnie Cohen and Jennifer Curtis, NRDC: 1998.)

Furthermore, the DEIS/R repeatedly relies upon the argument that efficiency improvements may not generate real water savings because excessive irrigation helps to recharge the groundwater basin, or returns to the river. This argument contains numerous flaws. Such recharge frequently happens at the wrong time and in the wrong place, and is much less efficient than an intentional conjunctive use program, or direct reallocation of saved water to the environment. For further support of our position, see the attached testimony of Dr. Michael Hanemann et al. before the State Water Resources Control Board during the 1992 Bay-Delta Hearings.

III. San Joaquin River

The Ecosystem Restoration Program Plan inappropriately excludes the mainstem of the San Joaquin River from consideration. It will not be possible for CALFED to create an equitable and durable solution for restoring the Bay-Delta ecosystem while ignoring one of the major tributaries in that system. CALFED aspires to promoting a balanced solution to problems in the Delta. Yet any situation that continues to leave a portion of the San Joaquin system dry not only fails to meet the CALFED solution principles, it also misses the tremendous opportunity to create large amounts of habitat, thereby creating benefits for fish and other species. Ultimately, a restored ecosystem, including a restored San Joaquin River, is the best way to provide water supply reliability in the long run.

Furthermore, conditions on the San Joaquin River have led to deterioration of water quality in the Bay-Delta, due in part to increased salinity and other negative impacts of Friant Dam operations on the Bay-Delta. Restoring the San Joaquin could generate significant water quality improvements for drinking water, for Delta farmers, and for the ecosystem

A recent decision by the federal Ninth Circuit Court of Appeals held that the federal government failed to adequately consider the impact of Friant Dam operations on endangered species. It also rejected the irrigators argument that the Central Valley Project Improvement Act preempts California State Fish and Game Code Section 5937 which requires that all dam operators to release sufficient water to maintain the fishery below the dam. In light of this ruling, CALFED must revise the ERPP to address restoration of the San Joaquin River. CALFED must no longer help perpetuate the myth that one part of the system (and one set of diversions) are somehow immune to the reforms that apply to the rest of the system.

The San Joaquin, once one of California's great rivers, has been devastated by a variety of long-term environmental problems, including diversion of 98% of its natural flows, and pollution from agricultural runoff and return flows. As the wet conditions since 1997 have once again shown, however, a continuous San Joaquin River, can be restored.

There is no doubt that conditions on the San Joaquin are seriously degraded. But the San Joaquin has tremendous potential to be a valuable environmental, recreational, and economic resource, on a local, regional, and statewide level. The San Joaquin could offer abundant opportunities for rafting, canoeing, birdwatching, fishing, and other recreational opportunities, as

well as increase jobs and revenues. We urge CALFED to incorporate restoration of the San Joaquin River into the ERPP, and to explore a full range of alternatives, including water transfers exchanges, and acquisitions, conservation, and expanded conjunctive use, to increase San Joaquin River flows. The full ecological and economic benefits of such restoration should be included in CALFED's next round of environmental documentation.

IV. No Action Alternative

The No Action alternative contains a number of significant flaws, which we urge you to remedy in the next draft EIS/EIR. In addition, the No Action alternative fails to explain a number of its assumptions. Our specific concerns follow.

1. Reliance on Bulletin 160: In a number of instances, the No Action alternative relies on conclusions in DWR's Bulletin 160-93 or 160-98. Bulletin 160, however, is fundamentally flawed because it lacks basic economic criteria necessary to address the balance between supply and demand. (Please see the attached comments recently submitted by NRDC and a coalition of other organizations to DWR concerning draft Bulletin 160-98.) Because of its methodological flaws, Bulletin 160 consistently overestimates the demand for water in California and underestimates the ability of water conservation to address demand. CALFED's No Action alternative, as currently drafted, has incorporated these significant flaws. Therefore, we strongly urge you to reconsider your reliance on Bulletin 160, and would refer you instead to findings of the Pacific Institute in its report, "California Water 2020: A Sustainable Vision."

2. Endangered Species Listings: The No Action alternative assumes that there will be no new listings under the state or federal endangered species acts ("ESA" and "CESA" respectively). This assumption is unjustifiable for two reasons. First, a large number of aquatic and terrestrial species that are "in the pipeline" to be listed under ESA or CESA, including but not limited to the Sacramento splittail and spring-run chinook salmon. Indeed, at least one aquatic species - the steelhead trout - has been listed as threatened under the federal ESA since the CALFED process began.

Second, the No Action alternative's assumption of no new listings does not square with its assumption of roughly one million acre-feet of additional diversions. These two dueling assumptions render the No Action alternative internally inconsistent, as it is not possible to increase exports without significant adverse harm to threatened species or species proposed for listing.

We strongly urge you to revisit the assumption regarding no new listings. At a minimum, the alternative should be revised to incorporate the most likely aquatic and terrestrial species to be listed. After all, it is widely recognized that one of the reasons that the CALFED process is being undertaken is to reduce the instance of new listings that will surely occur without massive ecosystem restoration. The No Action alternative should reflect this reality.

3. Land Retirement: The No Action alternative assumes, consistent with Bulletin 160, that only 45,000 acres of drainage-impaired land will be retired from willing sellers in the San Joaquin Valley. This assumption is just one of the many inadequacies created by reliance on the flawed Bulletin 160.

The CVPIA land retirement program is funded at \$50 million over the next five years and has already received 30,000 acres of offers from willing sellers in just one year. If one assumes an average cost of \$2,500 per acre for the retirement of land and water, then in the next five years, the CVPIA program can retire 20,000 acres from willing sellers. If the CVPIA program pays for the land only, and another entity, such as a water district, pays for the water, then the estimated amount of land retired from willing sellers will more than double. Thus, under the CVPIA land retirement program alone, the land retired from willing sellers will range from 20,000 to 40,000 acres by 2002. The No Action alternative's assumption of 45,000 acres for all projects (not just the CVP) by 2020 (18 years beyond the CVPIA horizon) is thus too modest.

The 1990 joint federal-state "Rainbow Report" forecast that, by 2040, 460,00 acres of San Joaquin Valley lands would be significantly drainage impaired.¹⁶ It recommended a suite of actions, including land retirement, in its drainage management plan. Even assuming the full accomplishment of the other measures, the Rainbow Report recommended that 75,000 acres be retired from willing sellers. We strongly urge you to revise the assumption regarding land retirement, such that 75,000 acres will be retired from willing sellers as of 2020.

In addition, we urge you to clarify the assumptions regarding the ultimate disposition of water associated with lands retired from willing sellers - for example, would it remain with water districts for irrigation use or be purchased by a state or federal agency for environmental purposes?

4. Dedication of 800,000 acre feet for Fish and Wildlife Restoration: The No Action alternative assumes the "dedication of 800,000 acre-feet" of CVP water. We agree that the No Action alternative should assume that the 800,000 acre feet will be dedicated to fish and wildlife by 2040. The No Action alternative provides inadequate information, however, regarding this critical issue.

Specifically, the alternative fails to explain assumptions regarding:

¹⁶ San Joaquin Valley Drainage Program, 1990. *Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley*, U.S. Department of Interior and California Resources Agency, Sacramento, California.

- the state/federal split of the Bay Delta Water Quality Standards (please note that modeling performed since the signing of the Bay-Delta Accord shows that the once presumed 50/50% federal/state split is actually more like a 67/33% split);
- crediting of the 800,000 acre feet towards meeting the Bay Delta Water Quality Standards;
- how much, if any, of the 800,000 acre feet will be used for the restoration of non-anadromous fish (and wildlife) adversely affected by the Central Valley Project, as required in § 3406(b)(1) of the CVPIA;
- windfall to the State Water Project from "recapture" of dedicated yield in the Delta;
- the federal and state governments meeting their respective obligations to double populations of salmon and other anadromous fish (in the case of the Interior Department, this obligation is to be met by 2002); and
- whether the November 20, 1998 Interior Department decision is the basis for use of the 800,000 acre feet - i.e., whether 800,000 acre feet will be dedicated to fish and wildlife restoration by 2020 or whether certain "fish measures" will be accomplished using a portion of the 800,000 acre feet and allowing the remaining portion, which on average over time is 400,000 acre feet, to be sold to CVP contractors.

Furthermore, despite the fact that the description of the No Action alternative assumes dedication of the 800,000 acre feet, the modeling runs of the base case fail to reflect that assumption.

5. Trinity River Flows: The No Action alternative assumes that the Trinity instream fishery flows will remain at 340,000 acre feet, which is the minimum amount required in section 3406(b)(23) of the CVPIA. The ongoing Trinity River Flow Evaluation Study is currently considering flows ranging from 369,000 acre feet to 815,000 acre feet, depending on water year type. We strongly urge you to incorporate this range of flows in the No Action alternative, much as the CVPIA PEIS did in its alternatives. At a minimum, we encourage you to develop a sub-analysis showing the higher range of flows. Otherwise, the DEIS/R could be found inadequate if the Trinity River Flow Evaluation Study Record of Decision conflicts with the EIR on this issue.

6. Delta Exports: The No Action alternative assumes that on average there will be an additional 1 million acre-feet of diversions by 2020. This assumption is significantly flawed. It appears that this assumption is based on Bulletin 160-98's demand projections, which may overestimate demand in the 1995 base year, and consequently in 2020, by 1.6 million acre feet. As stated above, this assumption is even more inadequate when coupled with the assumption of no new listings of endangered species. We strongly urge you to revise the assumptions regarding Delta exports in the final draft.

7. Delta Standards: The No Action alternative assumes that the 1995 Delta water quality standards are in place but is silent as to the actual implementation of those standards. We urge you to make explicit whether the No Action alternative includes "third party sharing" of the standards or is based on the formula embodied in the 1994 Bay-Delta Accord.

8. Water Conservation: The No Action alternative relies on Bulletin 160-98 for its assumptions regarding water conservation in 2020. As discussed above, Bulletin 160-98 significantly underestimates water conservation due in large part to DWR's failure to incorporate sound economic principles into its analysis. We therefore strongly urge you to revise this aspect of the No Action alternative and rely instead on the findings of the Pacific Institute in its 1995 report, "California Water 2020: A Sustainable Vision."

9. Water Contracts: The No Action alternative assumes that full contract amounts will be delivered unless they are restricted by other requirements. But most CVP contracts are up for renewal in the near future and the water quantity terms are being reexamined in light of modern circumstances, environmental regulations, and competing needs. Thus, automatic assumption that identical quantities will be delivered may not be appropriate. Also, the assumption fails to fully address the numerous restoration obligations in the CVPIA that must be incorporated into the renegotiated long term contracts, as well as other disparities between contract amounts and actual deliveries. These issues should be addressed.

10. Drinking Water Regulations: The No Action alternative assumes that the existing conditions will carry forward to 2020 and that there will be no new safe drinking water regulations. This is an odd assumption given that drinking water concerns and the likelihood of more stringent drinking water regulations are given by some as a justification for much of CALFED's mission. We urge you to include, at a minimum, some consideration of EPA's proposed drinking water regulations as part of the No Action alternative.

11. Water Contract Ratesetting: The No Action alternative assumes that the existing water ratesetting policy will be in place in 2020. Does this assumption include implementation of tiered pricing of CVP water as required by § 3405(d)? If not, why not? Does this assumption include implementation of the CVP's discretionary "ability to pay" policy and other discretionary charges? We urge you to explain the current ratesetting policies more fully and ensure that the No Action Alternative includes full CVPIA implementation.

12. Refuges: We agree with the No Action alternative's assumption that CVPIA Level 4 deliveries will be delivered to refuges in 2020.

V. Conclusion

The CALFED process continues to represent a tremendous opportunity to restore California's beleaguered rivers, the Bay and Delta, and the fish and wildlife that depend on them. By moving towards more sensible water management in California, NRDC believes that we can restore and

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protect the environment, maintain or improve California's economic productivity, including a healthy and productive agricultural sector, while providing safe drinking water and reliable water supplies to our cities. This necessarily will require changes in how water is used in California. We need to manage, rather than fight, these changes. We look forward to continuing to work with CALFED on this critical task.

Thank you for considering our comments.

Sincerely,



Ronnie Ann Cohen
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Wendy Pulling
Senior Attorney