Chairman's Interim Report of the Senate Select Committee on the CALFED Water Program

Senator K. Maurice Johannessen
Chairman

Forrest Sprague, Chief Consultant
Doug Haaland, Consultant
Peggy Huang, Senate Associate

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CALIFORNIA LEGISLATURE

SENATE SELECT COMMITTEE ON CALFED

CONSULTANTS
FORREST J SPRAGUE
DOUG HAALAND

STATE CAPITOL
ROOM 5061
SACRAMENTO, CA 95814
(916) 445-3353
(916) 445-7750 (FAX)

K. MAURICE JOHANNESSEN
CHAIRMAN

September 24, 1998

Honorable John Burton
President Pro Tempore of the Senate
Office of the President Pro Tempore
Room 205, State Capitol
Sacramento, CA 95814

Dear Senator Burton:

The attached interim report is an analysis of the testimony and materials presented at the Senate Select Committee on the CalFed Water Program hearings held on May 13, June 9, June 29, and August 5.

The hearings examined various aspect of the CalFed Bay-Delta Program, including the alternatives proposed by CalFed, various issues and challenges that face the program, and the general oversight mandated by Senate Resolution No. 252.

Witnesses and written comments submitted by members of the public, interest groups, and elected officials provided a number of insights and recommendations.

I am confident that the Legislature will find the information and recommendations helpful as it formulates policies that will help in solving the Bay-Delta ecological problems, and the management of California's water supply. Additional copies of this report can be obtained by contacting Senate Publications at (916) 327-2155.

Sincerely,

K. MAURICE JOHANNESSEN
Chairman

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I. EXECUTIVE SUMMARY

CALFED calls the Bay-Delta and it's tributaries the largest estuary in the western United States, home to more than 750 plant and animal species. The Bay-Delta is also described as the source of drinking water for over 20 million Californians and provides irrigation for over 7 million acres of highly productive agricultural land. The farmland talked about is the heart of the CALFED solution area. As the primary target of CALFED's plan to restore the Bay-Delta's ecosystem, this region will pay a price unmatched by other region. This land is also the foundation of the billions of dollars of economic prosperity in the Bay-Delta Region and tens of thousands of jobs that have their roots in that prosperity.

The potential economic impacts of the CALFED Program are compounded when you factor in other state and federal agencies participating in CALFED that have additional water or habitat plans and programs. Because CALFED is a program, no agency is providing full coordination of the programs, identifying the total land targeted for conversion, or calculating the economic impacts on the people of California.

This lack of coordination and oversight is particularly disturbing in light of the predictions of water shortages in the 21st Century contained in the Department of Water Resources Bulletin 160-98. Future demands associated with the expected population growth will be made worse by the water needs of converting hundreds of thousands of acres of highly productive agricultural land to wetland habitat using twice as much water. The need to plan for future water use is amplified when you look at the lost opportunities, such as capturing "surplus" Sacramento River flows this year which could have filled a Folsom Lake in less than a month.

CALFED has created a tenuous future for itself by bending to percieved political winds. The Program's March 1998 EIS/EIR listed three alternatives that included a variety of scientific and technical solutions to Bay-Delta problems. When public uproar surfaced over the possiblity of an environmentally unpopular choice, CALFED shifted to "staged implementation." The change has generated another political wind shift, blowing in from Southern California. CALFED now finds itself moving at a frantic pace to announce a preferred alternative, a move that seems willing to sacrifice science for political expediency.

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The following report chronicles activities to date by the California State Senate Select Committee on the CALFED Bay-Delta Program. Since its inception, the Committee has endeavored to gather written and oral testimony from interested and affected parties in its effort to oversee all aspects of CALFED, determine the CALFED program's likely costs and potential funding sources, and make recommendations to the Legislature regarding appropriate matters of concern.

The report includes a brief synopsis of the CALFED Bay-Delta Program's history, and summarizes salient portions of CALFED's voluminous 3,500-page Draft Programmatic Environmental Impact Report/Environmental Impact Statement. In addition, the report presents information that is at times contrary to conclusions reached by CALFED, or that points to serious deficiencies in the research, planning or proposed implementation of solutions as presented in CALFED's Draft EIR/EIS.

The report identifies significant areas for further study, either by CALFED or by the oversight committee. It concludes with 15 recommendations from Committee Chairman K. Maurice Johannessen. The most important of those recommendations is to allow the oversight committee to continue its work with a budget sufficient to hold a series of meetings statewide to gather additional information.

II. INTRODUCTION

A. The Senate Select Committee on the CALFED Water Program

On April 20, 1998, the Senate Rules Committee passed Resolution No. 252 creating the Senate Select Committee (Committee) on the CALFED Bay-Delta Program (Program). The mandates of the Committee are: 1) Oversight of the Program; 2) Determine Program costs and sources of funding; and 3) Recommend appropriate legislation in its report to the Senate.[1]

1. Membership

The Senate Select Committee has six members who include: Chairman Senator K. Maurice Johannessen, R-Redding [Representing Butte (partial),Colusa, Glenn, Sacramento (partial), Shasta, Siskiyou, Solano (partial), Sutter, Tehama, Trinity, and Yolo Counties]; Vice-Chairman Senator Jim Costa, D-Fresno [Representing Fresno (partial), Kern (partial), Kings, Madera (partial), and Tulare (partial) Counties]; and members Senator David G. Kelly, R-Idyllwild [Representing Imperial, Riverside (partial), and San Diego (partial) Counties]; Senator Hilda Solis, D-El Monte [Representing a portion of Los Angeles County]; Senator Richard K. Rainey, R-Walnut Creek [Representing portions of Alameda and Contra Costa Counties]; and Senator Deirdre "DeDe" Alpert, D-San Diego [Representing a portion of San Diego County].

2. Hearing dates

The Committee has held four public hearings at the State Capitol: May 13th; June 9th; June 29th; and August 5th. During these hearings the Committee heard testimony from more than 40 witnesses representing business, agriculture, environmental organizations, financial institutions, water agencies, utility districts, recreational interests, members of the legislature, and representatives of local government. In addition to oral testimony, the Committee also received at least 80 written comments from various individuals and organizations, as well

[1] Senate Committee on Rules Resolution No. 252 - April 20, 1998

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as copies of comments delivered to CALFED during a public comment period that ended July 1, 1998.

3. Areas of Concern

The primary areas of concern expressed in the public's communications with CALFED and the Committee have been broken down into seven topic areas. These areas include:

- Environmental concerns
- Agricultural issues
- Water use efficiency and conservation
- New water storage and water conveyance facilities
- Water transfers and marketing
- Groundwater and conjunctive use
- Financing and costs of the Program

Several other significant issues were also exposed during the Committee's hearings, the gravity of which caused the Chairman to request that the Committee be continued, as well as hold additional hearings in Northern, Southern and Central California.

III. HISTORIC PERSPECTIVE

Starting in the 1930s and continuing throughout the '60s, state and federal agencies planned for economic growth in California by designing and building massive water projects to support urban and agricultural needs. The Central Valley Project, the largest in California, and the State Water Project, the second largest,[2] represented the largest undertaking of long-term planning for the use of water resources. At the

[2]Department of Water Resources, The California Water Plan Update Bulletin 160-98, January 1998; Page 1-9.

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time, these projects were not viewed as damaging to the environment. Rather, they were seen as increasing the value of land while creating a future and heritage for the next generation of Californians.

A. The CENTRAL VALLEY PROJECT[3]

The Central Valley Project (CVP) began as the crown jewel of the Bureau of Reclamation (BOR). CVP encompasses thirty-five counties in an area about 500 miles long and 60 to 100 miles wide. The largest BOR project, the CVP containes some of the country's largest dams, including Shasta and San Luis. BOR intended on building Auburn Dam, on the American River, but it became a victim of changing times political attitudes.

In spite of the social, environmental, and political controversy surrounding the CVP, it remains a impressive accomplishment. The Central Valley holds three-quarters of the irrigated land in California, and one-sixth of the irrigated land in the United States. One year of the Central Valley's farm production revenue exceeds the total value of all the gold mined in California since 1848. The CVP ranks first among BOR projects for preventing flood damage between 1950 and 1991 that may have exceeded $5 billion dollars.

The CVP is a complex operation of interrelated divisions. *The Shasta Division,* which includes Shasta Dam, provides flood and salinity control for the Sacramento River and the Delta. The *Trinity River Division* shunts surplus flows from the Klamath River Basin to Keswick Reservoir for later release into the Sacramento River. The *Sacramento River Division* supplies Sacramento River water to Tehama, Glenn, Colusa and Yolo Counties for irrigation. The *American River Division* provides flood control on the American and Sacramento rivers. The *Friant Division* diverts nearly the entire flow of the San Joaquin River, except what is needed for flood control and irrigation. Friant Dam sends irrigation water south through the Friant-Kern Canal and north through the Madera Canal. The *Delta Division* is the

[3] The Central Valley Project - An Introduction by Eric A. Stene.

hub of the CVP. This Division has facilities for transporting water from the Sacramento River to the San Joaquin Valley as well as farms in the Delta.

The *San Luis Unit* has the largest offstream storage reservoir in the United States, the San Luis Reservoir. When water levels flowing through the Delta are too low, water is released from San Luis Reservoir into the Delta-Mendota Canal and the California Aqueduct. The *San Felipe Division* transfers water from San Luis Reservoir west of the Coastal Mountain Range and south of the San Francisco Bay.

The Central Valley Project Improvement Act of 1992 (CVPIA) started the CVP in a new direction. Despite objections from California Governor Pete Wilson and Central Valley legislators, President George Bush signed the bill as part of the Reclamation Projects Authorization and Adjustment Act of 1992. Environmentalists considered the act a victory. But California agricultural leaders considered it a disaster. The CVPIA reallocated 800,000 acre-feet of CVP water in normal years, or 600,000 acre-feet in dry years, from Valley farmers toward the restoration of Central Valley fisheries. CVPIA limited the renewal of agricultural water contracts to twenty-five years and eliminated any longer-term renewals.

B. THE STATE WATER PROJECT[4]

The California State Water Plan published in 1957, proposed immediate construction of a project on the Feather River which marked the inauguration of the California State Water Project (SWP). This effort was strongly supported by California Governor Edmund G. "Pat" Brown who realized the seriousness of California's water situation. The Central Valley Project (CVP), only compelled repayment for its irrigation projects. However, the State Water Project required water users to pay all project costs of $1.75 billion with bonds.[5] Although a little more than half complete, in 1994 the SWP consisted of twenty-two dams and reservoirs and the North Bay, South

[4] California Department of Water Resources Office of Education Information
[5] Water Education Foundation

Bay, and California Aqueducts. Approximately 30 percent of the water supplied by the SWP irrigates the San Joaquin Valley. The other 70 percent supplies water for residential, municipal, and industrial use, mostly in southern California.

The SWP is a water storage and delivery system of reservoirs, aqueducts, powerplants and pumping plants. It includes 29 reservoirs and lakes; 18 pumping plants; 4 pumping-generating plants; 5 hydroelectric power plants; and about 660 miles of aqueducts and pipelines. SWP's purpose is to store and distribute water to 29 urban and agricultural water contractors in Northern California, the San Francisco Bay Area, the San Joaquin Valley, and Southern California. The project provides supplemental water to approximately 20 million Californians and irrigates about 1.2 million acres of farmland. The SWP is maintained and operated by the California Department of Water Resources (DWR) to improve water quality in the Delta, control flood waters, provide recreation, and enhance fish and wildlife.

The SWP begins in Northern California on the Feather River, a tributary of the Sacramento River. Oroville Dam can retain a maximum of 3.5 million acre-feet (MAF), of which, 2.7 MAF is water supply storage and reserves 800,000 AF for flood control space. The water is released to the Sacramento-San Joaquin Delta where a portion is pumped through the North Bay Aqueduct to Napa and Solano counties. In the southern Delta, water is pumped by the Harvey O. Banks Delta Pumping Plant into the 444-mile long California Aqueduct. Located just a few miles south of the Banks Pumping Plant, the South Bay Aqueduct conveys water to Alameda and Santa Clara counties.

Named after Governor Edmund G. Brown California, the California Aqueduct lies along the west side of the San Joaquin Valley for 63 miles to San Luis Reservoir. Jointly operated by the DWR and the Bureau of Reclamation (BOR), this reservoir will store a maximum of 2.04 MAF (971,000 AF federal; 1.06 MAF state). The Aqueduct continues southward from San Luis Reservoir. In the southern San Joaquin Valley, the Coastal Branch Aqueduct currently under construction, will carry water to San Luis

Obispo and Santa Barbara counties. At the Tehachapi Mountains, the A.D. Edmonston Pumping Plant lifts the water 1,926 feet to enter 10 miles of tunnels and siphons which traverse the Tehachapi mountain range.

After crossing the Tehachapis, the Aqueduct divides into two branches. The West Branch Aqueduct conveys water to Pyramid and Castaic reservoirs serving Los Angeles and other coastal cities. The East Branch Aqueduct passes through the Antelope Valley, moving water to Silverwood Lake. The water finally reaches San Bernardino and Riverside counties, to be stored in the Lake Perris reservoir.

The confrontations between environmental, agricultural, and urban interests further escalated during implementation of the CVPIA. These conflicts were often punctuated by legislative and legal debates surrounding the use of California's water resources. In response to these growing conflicts, state and federal officials moved toward an atmosphere of cooperation. In June of 1994, representatives from several state and federal agencies agreed to an unprecedented level of cooperation in addressing the issues of California's environment and use of water. They culminated that cooperation by signing the Bay-Delta Framework Agreement. The agreement contains three primary directives: 1) Setting standards for improved water quality; 2) Coordination of water supply operations to provide protection of endangered species protection and comply with improved water quality standards; and 3) Development of a long-term solution to water issues throughout the Bay-Delta Estuary.[6]

In December 1994, a wide range of state and federal resource agencies, environmental groups, and stakeholders of the Central Valley Project signed the Bay-Delta Accord that provided a short-term, three year outline for environmental protections and regulatory stability within the Bay-Delta region. Reflecting the mandates of the agency agreement, the CALFED Program began to develop and implement a long-term comprehensive plan.[7]

[6] Framework Agreement Between the Governor's Water Policy Council of the State of California and the Federal Ecosystem Directorate - December 15, 1994.
[7] Mission Statement, CALFED Bay-Delta Program Draft Programmatic EIS/EIR - March 1998; Page 1-6.

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As a result, the CALFED Program began in May of 1995, with now 15 participating state and federal agencies having regulatory authority within the Bay-Delta region. This group of state and federal agencies have since been referred to by the abbreviated title, CALFED.

IV. CALFED

The CALFED Program was divided into three phases intended to develop long-term solutions.

- Phase I identifies the scope and depth of problems impacting the Bay-Delta region, develops an organizational mission statement and principles, and begins devising solutions to identified problems.

- Phase II refines preliminary alternatives, conducts a comprehensive "programmatic" or first-tier environmental review in accordance with the requirements of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), and selects a preferred alternative.

- Phase III implements the preferred alternative during the next 20 to 30 years.

Phase I was essentially completed in September 1996, and the Program is currently approaching the end of Phase II. It is anticipated that a preferred alternative will be announced on October 9, 1998 with the public comment period scheduled to extend for six months after the announcment.

A. Member Agencies

STATE

Resources Agency of California

Department of Water Resources (DWR)

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Department of Fish and Game (DFG)

State Water Resources Control Board (SWRCB)

California Department of Food and Agriculture (CDFA)

FEDERAL

Bureau of Reclamation (BOR)

Fish and Wildlife Service (USFWS)

Bureau of Land Management (BLM)

United States Geological Survey (USGS)

U.S. Army Corps of Engineers (Corps)

U.S. Environmental Protection Agency (EPA)

National Marine Fisheries Service (NMFS)

Natural Resources Conservation Service (NRCS)

U.S. Forest Service (USFS)

Western Area Power Administration (WAPA)

These CALFED agencies appointed an executive director who selected staff to work with resource stakeholders and agency personnel in the development of the CALFED Bay-Delta Program (Program). CALFED developed and presented 12 alternative configurations and conducted public workshops, scoping meetings, and other outreach opportunities during Phase II.[8] CALFED also developed a methodology to allow stakeholder input to the

[8] CALFED Bay-Delta Program Draft Programmatic EIS/EIR - March 1998; Page 1-5.

Program design and problem solving process through the formation of the Bay-Delta Advisory Council (BDAC). The BDAC is composed of 26 members of the business, environmental, agricultural sectors and stakeholders of the water community. The BDAC was chartered under the Federal Advisory Committee Act, with members appointed by the offices of Governor Pete Wilson and President Bill Clinton, through Secretary of the Interior Bruce Babbitt.

BDAC organized subcommittees focusing on several of the intricate issues involved in the development of the Program. These subcommittees include: 1) Ecosystem Roundtable; 2) Ecosystem Restoration Work Group; 3) Assurances Work Group; 4) Water Transfer Work Group; 5) Water Use Efficiency Work Group; 6) Finance Work Group; and 7) Watershed Work Group.

B. Mission Statement

The mission of the CALFED Bay-Delta Program is to develop a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta System.[9]

C. Primary Objectives

The four Primary Objectives are the overall objectives for each of the key program areas of water quality, ecosystem quality, water supply and vulnerability of Delta functions. Secondary objectives within each of these areas tie back to the Primary Objective and back through the Mission Statement itself.[10]

[9] CALFED Bay-Delta Program Draft Programmatic EIS/EIR - March 1998; Page 1-6.
[10] *Ibid.*, Page 1-6.

Water Quality—Provide good water quality for all beneficial uses.

Ecosystem Quality—Improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species.

Water Supply—Reduce the mismatch between Bay-Delta water supplies and current and projected beneficial uses dependent on the Bay-Delta system.

Vulnerability of Delta Functions—Reduce the risk to land use and associated economic activities, water supply, infrastructure, and the ecosystem from catastrophic breaching of Delta levees.

D. Solution Principles

Six solution principles that will guide the CALFED Bay-Delta program through the development and evaluation of the program and its alternatives are:[11]

Affordable—An affordable solution will be one that can be implemented and maintained within the foreseeable resources of the CALFED Bay-Delta Program and stakeholders.

Equitable—An equitable solution will focus on resolving problems in all problem areas. Improvements for some problems will not be made without corresponding improvements for other problems.

[11] CALFED Bay-Delta Program Draft Programmatic EIS/EIR - March 1998; Page 1-6.

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Implementable—An implementable solution will have broad public acceptance, legal feasibility and will be timely and relatively simple compared with other alternatives.

Durable—A durable solution will have political and economic staying power and will sustain the resources it was designed to protect and enhance.

Reduce conflicts in the system—a solution will reduce major conflicts among beneficial users of water.

No Significant Redirected Impacts—A solution will not solve problems in the Bay-Delta system by redirecting significant negative impacts, when viewed in its entirety, in the Bay-Delta or other regions of California.

E. The CALFED Program

CALFED began by laying out the issues and problems facing the Bay-Delta region, developed its mission statement, and outlined the primary objectives and solution principles as detailed above.

During that same period, the original twelve preliminary *alternatives* were narrowed to three through a series of agency reviews and public hearings. Alternative 1 has three configurations, Alternative 2 has four configurations, and Alternative 3 has five configurations. Each *configuration* addresses six *elements*: 1) ecosystem restoration; 2) water quality; 3) water use efficiency; 4) levee system integrity; 5) water transfers; and 6) coordinated watershed management.[12]

Examination of the CALFED Program in minute detail would be overwhelming. The three *alternatives* contain a total of 12 *configurations*

[12] *Ibid.*, Page 2-7.

and with six *elements* for each configuration. If you apply the 13 areas of inquiry possible under terms of Resolution No. 252, there would be more than 936 potential areas of examination. In addition to time constraints, the technical limitations for such a broad analysis of the CALFED alternatives by the Committee and staff caused this report to focus on the general impacts of the CALFED Program through the information, testimony and comments presented to the Committee.

F. Program Funding

The amount of funding provided to CALFED is more than $600 million through the year 2000. This amount will increase to more than $1.3 billion when CALFED receives certification of its final EIS/EIR.[13]

In 1996, the people of California committed nearly $1 billion to water conservation and water quality by passing the Safe, Clean, Reliable Water Supply Act (Proposition 204). CALFED, under terms of the Bay-Delta Accord, has undertaken the review and funding of various restoration projects known as Category III or non-flow related objectives. Funds for these projects are from stakeholder contributions, CVPIA restoration funds, federal appropriations, and Prop. 204.[14] To date, CALFED, through the Ecosystem Roundtable, has funded more than $85 million of Category III projects during Fiscal Years (FY) 1997 and '98. These projects range from fish screening fish at water diversion points to habitat restoration and monitoring projects. CALFED land acquisitions for creating habitat have resulted in more than 17,450 acres owned by federal and state agencies, as well as non-profit organizations. In the near future, CALFED expects to fund an additional 64 projects worth more than $24 million.[15] In response to the most recent request for proposals, CALFED recieved more than 181 projects that total more than $161 million.[16]

[13] CALFED Bay-Delta Program Phase II Interim Report - March 1998; U.S. Senate Appropriations Committee Report for Fiscal Year '99; and the Association of California Water Agencies (ACWA).
[14] California Water Code Sections 78535.5 and 78536.
[15] CALFED Ecosystem Roundtable Member Information Material for the August 31 Meeting, August 26, 1998.
[16] CALFED information provided in response to a Letter of Request from the Senate Select Committee on the CALFED Water Program; July 30, 1998.

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Further, the fiscal accounting requirements of the CALFED program under the terms of Proposition 204 require the Director of the Department of Water Resources to submit a report of expenditures to the Legislature. This report follows the certification of CALFED's EIS/EIR by the appropriate federal and State agencies. However, no requirement for such a report exists in the interim period ***prior*** to certification. (Emphasis added)

Federal reports on the funding of the CALFED program, include reports by the U.S. Senate Appropriations Committee and its counterpart in the U.S. House of Representatives. The U.S. Senate Appropriations Committee Report states, "As stated last year, it will take time for the program to mature. The allocation of the current year appropriation was completed only recently, and construction or implementation work on most projects is just beginning. Further, **financial and accounting systems essential to proper funds management are not fully in place**. The (U.S. Senate) Committee, therefore, believes that a **substantial expansion of the program at this time could adversely impact the program's overall success** and the proper use of the resources committed to the program." (Emphasis added)

Governmental entities have a responsibility to the people to expend tax dollars wisely and account for those expenditures. CALFED, as a matter of priority, needs to comply with regulations used by other federal and state agencies. The lack of proper fiscal tracking and accounting procedures in a program already disbursing funds must be corrected.

G. Staffing

CALFED has more than 70 persons listed in its organizational structure. Many have been assigned from the program's participating agencies. But the assignment of personnel on a temporary basis is fraught with pitfalls for two reasons:

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First, CALFED agencies have a variety of competing regulations regarding species, engineering specifications, and other technical material. Mr. Bob Clark highlighted this problem when he testified about the problems of individuals participating in the ERPP fish screening process. Criteria for some species have not been developed yet. As a result, engineers find requirements for one species are at odds with requirements for other species. Sometimes the agencies themselves have different requirements for the same species.[17] Temporary assignments place personnel in a difficult position while performing CALFED functions. For example, staff on loan from the Department of Fish and Game may be responsible for development of guidelines that would require the "home" agency to surrender regulatory authority.

Second, all such assignments come with "time limits," imposed by the agency that sends the employee. Assignments to CALFED usually run for two years. This continual turnover leaves CALFED without the framework for the accumulation of the "institutional knowledge" allowing Program continuity and progression. As a result, the EIS/EIR and associated plans become the victim of the "home" agency's bias towards CALFED's Program goals.

In any case, a "revolving door" causes potential planning gridlock and ends up being very costly to the program and ultimately delays the development of a meaningful plan.

V. CALFED: OVERLAPPING PLANS AND PROGRAMS OF THE AGENCIES

CALFED is a program. It is not an agency. It is a consortium of some 15 state and federal agencies, but lacks the proper authority to coordinate the activities among those agencies which have water and land use programs have on the state. Many questions still need answers:

[17] Testimony of Bob Clark, Manager, California Central Valley Flood Control Association, Senate Select Committee on the CALFED Water Program Hearing - June 9, 1998.

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- How much land will be taken out of production?
- How many jobs will be lost?
- How much water will be required?
- What water rights will be taken away?
- Will local communities be compensated for their economic losses as a result of these programs?

Meanwhile, other state and federal agencies are also working on similar and overlapping programs to those being addressed by CALFED. If these plans are simultaneously implemented without any central coordination, the cumulative impact could severely impact local economies, land use, lifestyle, culture and livelihoods.

For example, the following state and federal agencies have introduced similar programs that may or may not be under the umbrella of CALFED: State Water Resources Control Board, State Department of Water Resources, Department of Fish and Game, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, U.S. National Marine Fisheries Services, U.S. Army Corps of Engineers, Bureau of Land Management and the U.S. Department of Agriculture.

To determine where these programs overlap, it is important, first, to examine CALFED's Ecosystem Restoration Program Plan (ERPP). It suggest, among things, conjunctive water use to increase streamwater flows; the removal of dams; alternative water sources; acquisition of water rights; restoration of waterway meander corridors; control of livestock levels; implementation of land use plans to establish riparian habitat and buffer zones and limiting "potentially harmful land use activities," specifically identifying "livestock grazing and agricultural practices."

The ERPP, along with other CALFED programs, would take out of production up to 380,000 acres of agricultural land in the Sacramento and San Joaquin Valleys.

Shortly after the ERPP was released by CALFED, the State Water Resources Control Board (Board) unveiled another Draft EIR for the Bay-Delta. The Board's objective is stated in their cover letter: "An important aspect of the draft EIR is the inclusion of alternatives that rely on the ***modification of water rights in the Central***

Valley as a means of distributing the responsibility for meeting the objectives of the 1995 Bay/Delta Plan." (emphasis added)

As contained in the draft EIR, the Board states the following regarding agricultural economic impacts:

"The proposed flow alternatives will affect water deliveries to farms in the Central Valley and to water utilities in the San Francisco Bay Area....As a result of these reductions in deliveries, average net income in agriculture is reduced by an amount ranging from $14 million to $50 million annually...In dry years...the proposed alternatives reduce net income in agriculture by $50 to $75 million...."

Furthermore, reduced agricultural production, according to the Board, will result in job losses ranging from 1,300 to 1,900 in agriculture and from 1,800 to 2,700 in other related businesses.

While CALFED and the Board's documents were circulating, the U.S. Bureau of Reclamation (Bureau) released a draft PEIS on November 7, 1997, to comply with the Central Valley Project Improvement Act (CVPIA). This proposal "provides tools to protect and restore fish and wildlife and their habitats in the Central Valley."[18] According to the Bureau, their primary goal is to restore "natural populations of anadromous fish."[19]

The Bureau states that their plan would reduce water supplies between 300,000 acre-feet and 600,000 acre-feet, which would idle 50,000 to 200,000 acres of irrigated land. Annual statewide economic loss would range from $98 million to $413 million. Personal income losses are between $10 million and $178 million, with jobs losses (primarily agricultural) from 1,740 to 6,210.[20]

The U.S. Fish and Wildlife Service currently oversees the Central Valley Habitat Joint Venture. The objectives are: 1) Protect 80,000 acres of existing wetlands; 2) establish 120,000 acres of new wetlands; 3) improve habitat on 750,000 acres of existing public and private wetlands and agricultural lands; and 4) secure quality water and affordable power supplies for protected wetlands.

[18] US Bureau Reclamation Feb. 1998 Newsletter, Vol 5, No 1.
[19] *Ibid.*
[20] *Ibid.*

When the Service must acquire land, it acquires fee title (control of all property rights) only if control of lesser property interests through easements or leases will not achieve land protection objectives.

Funding for acquisitions come from receipts, such as Federal Duck Stamp sales, entrance fees to certain National Wildlife Refuges, import duties on arms and ammunition, and appropriations under the Land and Water Conservation Fund Act.

In November 1997, the National Marine Fisheries Services (NMFS) proposed to the public specific guidelines to protect the coho salmon's habit. The plan would require a 300-foot 'buffer zone' on both sides of a river and 60 feet on both sides of a stream or creek.

Relative to NMFS, the California Farm Bureau states: "This critical habitat designation covers lands that, by NMFS' own admission, are 89% private in the densely-populated Central California...and 46% private for the Southern Oregon/Northern California....This proposal will encompass more than 1.4 million acres in the state of California....

"Agricultural land values in the proposed critical habitat areas range from as low as $500 per acre for rangeland, to as much as $50,000 per acre for quality vineyards, according to the American Society of Farm Managers and Rural Appraisers. Taking an extremely conservative average land value of $10,000 per acre, if the proposed critical habitat designation substantially interferes with productive use of land valued in the aggregate at more than $14 billion, this will cause $14 billion in assessed land value losses. This does not account for the ripple affect the loss of products, employment, and taxes from this land will have in affected communities."[21]

In January 1998, the Board of Reclamation and the California Department of Fish and Game completed the two Environmental Assessments/Initial Studies for proposed long-term delivery facilities to transport water supplies to wildlife refuges in the Sacramento Valley. The proposed projects would supply water to the

[21] CA Farm Bureau letter to Craig Wingert (NMFS), Page 5; April 28, 1998.

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Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges, and to the Gray Lodge Wildlife Area.[22]

On July 1, 1998, the Army Corps of Engineers proposed a plan, with a 60-day public comment period, to streamline federal permitting of developments relative to wetlands. The proposal for wetlands and building permits could have wide-ranging effects on land development.

On July 10, 1998, the United States Department of Agriculture announced the Sierra Nevada Conservation Planning for National Forest in California. This is the beginning of a planning process that will: 1) Examine existing management direction for the National Forests in the Sierra Nevada, and 2) develop new management direction where necessary, supported by an environmental impact to be completed by July 31, 1999. After an initial public involvement period, the Agency will amend this notice with a Notice of Intent that will more fully describe an Agency proposed action.

On August 1, 1998, the United States department of Agriculture and the State Water Resources Control Board released the Draft California Unified Watershed Assessment, with a 30-day public comment period. This is part of the federal Clean Water Action Plan (released on February 19, 1998, by President Clinton and Vice-President Gore), which provides a blueprint for several federal agencies, working in cooperation with states, Tribal Nations, and the public to restore and protect our Nation's waters, and emphasizes a cooperative approach to solving water quality problems.

The Bureau of Land Management (BLM) has announced the formation of a National Land Exchange Evaluation and Assistance Team. The BLM, with control of more than 264 million acres of land primarily in the West completes 60 to 70 land exchanges every year. The average exchange involves 150,000 acres of land worth about $50 million. Exchanges allow the BLM to acquire land for public ownership, land with high conservation values as habitat for wildlife. These lands contain riparian areas BLM believes are critical to the health of streams rivers, and entire watersheds.

[22] US Bureau Reclamation Feb. 1998 Newsletter, Vol 5, No 1.

CALFED, as the program responsible for implementation of the Bay-Delta Accord and with the cooperation of the 15 agencies supporting the program, must exercise its role as the "coordinator" of this information.[23] Especially since, as part of technical review, CALFED establishes how proposed projects fit into the ERPP and the goals of the Bay-Delta Accord.[24]

VI. ISSUES RAISED IN TESTIMONY AND WRITTEN COMMENTS

A. Land Conversions

The habitats identified in the ERPP are found almost solely within the Sacramento and San Joaquin Valleys. The conversion of farm land to increase fish and animal habitat violates CALFED's own sixth principle which states, "Solutions will not solve problems in the Bay-Delta system by redirecting significant negative impacts, when viewed in their entirety, *within the Bay-Delta* or other regions of California."[25] (Emphasis added.)

There may be circumstances when land conversion is necessary. However, the overall CALFED approach favors certain parts of the environment over productive agricultural land. This attitude toward agriculture is conveyed in the Water Use Efficiency Program. There CALFED expresses concern that the **program does not include strong provisions to mandate agricultural land conversion as a means of delaying the need for new storage facilities.**[26] (Emphasis added)

CALFED's programmatic EIS/EIR, in section 5.2, discusses the land use changes that will likely occur.[27] However, there is a total lack of analysis,

[23] County of Fresno Comments on the CALFED Bay-Delta Program Draft Programmatic EIS/EIR, June 23, 1998; San Joaquin Farm Bureau Federation Comments Concerning the CALFED Program, June 30, 1998; et al.
[24] CALFED information provided in response to a Letter of Request from the Senate Select Committee on the CALFED Water Program; July 30, 1998.
[25] CALFED Bay-Delta Program Draft Programmatic EIS/EIR, March 1998; Page 1-6.
[26] County of Yolo Comments on the Draft Programmatic EIS/EIR for the CALFED Bay-Delta Program, June 23, 1998 and California Farm Burea Federation President Bill Pauli's Comments on CALFED, July 9, 1998.
[27] California Farm Burea Federation President Bill Pauli's Comments on CALFED, July 9, 1998

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either for individual projects or cumulative for all programs, of the economic impacts resulting from such extensive land conversion programs. Examples of this include:

1) The EIS/EIR states, "Levee system integrity measures could affect up to 35,000 acres of land in the Delta, most of which would likely be *important agricultural land.*"[28] (Emphasis added)

2) In discussing the ecosystem restoration program and its impact on the Sacramento and San Joaquin River regions CALFED states, "The Ecosystem Restoration Program could convert up to 34,000 acres of *important farmland*, primarily on the east side of the valley and the valley trough in the Sacramento Valley and up to 11,000 acres of *important farmland*, primarily east of the San Joaquin River in the San Joaquin Region."[29] (Emphasis added)

3) The impacts of this common element are even greater when the EIS/EIR speaks to its impacts in the Delta Region noting, "The ecosystem restoration program could convert up to 115,000 acres of *important farmland.*"[30] (Emphasis added)

4) CALFED, while not specifically identifying where any of these conversions might occur, also discusses the impact of the proposed Water Quality Program in the Sacramento and San Joaquin River Regions. The document identifies 35,000 to 45,000 acres of *agricultural land* with water quality problems and states "Grasslands Subarea of the San Joaquin River Region may be 'idled' to improve water quality in the region and the Delta."[31] (Emphasis added)

5) The Ecosystem Restoration Program Plan targets 314,100 acres of *agricultural land* as a goal for conversion to habitat. This is in addition to

[28] CALFED Bay-Delta Program Draft Programmatic EIS/EIR - March 1998; Page 8.1-27.
[29] *Ibid.*, Page 8.1-28.
[30] *Ibid.*, Page 8.1-26.
[31] *Ibid.*, Page 8.1-28.

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acreages listed in the EIS/EIR as being impacted by storage (32,000 acres) and conveyance (61,500 acres -- a total of 28,0000 acres for Alternative 2 and another 33,500 acres for the isolated conveyance in Alternative 3).[32] (Emphasis added)

6) Addressing the impacts of conveyance plans on *agricultural land* in the Delta Region, CALFED makes two comments; a) "Channel widening and island flooding proposed in Alternative 2 will require the purchase and conversion of between 4,000 and 28,000 acres of *agricultural land*, depending on the variation chosen." and b) "Creating an open-channel isolated conveyance in Alternative 3 would be a significant adverse land use impact due to permanent conversion of between 4,500 and 33,500 acres of *important farmland.*"[33] (Emphasis added)

Following each of the examples cited above, the plan states, "....*the location of lands that would be affected by the Program are not known at this time.*" (Emphasis added)

This statement by CALFED is dubious for the following reasons:

1) The EIS/EIR states that of the 1,100 miles of Delta levees, 625 miles would be upgraded and a 200-foot-wide strip of land would be acquired under the Levee System Integrity Program. Additionally, CALFED assumes that 100 miles of setback levees would be constructed, affecting an area 500 feet in width.[34] Information is available through the Department of Water Resources' (DWR) Geographic Information System (GIS) Section to allow production of detailed maps indicating the precise location of each levee in question. If CALFED were to provide the DWR the figures contained in the EIS/EIR, DWR could produce a map capable of pin-pointing the acreage identified in the Levee System Integrity Program.

[32] *Ibid.*, Pages 8.1-1 to 8.1-29.
[33] *Ibid.*, Page 8.1-25.
[34] *Ibid.*, Page 5-7.

2) The area identified by CALFED as the "Grasslands Subarea of the San Joaquin River Region" is a specific location within the State of California. Based on the resources available to CALFED through the California Department of Food and Agriculture, the State Water Resources Control Board, the California Department of Fish and Game, the Bureau of Reclamation, the U.S. Fish and Wildlife Service, and the U.S. Geological Service, the 35,000 to 45,000 acres subject to Water Quality Program examination can be identified.

3) CALFED generally describes acreage subject to conversion under the Ecosystem Restoration Program in terms of "the east side of the valley" and "the valley trough in the Sacramento Valley" and "primarily east of the San Joaquin River in the San Joaquin Region." Furthermore, CALFED describes a range of acreage in terms of "... up to 34,000 acres of important farmland" and "...up to 11,000 acres of important farmland." The California Department of Conservation maintains a detailed inventory of agricultural land in each of the counties identified in the CALFED solution area. This inventory can be combined with information from the Stephen P. Teal Data Center, the Bureau of Land Management and the California Department of Forestry and Fire Protection for a very detailed and accurate location of the targeted acreage.

4) The alignments of each of the configurations associated with EIS/EIR Alternatives 1, 2, and 3 are precisely known to CALFED, as evidenced by the production of maps included in the document titled "Figure 2-3. Alternative 1 General Features," "Figure 2-4. Alternative 2 General Features," and "Figure 2-5. Alternative 3 General Features."[35] The information CALFED possesses relative to these alignments, combined with information available through the previously identified CALFED agencies, allows the precise location and acreage information to be developed.

CALFED staff has told the public that projects will comply with CEQA/NEPA requirements and that CALFED will complete site-specific EIS/EIR's on its projects. However, the California Environmental Quality

[35] *Ibid.*, Pages 2-19; 2-20; and 2-21.

Act (CEQA) allows land purchased for wildlife conservation purposes to be exempt from separate reviews under the Class 15 Categorical Exemptions section.[36] This exemption eliminates any site-specific or cumulative impact information at all levels of the Program.

The Office of Planning and Research is required to develop objectives and criteria for the evaluation of projects and the preparation of EIR's and negative declarations. The guidelines include criteria for public agencies to follow in determining whether or not a proposed project may have a "significant effect on the environment."[37] Further, the criteria will require such a finding if certain criteria are met stating at Subsection (b), "The possible effects of a project are individually limited but cumulatively considerable.... means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." The code goes on at Subsection (c) to add another criteria of significant effect stating, "The environmental effects of a project will cause substantial adverse effects on human beings, either *directly* or *indirectly*."[38] (Emphasis added)

There is a compelling need for the public and agency review of the EIS/EIR to understand the scope of impacts outlined in the program plan. As part of the CEQA/NEPA process, parties must identify not only the site-specific impacts of a project, but also its cumulative impacts. Without this information, adequate and informed opinion is not possible.

1. Agriculture

California's economy ranks seventh in the world. Agriculture in California ranks ninth worldwide as a stand-alone economy. The resource necessary for almost all agricultural endeavors is water.

[36] County of Solano Comments on the CALFED Bay-Delta Program Programmatic EIS/EIR and Phase II Interim Report; June 29, 1998.
[37] California Public Resources Code Section 21083
[38] *Ibid.*, Subsections (b) and (c).

Testimony presented by Mr. David Phippin, Chairman of the Sierra-Bay Production Credit Association - Western Farm Credit Bank varifies that the cost and availability of water are often limiting factors in determining the amount of credit made available to farmers. Lending institutions consider many factors in evaluating loan applications for operating capital. One primary factor is the durability of property value and water is the determining element in calculating property value.[39]

Agricultural production plays a significant economic role in our state and agricultural land is an integral part of what is termed the "environment." There are more than 100 million acres within the borders of the State of California.[40] According to the California Department of Conservation's Farmland Conversion Report 1994 to 1996, nearly 27 million acres in California is dedicated to agricultural production.[41] Of this amount, 13.6 million acres or half of all agricultural land is in the Sacramento and San Joaquin Valley regions.[42] These regions represent the foundation of the economic base of California. California's farmers and ranchers produced nearly $25 billion in agricultural production revenues in 1996.[43]

CALFED's various alternative solutions have the potential to devastate the agricultural industry. Clearly, many farmers operate in a fragile financial condition. If the value of their property fluctuates or their access to water is disrupted due to supply or cost, they would not be able to absorb the losses. Many would simply become bankrupt which in turn, would have a devastating effect on local economies. It could also conceivably increase food costs not just in California, but throughout the nation and world.[44]

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[39] Testimony of David Phippin, Chairman of the Sierra-Bay Production Credit Association and Western Farm Credit Bank, Senate Select Committee on the CALFED Water Program Hearing - June 29, 1998.
[40] California Department of Forestry and Fire Protection, Fire and Resource Assessment Program (FRAP) Map & Report to the Senate Select Committee on the CALFED Water Program, August 3, 1998.
[41] California Department of Conservation, Farmland Mapping and Monitoring Program, Farmland Conversion Report 1994 to 1996, June 1998; Table B-2, Page 77.
[42] *Ibid.*, Page 77
[43] California Farm Burea Federation - "California Agricultural Facts"; CFBF Website, August 10, 1998
[44] Written comments of Richard M. Lorenz, President of the Colusa-Glenn Farm Credit Association on the CALFED Bay-Delta Programmatic EIS/EIR; June 26, 1998.

Mr. Alex Hildebrand, a Central Valley farmer and member of Bay Delta Advisory Council, testified that the CALFED plan speaks of providing a "reliable" water supply rather than an "adequate" water supply. This permits increasing reliability for some needs while reducing consistency of the supply for other needs. Mr. Hildebrand stated that the CALFED plan and the Bulletin 160-98 treat the production of food as an "expendable activity." The state has not addressed the issue of supplying food for the increased populations anticipated in the 21st century. He noted that if surface water supply allocated for consumptive use by agriculture remained constant, population growth and loss of overdrafted groundwater would reduce per capita allocation of water for consumptive use for food production to less than half its present level by the year 2025.[45] CALFED states, "Substantial conversion of agricultural land in the Delta Region could shift some production to desert areas in southern California, such as the Imperial Valley."[46]

As pointed out by the California Farm Bureau Federation,[47] the CALFED Program also seems willing to ignore Constitutional and legislative provisions that declare the importance of farms and ranches within the existing environment. The California Constitution, Article XIII, Section 8 heralds the importance of land used for the "production of food or fiber" along with attendant open space values that significantly contribute to the environment. In the Delta Protection Act of 1992, the Legislature found that:

> (a) The [San Joaquin-Sacramento] Delta is an agricultural region of great value to the state and nation and the retention and continued cultivation and production of fertile peat lands and prime soils are of significant value.
>
> (b) The agricultural land of the Delta, while adding greatly to the economy of the state, also provides a significant value as open space and habitat for waterfowl using the Pacific

[45] Testimony of Alex Hildebrand, Farmer and Member of the Bay-Delta Advisory Council, Senate Select Committee on the CALFED Water Program Hearing - August 5, 1998.
[46] CALFED Bay-Delta Program Draft Programmatic EIS/EIR - March 1998; Page 8.1-38.
[47] California Farm Bureau Federation President Bill Pauli's Comments on Cal-Fed, July 1, 1998; Pages 3 to 5.

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> Flyway, as well as other wildlife, and the continued dedication or attention to that delta land in agricultural production contributes to the preservation and enhancement of open space and habitat values. (Pub. Res. Code Section 29703.)

The Thurman Agricultural Policy Act provides that:

> A profitable and healthy farming industry must be sustained by a sound natural resource basis of soils, water, and air that is developed, conserved, and maintained to assure sufficient quantities and highest optimum quality possible. [Food and Ag. Code Section 802(g)]
>
> One of the major principles of the state's agricultural policy shall be "to sustain the long-term productivity of the state's farms by conserving and protecting the soil, water and the air that are agriculture's basis resources." [Food and Ag. Code Section 821(c)]

On the Federal level, the Agricultural Improvement and Reform Act of 1996 provides that:

> The nation's farmland is a unique natural resource, and each year a large amount of the nation's farmland was being irrevocably converted from actual or potential agricultural use to nonagricultural use in many cases as the result of action taken or assisted by the federal government. **The Federal Farmland Protection Program directs federal agencies to identify and take into account the adverse effects of federal programs on the preservation of farmland**; consider alternative actions, as appropriate, that could lessen such adverse effects; and assure that such federal programs, to the extent practicable, are compatible with state government, local government and private programs and policies to protect farmland. [Fed. Reg. June 17, 1994, page 31110.] (Emphasis added)

CALFED cannot reconcile this information with Draft EIS/EIR assumptions that "Water Use Efficiency measures are not expected to directly impact current land uses therefore, no estimates of land changes relative to this program are presented."[48] (Emphasis added) It is very clear that the connection between land use, water availability, and water price directly impacts land use considerations. These facts also put the CALFED program in conflict with the solution principle of "no significant redirected impacts."

These facts are also closely tied to the CALFED Program's approach to identifying solutions to the problems of the Bay-Delta. The difficulty in assessing CALFED Program impacts is the way CALFED defines issues. CALFED speaks in terms of watershed, while the public and local government speak in terms of county, district, or neighborhood boundries. The Bay-Delta, as defined by CALFED, is divided into three regions: the Sacramento Region; the Delta Region; and the San Joaquin Region. The Sacramento Valley and the San Joaquin Valley form the very heart of the CALFED geographic regions of the "problem" and "solution" areas. Therefore, it is understandable that the agricultural community, along with the local governments, and people living and working in this area are paying close attention to the actions of CALFED.

2. Economic Impacts

"The impact on the fiscal integrity of the districts and the economy of small agricultural communities cannot be ignored." (EIS/EIR, Phase II Interim Report, Page 60) (Emphasis added)

The draft programmatic EIS/EIR concludes that the widespread conversion of agricultural land would have a substantial adverse impact on farm income, employment levels, and public finances in the Delta and Sacramento Valley Regions.[49] The value of crops taken out

[48] CALFED Bay-Delta Program Draft Programmatic EIS/EIR - March 1998; Page 5-5.
[49] *Ibid.*, Page 8.1-36.

of production in the Delta Region alone is estimated to range between $58 and $184 million annually, with nearly 9,000 jobs lost (3.6% of regional employment). Estimated crop loss in the Sacramento Valley is placed at between $13 and $34 million per year, with 650 to 3,300 jobs lost.[50] When CALFED's economic "multiplier" (Identified by CALFED as 3.2)[51] is applied to these figures, regional economic losses in the Delta will exceed $588,000,000 and those of the Sacramento Valley are over $108,000,000.

In particular, the document determines that farm worker job loss would represent a "significant unavoidable impact" of the CALFED Program. The most significant impact would be the concentrated loss of jobs for farm workers who have limited skills. Per capita income for displaced farmers and families may also decline. Farm managers may be required to travel farther to their place of employment or move to other areas to gain employment. Displaced farm managers and technicians may find work in other regions or other jobs related to agriculture.[52] This impact is compounded by a fact not addressed in the EIS/EIR. Local agricultural service industries that provide goods outside the immediate locale will also be adversely effected by the regional economic disruption proposed by the CALFED Program. The Program will result in the layoffs of thousands more low-skilled agricultural workers into an economy that will not be able to provide jobs given current unemployment rates.[53]

There are a number of economic studies regarding the impacts of water loss, land fallowing, and associated land use actions. A UC-Davis study of the effects of the 1991 water banking program estimated that the transfer of 151,000 acre-feet from Yolo County reduced farm income 5% and increased agricultural unemployment 4.7%. Rural areas in the Sacramento Valley still dependent upon agriculture, such as Yolo County will suffer substantial economic impact as a result of

[50] *Ibid.*, Pages 8.6-12 and 8.6-13.
[51] *Ibid.*, Page 8.1-14.
[52] *Ibid.*, Pages 41 and 44.
[53] County of Yolo Comments on the Draft Programmatic EIS/EIR for the CALFED Bay-Delta Program, June 23, 1998.

CALFED policies.[54] Another study of the loss of 25% of irrigation water in the Sacramento Valley found staggering results. While the effects are not uniform across the entirity of the study area (Tehama, Glenn, Butte, Colusa, Yolo, Yuba, Sacramento, and Sutter Counties), dollar losses for crops totalled $32 million. 80% of the losses took place in counties that depend heavily on agriculture, and particularly on rice.[55] Finally, the California Farm Water Coalition conducted an economic impact study in November 1995. The analysis confirmed that reduced agricultural production has broad-reaching effects, not only on production agriculture, but also on other sectors of local economies. The report uses actual loss experienced in the 1987-1992 drought to demonstrate the effects of reduction in water, ***whatever the cause***, has on these allied industries. (Emphasis added) Water shortages of 75,000 acre-feet in the Sacramento Valley fallowed 26,000 farm acres, resulting in losses of $26.3 million in farm revenues in 1992. Local allied industries suffered additional direct losses of $18.4 million. The total loss in revenue within the Sacramento Valley was greater than $44 million. In the San Joaquin Valley, water shortages of 390,000 acre-feet resulted in fallowing 166,000 farm acres and the loss of $128.8 million in farm revenues in 1992. Local allied industries experienced additional direct losses of $50.2 million. These impacts were smaller than in 1991, when a 790,000 acre-feet water shortage caused fallowed more land. Total revenue losses to the San Joaquin Valley in 1991 exceeded $179 million.[56]

Based on the above analysis, the Bay-Delta Program will have profound and potentially dire consequences for the future economy of various regions. The CALFED Program appears to be a vast transfer of wealth from one region to another. Program elements analyzed in the EIS/EIR should be extensively revised to eliminate the widespread inequities that are being proposed.[57]

[54] *Ibid.*
[55] "Economic Impacts of Irrigation Water Cuts in the Sacramento Valley" by Dr. Hyunok Lee, Daniel A. Sumner, and Richard E. Howitt; UC Davis Department of Agricultural and Resource Economics, June 1997.
[56] California Farm Water Coalition "Agribusiness and Water Shortages: The Impacts Quantified" - November 1995.
[57] County of Yolo Comments on the Draft Programmatic EIS/EIR for the CALFED Bay-Delta Program, June 23, 1998.

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The testimony of Adrienne Alvord, Policy Coordinator of the Community Alliance with Family Farmers, points to the need of information to evaluate the economic impacts of the CALFED Program.[58] The purpose and scope of a "programmatic" document is understandable, including the need to address issues and potential projects in broad, general terms. However, the economic information contained throughout the draft EIS/EIR is so vague, it fails to provide adequate information. It does not allows decision-makers and members of the general public to be informed within the context and intent of CEQA and NEPA. CALFED has proceeded with its mandate to restore the Delta ecosystem. Prior to 1997, 38 projects were selected for funding, 71 projects in 1997, and 9 projects in 1998. In response to its latest Proposal Solicitation Package CALFED received another 181 proposals requesting funding. The projects approved and funded, have aquired over 17,000 acres of land for habitat restoration and other purposes. The cumulative impacts of these projects on surrounding property owners should have been identified and mitigated in view of Pubilc Resources Code Section 21803.

Throughout the CALFED document mitigation measures are lacking. Section 8.6 of the EIS/EIR states, "Additional negative regional economic impacts could result from costs of the Water Quality Programs...Costs are not yet available, so regional economic impacts cannot be quantified." The significance of the economic impacts cannot be determined without quantifying costs. The costs of this Program element have not been quantified because scope of the plan has not been determined. CALFED must conduct the necessary analysis including consistency with the CALFED principle of no redirected impacts, to achieve CEQA and NEPA compliance.[59]

CALFED representatives, when directly asked by the Committee and the general public about identifying the cumulative impacts of the plan,

[58] Testimony of Adrienne Alvord, Policy Coordinator for the Community Alliance with Family Farmers; Senate Select Committee on the CALFED Water Program Hearing - May 13, 1998; Page 45.
[59] Regional Council of Rural Counties PDEIS/EIR Comments, June 30, 1998; Page 4.

will state that they are only producing a programmatic document sometimes referred to as a first-tier EIS/EIR. They further state that when the plan gets to a site-specific stage, then a lead project agency will be responsible for filing all necessary CEQA/NEPA documentation.

This defense on the part of CALFED, in conjunction with the use of the term "willing seller" or the phrase "the location of lands that would be affected by the Program," in effect shield program agencies. They prevent decision-makers and the general public from obtaining even the broadest estimations of the plan's impacts. Information that could be used to document potential costs in the ERPP, the Levee System Integrity Program, the Water Quality Program, and the Water Use Efficiency Program has already been adequately identified. While this information may not be sufficient to provide answers to **all** costs associated with all aspects of the plan, it is reasonable to expect more information could be included in the draft programmatic EIS/EIR.

Such excuses cannot and should not be allowed to dismiss the apparent lack of data surrounding economic impacts of land conversion from farming to other uses. Neither should they be used to excuse the absence of sound scientifically based information on how costs and impacts of water use efficiency programs are developed; fiscal impacts of anticipated user fees on transactions across the breadth and depth of the solution area; economic losses to local governments; and costs of increased service delivery to those forced out of employment.

By avoiding the cumulative economic impacts of its plan, CALFED also avoids developing meaningful mitigation strategies and associated costs. For example, the simple task of obtaining land values for property acquired under the Levee System Integrity Program and calculating the resulting tax base loss is avoided by CALFED. Calculating the potential loss of school district revenues is straightforward, if the preliminary work is done to identify what land is involved. Accounting for the costs to local government of a 7%

increase in unemployment in an area already suffering from an 18% unemployment rate is also a simple mathematical exercise, but one that CALFED doesn't address.

CALFED **must** commit the time and resources to proposing well thought out, functional, effective mitigation measures for impacts which result from its program.

3. Local tax base impacts

In economic terms, the medium of exchange identified in CALFED's discussions regarding the conversion of land is the land itself and its associated water. This exchange medium has a value. It is also the foundational basis of local economies that include the economic viability of businesses, local and county governments,[60] special districts[61] and public schools that derive their operating revenues from local taxes. The CALFED plan attempts to quantify the added value of land and water by presenting economic data such as projected losses in crop revenue and employment. But it does not provide information on the potential loss of the base value of the land and water.

Converting thousands of farm acres to other uses through the Levee System Integrity Program could devastate special districts. Their ability to maintain this important flood control resource could be permanently crippled or even eliminated if tax revenue losses are not replaced from another source.[62]

[60] County of Solano Comments on the CALFED Bay-Delta Program Draft Programmatic EIS/EIR, June 29, 1998; County of Butte Comments on the Draft EIS/EIR, May 26, 1998; City of Rio Vista Comments on the CALFED Draft EIS/EIR, June 26, 1998.

[61] Testimony of Steve Mello, Vice-Chair of the Delta Protection Commission and Rancher; Senate Select Committee on the CALFED Water Program Hearing - May 13, 1998; Page 47.

[62] North Delta Water Agency Comments Regarding the CALFED Draft EIS/EIR, June 5, 1998; California Central Valley Flood Control Association Comments on Draft Programmatic EIS/EIR, June 26, 1998; and Testimony of Mr. David Brown, Manager of the Sacramento-Yolo Mosquito & Vector Control District; Senate Select Committee on the CALFED Water Program Hearing, August 5, 1998..

The magnitude of the potential conversion of agricultural land to the other uses identified in the plan make it vital for detailed economic data to be contained in the EIS/EIR.

Testimony by Colusa County Assessor, Dan O'Connell revealed that increasing the amount of public land in his county is not desirable. Mr. O'Connell noted that Colusa County already has 18,000 acres of publicly owned wetlands including 12,000 acres owned by the U.S. Fish and Wildlife Service.[63] Colusa County, cannot afford any more public land since public lands do not provide tax funds for fire or levee protection and do not contribute anything to public schools. Colusa County has also been hurt by government agencies that are supposed to make in-lieu payments. For example, the U.S. Fish & Wildlife Service owes approximately $500,000 in such payments.[64] Government officials at the regional level often agree that their agency owes taxes for any land that is purchased. But most agencies fail to pay local property taxes once the land is actually acquired. The usual excuse made involves budget constraints that have been imposed by an upper-level bureaucrat or even Congress.

The testimony from representatives of various local and county governments speaks directly to the issue of fiscal uncertainty presented by the plan.[65] As an example, on page 8.1-39 and again on page 8.1-43, the EIS/EIR states that one of the strategies for minimizing tax losses resulting from land conversion is ". . . providing opportunities for alternative industries to develop and other economic incentives."[66] This strategy hardly begins to identify the amount or the source of this revenue. However, it is presumed by CALFED that its affiliated state and federal agencies will meet their commitments.

[63] California Department of Forestry and Fire Protection, Fire and Resource Assessment Program (FRAP) Map & Report to the Senate Select Committee on the CALFED Water Program, August 3, 1998.
[64] Testimony of Dan O'Connell, Colusa County Assessor, Senate Select Committee on the CALFED Water Program Hearing - June 9, 1998.
[65] Testimony of Dr. Don Villarejo, Ph.D., California Institute for Rural Studies and Richard Howitt, Professor at the University of California, Davis-Department of Agriculture and Resources Economics; Senate Select Committee on the CALFED Water Program Hearing - June 9, 1998.
[66] County of Yolo Comments on the Draft Programmatic EIS/EIR for the CALFED Bay-Delta Program; June 23, 1998.

How can any governmental entity reasonably speak to the adequacy of any plan that is unable to quantify the level of fiscal impact? Nor does the plan address increases expected in the delivery of certain services that might result from such a loss of revenue.[67] While local governments do support CALFED as a means to providing a resolution to conflicts surrounding the use of water and natural resources, the methods for restoring ecological health to the Bay-Delta will have a direct impact on the entities that deliver public services such as police and fire protection, libraries and education to residents of the area.

Once again, CALFED ***must*** identify specific mitigation measures to ensure the continual delivery of services provided by local government. Additionally, these measures must also include the projected costs resulting from lost tax revenues, as well as increases in services provided as a result of Program actions.

B. ENVIRONMENTAL CONCERNS

Testimony on behalf of the environmental community focused on increasing water conservation and the use of water markets, holding the best potential to help meet California's future water needs. While not entirely opposed to storage, the environmental community believes most surface facilities don't "pencil out" economically.[68]

Beyond the issues of storage and conveyance, written comments of the environmental community support some of the concerns of other stakeholders in the CALFED process. CALFED's approach to CEQA requirements, the scope of the Ecosystem Restoration Program Plan, and the scientific soundness of the objectives of Program elements are questioned.[69]

[67] County of Sacramento Comments on the CALFED Draft Programmatic EIS/EIR; April 30, 1998.
[68] Testimony of Barry Nelson, Senior Fellow for Save San Francisco Bay Association; Senate Select Committee on the CALFED Water Program Hearing, May 13, 1998.
[69] Environmental Water Caucus Joint Comments of Draft EIS/EIR, June 30, 1998, Page 17; Friends of the River Comments on the CALFED Bay-Delta Program Draft Programmatic EIS/EIR, July 1, 1998; Sierra Club Comments of the CALFED Bay/Delta Program's EIS/EIR, June 30, 1998, Page 1.

C. WATER USE EFFICIENCY

Water use efficiency is a common element that typically includes managing the demand for water. It is also directly linked to water quality and water supply reliability. CALFED's approach to these issues is from a policy perspective. As a result, few technical issues are addressed. CALFED believes this approach is necessary and appropriate because implementation of efficiency measures occurs mostly at local and regional levels.[70] However, concerns exist regarding this approach:

First, as noted in its own document "Developing a Draft Preferred Alternative," CALFED elevates this common element beyond the local or regional level by establishing direct linkage between it and variable elements, such as storage. Further, CALFED states that CALFED agencies will provide assurances that cost-effective efficiency measures ***are*** implemented.[71] (Emphasis added) This statement puts CALFED in the middle of technical development and certification of efficiency programs at the regional and local levels. Since "(a)ssurances will play a critical role in the Water Use Efficiency Program."[72] how will CALFED provide these assurances?

Second, CALFED identifies its member-agencies' roles in the Water Use Efficiency Overview as being twofold: 1) Offer support and incentives through expanded programs to provide "planning," "technical," and "financing assistance."; 2) Play an important role in providing assurances that cost-effective efficiency measures will be implemented.[73]

It's under the second role definition that CALFED proceeds with preliminary cost estimates that indicate ". . . costs for achieving efficiency increases could range from $40 to $60 per acre-foot of reduced applied water in the

[70] CALFED Bay-Delta Program Draft Programmatic EIS/EIR - March 1998; Page 2-12.
[71] CALFED Bay-Delta Program "Developing a Draft Preferred Alternative" - August 5, 1998; Page 17.
[72] CALFED Bay-Delta Program Draft Programmatic EIS/EIR - March 1998; Page 2-13.
[73] *Ibid.*, Page 2-12.

Sacramento Region and from $50 to $100 per acre-foot in the San Joaquin River Region."[74] It also states, "Additional district-level costs could range from $5 to $12 per acre of land served in both regions."[75] CALFED has identified an average cost of surface water in the Sacramento Region at between $0 and $15 per acre-foot and in the San Joaquin Region between $20 and $85 per acre-foot.[76] If you total the projected pricing applied to the Sacramento Region, it results in a 480% cost increase and an increase of more than 130% in the San Joaquin Region. What would be the reaction of the trucking industry, for example, if a government agency announced today that the current average price of $1.25 per gallon for diesel fuel would increased to more than $6 per gallon?

Throughout the discussion of water use efficiency, agriculture and urban uses are identified in terms such as target goals, assurances and planning assistance for reaching CALFED goals. CALFED staff has predicted that through "stringent application of conservation and demand management measures," they expect to reduce future drought-year shortfalls by 4 million acre-feet."[77] CALFED staff has also indicated that the only way to increase water supply is through development of new storage. But, when everything else involved in the development of new storage is considered, it may be more feasible to accept some economic consequences rather than provide the facilities necessary to reduce any shortfall to zero.[78] To date, there has been no clarification of this issue from CALFED and an explanation is necessary.

Additionally, during a meeting with representatives of the McCloud River management group, Roger Patterson of the Bureau of Reclamation stated a conversation he had that morning with CALFED staff, centered on how to implement *mandatory* (emphasis added) conservation measures to reach 4 million acre feet of water savings. When asked to explain what he meant by the term "mandatory," Mr. Patterson stated that he meant to say "voluntary."

[74] *Ibid.*, Page 8.1-37
[75] *Ibid.*, Page 8.1-37
[76] *Ibid.*, Page 8.1-13
[77] Statements of Mark Cowin, Director of CALFED Storage and Conveyance Programs, California Farm Bureau Federation "AG ALERT," Issue dated May 20, 1998.
[78] *Ibid.*

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There is reason to be concerned that CALFED intends to propose a mandatory program on selected CALFED regions, or even the State of California to reach the goals of the Water Use Efficiency Program. This is based not only to the comments made by a CALFED agency representative, but also on comments in the Department of Water Resources Bulletin 160-98. The Bulletin states CALFED has suggested that the State Water Resources Control Board could be asked to pursue its obligations to investigate waste and unreasonable use more *vigorously*.[79] (Emphasis added)

CALFED's publicly stated water savings are based on the efficiencies outlined in the EIS/EIR and come from agricultural and urban conservation including urban recycling. However, the EIS/EIR fails to identify any amount of water conserved by environmental users since there has been little formal planning using water in that manner. As a result, no options for wetland water conservation have been quantified.[80] The lack of this information is addressed in the "Errors and Ommissions" section of this report. However, it needs to be emphasized that the absence of this data is a serious ommission by CALFED.

According to written comments received by the Environmental Water Caucus, CALFED has adopted estimations made by the Department of Water Resources in its Bulletin 160-98. According to these estimations, full implementation of urban best management practices will result in the conservation of 1.5 million acre-feet. However neither Bulletin 160-98 nor CALFED's draft EIS/EIR demonstrate how that estimate was generated. CEQA/NEPA guidelines require that CALFED provide all of its supporting information and assumptions that were necessary to arrive at that estimate.[81] This lack of credible and necessary data from the programmatic document impairs the ability of the public to either thoroughly understand impacts of the plan or adequately analyze its scope.

Bulletin 160-98 also forecasts that despite increased conservation efforts, California still won't have enough water for urban and ag use, much less for

[79] Department of Water Resources, The California Water Plan Update Bulletin 160-98, January 1998; Page 4-19
[80] *Ibid.*, Page 6-24.
[81] Environmental Water Caucus Joint Comments on Draft EIS/EIR, June 30, 1998; P 7.

environmental purposes. Why then does CALFED focus on water conservation as generating water for environmental use?

There are large differences between Bulletin 160-98, the state's water planning document, and the CALFED draft EIS/EIR. CALFED seems to have cherry picked Bulletin 160-98 for the numbers it wanted while ignoring other data in the document. For example, CALFED's no-action alternative identifies "significantly more water use efficiency potential" than Bulletin 160-98, and bases its findings on unspecified "increases in funding and regulatory support." Unless CALFED can provide funding for water efficiency measures that truly result in water savings, the no-action alternative should not contain estimates of water savings that exceed Bulletin 160-98.[82]

D. The Ecosystem Restoration Program

The Chairman presumes CALFED is committed to its mission statement, and the solution principles and objectives. As such, CALFED must measure its program actions against these principles and objectives. It is in light of this presumption, that testimony and written comments about the Ecosystem Restoration Program Plan (ERPP) were examined.

CALFED's primary mission is to develop a long-term, all-encompassing plan for the restoration of ecosystem health. The ERPP is the embodiment of that goal. Further, a single statement in the plan that is the source of the most controversy is in reference to the purpose which says: "It is not designed as mitigation for projects to improve water supply reliability or to bolster the integrity of Delta levees; improving ecological processes and ***increasing the amount and quality of habitat are co-equal with other program goals*** related to water supply reliability, water quality and levee system integrity."[83] (Emphasis added) The "co-equal" status granted this goal, is then established throughout the ERPP by identifying a broad range of habitats

[82] Kern County Water Agency Comments on the Draft EIS/EIR, June 30, 1998; Page 7.
[83] CALFED Bay-Delta Program, Volume I: Ecosystem Restoration Program Plan Draft, March 1998; Page 2

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found in California. The ERPP also outlines the "target goals" of acreage subject to conversion. The target goals of the habitats described within the ERPP are widely argued, but range from a minimum target of 196,300 acres to a maximum target of 314,100.[84] Further, the EIS/EIR states "It is likely that the majority of lands that would be affected by the CALFED Program are currently being used for agricultural purposes."[85] Testimony, taken in conjunction with these points, affirms that CALFED does not consider agricultural land to be an inclusive segment of the environment.

As noted in the CALFED Program funding section of this report, CALFED has already begun funding near-term restoration projects that have resulted in agencies acquiring fee title or easements to over 17,450 acres of land in the Delta region. These acquisitions, which have borders with other property, can have a positive or negative impact on surrounding properties. Of the land acquisition projects funded by CALFED two present the best example of the difficulty in projecting total costs of the ERPP:

First, the McCormick-Williamson Tract project by the Nature Conservancy and others, involves 1,650 acres of Delta agricultural land for conversion to habitat. The price stated during the Nature Conservancy's presentation to the Ecosystems Roundtable amounting to just over $3,100 per acre. Second, is the project that involves the acquisition of upland agriculture land along the Napa River by the Napa County Land Trust. After an extended wait for funding, the Land Trust was given $1 million for the first phase purchase of 77 acres along the river. This amounts to just over $12,000 per acre. The average price per acre between these two projects is a little over $7,500 per acre.

In looking at the ERPP, which targets over 300,000 acres of what CALFED describes as "mostly agricultural land," the "bottom line" analysis of this program could result in the projection of billions, upon billions of taxpayer dollars in expense.

[84] *Ibid.*, Pages 74 to 121.
[85] CALFED Bay-Delta Program Draft Programmatic EIS/EIR, March 1998; Page 5-5.

When CALFED representatives are asked what steps are being taken to quantitatively analyze these impacts, their response is that CALFED is only taking the programmatic approach and therefore is not identifying site-specific projects in its document.[86] This answer relays two points: 1) The lead agency for any project which purchases property is responsible for completing any necessary CEQA/NEPA documentation; and 2) CALFED is simply the umbrella program under which technical merits will be reviewed and funding will be channeled.

That has led many to ask the question in regards to CALFED land acquisitions to meet ERPP goals: What assurances or safeguards have been established to protect the taxpayers of California? During a meeting of the Ecosystems Roundtable regarding the McCormick-Williamson Tract acquisition, it was stated that the Nature Conservancy only planned to hold title to the property for three to four years. After that brief period, the Nature Conservancy would then deed the property to an appropriate state or federal agency. CALFED's executive director was asked what procedures are in place to assure taxpayers that they do not pay twice for the same real estate. The director replied that they are setting up a process to avoid this problem and the damage it could cause to the program.[87] During the same hearing, CALFED Executive Director Lester Snow said he anticipates renewal of the Bay-Delta Accord once it expires in December 1998, and Snow envisions expansion of the Accord to include areas north of the present boundaries.[88] The extent of this expansion, however, was not detailed.

The ERPP also targets 40,000-75,000 acres of agricultural land to be "cooperatively managed" for agriculture and wildlife in the Sacramento-San Joaquin Ecological Zone.[89] The term "cooperatively managed" in the ERPP needs clarification. CALFED's present expectation is for agencies to work with agricultural interests to develop land management practices that are wildlife friendly and encourage seasonal habitation. The Assurances Work

[86] Testimony of Dan McCarroll, Legislative Coordinator, CALFED Bay-Delta Program; Senate Select Committee on the CALFED Water Program Hearing - May 13, 1998.
[87] Testimony of Lester Snow, Executive Director, CALFED Bay-Delta Program, Senate Select Committee on the CALFED Water Program Hearing - August 5, 1998.
[88] *Ibid.*
[89] CALFED Bay-Delta Program Volume I: Ecosystem Restoration Program Plan Draft - March 1998; Page 121.

Group must develop methods of protection for landowners known as "safe harbor" regulations. The "safe harbor" regulations must include impacts on surrounding property owners and methods of withdrawing from "cooperatively managed" programs.

Additionally, CALFED plans as laid out in the ERPP are in conflict with common element programs in the EIS/EIR. Specifically, conflicts arise in those implementation objectives, targets and programmatic actions that are relative to Delta sloughs.[90] The Levee System Integrity Program states, **"Restoration of riparian habitats adjacent to levees may increase the difficulty of maintaining safe and stable levees and may increase risk of levee catastrophic failure."**[91] (Emphasis added) Resolving this potential for disaster is imperative to prevent possible loss of life and property.

In the area of agency coordination, testimony indicates a portion of the inter-agency difficulties faced by CALFED must be addressed in order to proceed with any level of confidence. Mr. Bob Clark testified that one of the major problems for individuals and agencies participating in the ERPP fish screening process that is overseen by CALFED is that there are many aquatic species identified as either endangered or threatened while others are species of concern or are awaiting listing. The criteria for some species have not been developed yet. Often the engineers find that requirements for a single species are at odds with requirements for other species. Sometimes the agencies themselves have different requirements for the same species. All of these factors impact the cost-effectiveness of specific projects and can slow or even stop a project intended to benefit the environment.[92]

Mr. Clark also testified that conflicting requirements have also found their way into the EIS/EIR. CALFED has stated in its program descriptions that the ERPP is not designed as mitigation for projects to improve Delta levee integrity.[93] This could have a chilling effect on CALFED's ability to obtain

[90] *Ibid.*, Page 88.
[91] CALFED Bay-Delta Program Draft Programmatic EIS/EIR - March 1998; Page 2-10.
[92] Testimony of Bob Clark, Manager, California Central Valley Flood Control Association, Senate Select Committee on the CALFED Water Program Hearing - June 9, 1998.
[93] CALFED Bay-Delta Program Draft Programmatic EIS/EIR - March 1998; Page 2-10.

assistance in habitat improvements or reserve projects from flood control or water agencies. It seems reasonable to the Committee that these agencies may be required to provide mitigation for projects undertaken for levee repair and maintenance. However, they may be reluctant to commit to any habitat programs which may be needed for future mitigation.[94]

Throughout the ERPP as well as the Draft Programmatic EIS/EIR, CALFED uses the terms "willing seller" and/or "willing buyer" to describe various transactions involving land or water. The terms have also been used when referring to certain CALFED actions in testimony before the Committee, as well as in written comments received by the Committee. These terms are even defined in the EIS/EIR. A "willing seller" bases his or her motivation to sell on economic hardship due to frequent flooding or expensive levee maintenance.[95]

Whenever there is a transaction between two parties -- whether buying a house, car, land or household appliance -- it requires two willing parties to consummate a transaction. While on the surface this term, "willing seller," appears to have a transactional meaning in CALFED documents, closer review poses a different meaning more closely akin to coercion.

CALFED has performed analysis of costs involving storage and conveyance alternatives and has even apparently contracted for cost analysis of factors surrounding water use efficiency. This analysis is possible because it is based on known costs either for assets, technological solutions or anticipated expenses of the project. In the case of land and water transactions, free market principles apply at an even higher level than those involving concrete, steel, consulting services or a host of other items. Interestingly, CALFED is able to identify land acquisition costs in storage projects at an average of $1,500 per acre. It is presumed also to be able to do the same in each of the conveyance alternatives under consideration. However, when it comes to putting to paper the projected costs of buying land for the ERPP or Water

[94] North Delta Water Agency Comments Regarding the CALFED Draft EIS/EIR, June 5, 1998; California Central Valley Flood Control Association Comments on Draft Programmatic EIS/EIR, June 26, 1998.
[95] CALFED Bay-Delta Program Draft Programmatic EIS/EIR - March 1998; Page 5-7.

Quality Program, or even the Water Use Efficiency Program (though for different reasons), no costs are possible because of the phrase "willing seller."

E. Storage

1. A Message for CALFED

"In spite of the potential benefits... the development of new on or off stream storage has been extremely controversial in California."[96]

While CALFED may consider planning for new water storage controversial, the California State Senate sent CALFED a clear signal when it voted down AB 254 (Machado), the water bond measure for 1998. Planning for California's future water and flood control needs is necessary. Any measure containing language of AB 254 ***prohibiting the use of funds for planning future needs, or no funding for storage*** cannot become law.

The reason for this position is simple and clear. Current estimates indicate that early in the next millennium, California's population will grow by more than 15 million people.[97] This is equivalent to the entire population of the State of New York picking up and moving to California. In light of this fact, the testimony and written comments on storage has had a consistent theme: Conservation efforts alone cannot be expected to produce the needed results. Additional storage is a logical component of an overall solution to increase water flows to the Bay-Delta for environmental restoration and other CALFED program goals.[98]

[96] CALFED Bay-Delta Program Phase II Interim Report - March 5, 1998; Page 22.
[97] Department of Water Resources, The California Water Plan Update - Bulletin 160-98; Page 1-3.
[98] Testimony of Rosemary C. Kamei, Member of the Board of Directors of the Santa Clara Valley Water District, Senate Select Committee on the CALFED Water Program Hearing - August 5, 1998; Testimony of Dan Macon, Executive Director of the Farm Water Coalition, Senate Select Committee on the CALFED Water Program Hearing - May 13, 1998; California Farm Bureau Federation President Bill Pauli Comments on Cal-Fed, July 1, 1998; County of Yolo Comments on the Draft Programmatic EIS/EIR, June 23, 1998; Page 15; Kern County Water

However, the Committee recognizes that there are some ardent supporters for more stringent conservation measures who object to increasing the state's water storage capacity.[99] The underlying tenet of this objection is that from their point of view, the construction of expansion of water storage facilities is contrary to restorating environmental damage caused, in part, by the construction of previous water projects.

Based on information presented by those opposed to any surface storage option and from materials collected by the Committee, one additional observation is necessary.

The often stated principle of opposition, aside from any assertions that construction of these facilities would cause potentially massive environmental damage, is the affordability of such projects.[100] This is one programmatic area in which CALFED has undertaken a detailed look at economic impacts for each of its potential alternatives. The presentation materials distributed at the Quarterly CALFED Storage and Conveyance Update Briefings on July 21, 1998, show projected CALFED facility component costs amounting to tens and hundreds of millions of dollars.[101]

2. The Impact of "Staged Implementation" on Storage

The EIS/EIR discusses options providing from 4.25 MAF to 6.45 MAF of water storage. The amount of storage is dependent on the selection

Agency Comments on the Draft Programmatic EIS/EIR, June 30, 1998; Page 19.County of Fresno Comments on the CALFED Bay-Delta Program Draft Programmatic EIS/EIR, June 23, 1998; San Joaquin Farm Bureau Federation Comments Concerning the CALFED Program, June 30, 1998; et al.

[99] Environmental Water Caucus Joint Comments of Draft EIS/EIR, June 30, 1998, Page 17; Friends of the River Comments on the CALFED Bay-Delta Program Draft Programmatic EIS/EIR, July 1, 1998; Sierra Club Comments of the CALFED Bay/Delta Program's EIS/EIR, June 30, 1998, Page 1.

[100] Friends of the River Comments on the CALFED Bay-Delta Program Draft Programmatic EIS/EIR; July 1, 1998; Page 1.

[101] CALFED Bay-Delta Program, **Draft Preliminary Cost Summary - CALFED Facility Components**; Table E - July 14, 1998.

of the final preferred alternative. There is significant concern over the place this variable element holds in the "staged implementation" process. Staged implementation represents a fundamental change in the approach CALFED takes on storage. Storage is made independent of conveyance and CALFED has totally "reprioritized" storage out of the common or variable elements of the plan. In fact, **CALFED has moved the storage discussion to the arena of an emergency implementation plan, in the event "all else fails."** While CALFED has not taken steps to "remove" storage from the policy discussions of the EIS/EIR, actions have put storage in doubt as part of CALFED's solution strategy. CALFED has taken storage, that was part of each alternative, and set it apart with its own "triggers" for implementation.

Concerns stem from the presentation by CALFED Director Lester Snow and the briefing document presented at the August 5th public hearing.[102] CALFED is now to presenting conveyance in terms of a "primary" strategy (modified through Delta plan) and "contingent" strategy (addition of an isolated facility, otherwise known as the mini-peripheral canal). The two "triggers" associated with the implementation of the contingency strategy are the development of a public health issue involving drinking water, or if "through Delta" strategies do not produce a predefined level of fish recovery. If either trigger occurs, CALFED will consider the thresholds for introduction of the isolated facility to have been met.

When addressing storage, CALFED outlines a different approach which states, "Surface storage is part of strategy as long as progress is made on... Water Use Efficiency, Market Transfers, and Groundwater Storage," and adding the issue of "Beneficiaries Paying" to the "triggers" for storage.[103]

[102] Testimony of Lester Snow, Director of the CALFED Bay-Delta Program; Senate Select Committee on the CALFED Water Program Hearing - August 5, 1998.
[103] CALFED Bay-Delta Program Briefing Document presented by Director Snow during the Senate Select Committee on the CALFED Water Program Hearing - August 5, 1998.

Another factor was discovered while reviewing the staged implementation approach as introduced by CALFED. Prior to June 17th, the CALFED alternatives appeared to include a series of clear and progressive recommendations that address the issues of storage and conveyance. The recommendations ranged from configurations in Alternative 1, considered a baseline because they amount to minimum actions required by the program, up to configurations in Alternative 3, which include construction of the isolated facility. By shifting to staged implementation, CALFED has been able to incorporate the need, or ability, to construct the isolated facility into any of 12 alternative configurations presented in the March 1998 draft programmatic EIS/EIR.

In doing so, CALFED has *increased* the potential for conflict, contrary to its solution principle to reduce major conflicts among beneficial users of water.

3. Opportunities Lost

Everyone remembers the storms of January 1997 and the devastation that warm downpours caused the state. Yet, in terms of total annual precipitation, 1997 was classified as a normal year. By contrast, the 1998 water year was classified by the Department of Water Resources as wet. Committee staff obtained data on river flows gathered by the DWR at its Sacramento River Freeport site. Comparison of the data for the 1997 and 1998 water years, between January and June, reveals some startling facts. When examining the data, one can determine that California clearly lost significant opportunities for capturing and storing water.

Average volumes of water during January to June of 1998 was 23,177 cubic feet per second (cfs) greater than average volume during the same months in 1997. The excess flows could have filled a facility the size of Folsom Lake in just 22 days. Shasta Lake would have reached

its 4.5 MAF capacity in 99 days. And a reservoir the size of Trinity Lake could have stored 2.5 million acre-feet in just 54 days. **[Appendix A]**

F. Conveyance

1. CALFED "Public Relations" and Conveyance

Announcing the staged implementation approach to development of a preferred alternative allowed CALFED to tailor its message to any audience. To those concerned about the construction of an isolated conveyance facility, CALFED can say, ...Look it's not part of our immediate plans. A canal only becomes necessary if our "through-Delta" strategy doesn't improve water quality for the environment or export. Likewise, to those opposed to building more storage facilities, CALFED can proclaim, ...Look, building dams is not part of our immediate plans. They only become possible if good progress is madeon water use efficiency, market transfers, and groundwater storage. The "public relations" value of such an approach is clear. However, such methods have no value in terms of CALFED developing a long-term solution to water supply reliability.

This approach failed to stop environmental concerns. It also resulted in language amended into the water bond that prevented CALFED from spending funds on implementing configurations associated with Alternative 2 or 3. Such a prohibition would have limited CALFED to selecting the "No Action Alternative" as its preferred alternative, providing no Delta conveyance improvements.[104]

[104] AB 254 (Machado) The Clean and Safe Water and Flood Prevention Act of 1998 - As ammended August 27, 1998.

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2. Conveyance Across the Delta

CALFED states that new conveyance and storage would increase the capacity for and reliability of transferring water. As the hub of water flows in California, improving the transportation of water through the Delta should be CALFED's main focus. However, most of the discussion surrounding transfers of water seems to redefine them as water sales with deliveries across the Delta. In its present configuration, CALFED's plan is questionable when it comes to improving Delta water quality and facilitating transfers. If water transfers are to be a major part of the CALFED program, then improved conveyance must be included as part of an overall solution for the Bay-Delta.[105]

While much attention has been directed at water transfers and water quality improvements for Southern California, CALFED's solutions must include the entire Bay-Delta system. The EIS/EIR states than an extension of the Tehama-Colusa Canal could provide multiple benefits to the Bay-Delta by carrying water to potential off-stream reservoirs and providing water to areas currently served by the North Bay Aqueduct. Such a plan would eliminate diversions to the North Bay Aqueduct from a sensitive habitat area while at the same time providing superior water.[106]

CALFED has also recieved suggested alternatives to construction of through Delta improvements or an isolated facility. The Environmental Water Caucus (EWC) states that each Delta alternative could result in some level of benefit for each of the species of concern, but none of the alternatives provides benefits for ***all*** species. (Emphasis added) CALFED should identify areas of uncertainty, as far as fisheries protection is concerned under current operational

[105] Kern County Water Agency Comments on the Draft Programmatic EIS/EIR, June 30, 1998; Page 19.
[106] County of Yolo Comments on the Draft Programmatic EIS/EIR, June 23, 1998; Page 15 and County of Napa Comments on the CALFED Draft Programmatic EIS/EIR, May 29, 1998.

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conditions and then address knowledge gaps over the next five to seven years while implementing common program elements.[107]

The EWC also presented what it believes to be a more cost-effective approach when it comes to addressing concerns regarding drinking water. Rather than build an isolated facility, CALFED should consider: 1) Installation of a flexible barrier to separate higher quality water from lower quality water in the California Aqueduct; or 2) Changes in the timing of filling San Luis Reservoir in an effort to obtain higher quality water by waiting for high flow events rather than filling the reservoir as early as possible.[108] The second EWC reccomendation targets the issue of bromide levels of San Luis Reservoir water. Metropolitan Water District water quality modeling shows bromide standards obtained at the Delta pumps with an isolated facility, are lost when SWP and CVP waters mix at San Luis Reservoir.[109]

3. Other Conveyance Proposals

One of the more interesting proposals for conveyance was offered by Mr. Michael Jackson, attorney for the Regional Council of Rural Counties. In his testimony, Mr. Jackson said CALFED appears to be missing an important point when it addresses water quality.

The difficulty facing CALFED is that water intended to solve problems in the Bay-Delta and water needed for export can't readily be transferred to where it is most needed. Mr. Jackson proposed construction of water storage facilities on the San Joaquin side of the Delta. In particular, additional storage capacity must be developed in the Millerton area, he said. Connecting the Kern-Friant Canal to the State Water Project would help solve the problem of increasing river

[107] Environmental Water Caucus Joint Comments on Draft EIS/EIR, June 30, 1998; Page 20.
[108] *Ibid.*, Page 19.
[109] Frances Spivy-Weber, Executive Director of the Mono Lake Committee - Letter to Three Valleys Municipal Water District and Metropolitan Water District; August 26, 1998.

flows for fisheries in the San Joaquin and Delta while at the same time totally avoiding water quality issues connected to through-Delta conveyance.[110]

G. Water Transfers/Marketing[111]

California's population continues to grow. Meanwhile, dependable water supplies are diminishing due to the passage of various laws and regulatory actions. In this stressful climate, increasing attention is being focused on water transfers. Every Californian who reads has been repeatedly exposed to the message that: (1) agricultural water use within the state is about four times larger than the total water use for all municipal and industrial purposes, so (2) transferring only a small fraction of the water from agriculture to municipal and industrial uses could easily meet the needs of a growing population.

Some people advocate that a market-based distribution system for water would result in more efficient use of the resource,[112] while others believe that CALFED relies too heavily on this element.[113] Additionally, water transfers are receiving strong support in part based on a belief that a fully functioning, voluntary water market would provide increased reliability. It would also ensure the most efficient possible use of developed supplies. Such a plan, they argue, would improve water quality, demonstrate which infrastructure projects are necessary, and ensure more efficient use of capital.[114] Still others support a well-regulated water transfer market within an area of origin. Those same people, however, would oppose pressuring water rights holders into either transferring water or widespread fallowing of farm land just to provide more water for the Bay-Delta.[115]

[110] Testimony of Michael Jackson, Attorney for the Regional Council of Rural Counties; Senate Select Committee on the CALFED Bay-Delta Water Program Hearing - August 5, 1998.
[111] DWR State Water Project Analysis Office Publication "Water Transfers in California"; November 1993.
[112] Environmental Water Caucus Joint Comments on Draft EIS/EIR, Page 8; June 30, 1998.
[113] Northern California Water Association Draft PEIS/EIR Comments, July 1, 1998; Page 4 and Water Resources Association of Yolo County Letter to the Chairman, August 3, 1998.
[114] Bay Area Council Letter to President Bill Clinton and Governor Pete Wilson, April 15, 1998.
[115] County of Yolo Comments on the Draft Programmatic EIS/EIR for the CALFED Bay-Delta Program; June 23, 1998.

Will water transfers play a major role in California's water future? Most transfer activity through 1990 had been carried out between customers of a specific water supplier. Criteria and procedures were not developed for general use when Governor Pete Wilson launched the State's Emergency Drought Water Bank in 1991. The offering price of $125 to $175 per acre-foot resulted in a surprising number of "willing sellers."

1. Definition of Terms

These definitions are used in evaluating and discussing proposed transfers:

New Water: Water not previously available in the system, created by reducing irrecoverable losses or flow to unusable water bodies (such as the ocean or inland salt sinks like the Salton Sea). Examples: (1) Water stored when a reservoir captures runoff that would otherwise flow to the ocean during periods of "excess" outflow; (2) Water conserved by reducing agricultural drainage discharge to salt sinks.

Real Water: Water for transfer not derived at the expense of any other lawful water user. Examples: (1) The net water savings resulting from not planting and irrigating a crop that would otherwise be irrigated: 2) Stored water released that would not otherwise be released. Real water is not necessarily new water, but new water must, by definition, be real.

Paper Water: Water proposed for transfer that does not create an increase in the water supply. Example: A proposal to market water a seller is legally entitled to use under a water service contract or a water right, but has not historically used. Paper water transfers often involve an offer to sell water that someone else would otherwise use in the absence of the transfer. In other words, an offer to transfer return flows that would otherwise be used by a downstream appropriator. To the extent that a paper water transfer results in an increase in consumption by the buyer, the water is really coming from a user other than the seller.

The Legislature has established, as policy in California, the voluntary transfer of water and water rights where consistent with the public welfare of the place of export and the place of import. (Water Code Section 109) California also established policy stating, the ***use of water for domestic purposes*** is the **highest** use of the resource and ***irrigation*** is the **next highest use**. (Water Code Section 106) (Emphasis added)

The "no-injury rule" prohibits transfers that would harm another legal user of the water (Water Code Sections 1706, 1725, 1736, 1810(d)). It is a statutory basis for prohibiting transfers of paper water.

2. Environmental Impacts of Transfers

Closely related to the real water/paper water distinction is the issue of proposed transfers that adversely affect riparian vegetation, wetlands, wildlife habitat or other aspects of the natural environment. State law prohibits transfers that would have an unreasonable impact of fish, wildlife or other instream uses, so the State Water Resources Control Board cannot approve such transfers (Water Code Section 1025.5(b), 1725, 1736). The 1992 CVP Improvement Act (Public Law 102-575) prohibits transfers that significantly reduce the quantity or quality of water available for fish and wildlife. Similarly, public agency facilities cannot be used to convey transferred water if fish, wildlife or other beneficial instream uses are unreasonably affected or if the overall economy or environment in the county where the water originates would be unreasonably affected (Water Code Section 1810(d)). State and Federal endangered species laws may prohibit harm to particular plants, animals or habitat. Thus, a proposal to conserve and transfer runoff, tailwater, or seepage water may be barred by the legal protections accorded to the plant and animal beneficiaries of the prior "inefficient" use.

3. Economic Impacts of Transfers

Some water transfers also have potential to harm the economies of areas from which water is transferred. Fallowing can have an adverse

effect on local farm economies. Because this method can have a significant impact on rural areas from which water is tranfered, CALFED must make a choice. They must fully (not selectively) analyze the potential impacts. Otherwise, water transfers should be left out of the CALFED process completely. Additionally, CALFED must provide in-depth analysis of the more subtle water transfers that will occur as a result of proposed land conversions. In almost all cases, water rights are either included with land or are appurtenant to the land. The land and water must be analyzed as a package that constitutes the agricultural resource.[116] Groundwater pumping can result in ground subsidence[117] or higher pumping costs for other local users of the basin.[118] State and Federal Law contain protections against these impacts, and more have been proposed. Recently enacted provisions on transfers by water suppliers limit the amount of transferrable water made available by fallowing to 20 percent of the water that would have been applied or stored by the supplier (Water Code Section 1745.05(b)). Public Law 102-575 prohibits the Secretary of the Interior from approving any transfer of CVP water that would have a long-term adverse effect on groundwater conditions in the transferor's service area. Transfers that would unreasonably impact water supply, operations, or financial conditions of the transferor's contracting district or its water users are also prohibited. **State law prohibits the use of public agency facilities unless a finding is made of no unreasonable impact on the overall economy of the county from which the water is being transferred** (Water Code Section 1810(d); see also Water Code Section 386). (Emphasis added) **Provisions of the water code prohibit transfers that would deprive areas of origin of water reasonable required to meet beneficial needs** (Water Code Sections 1215 et seq.; see also Water Code Section 11460). (Emphasis added)

CALFED's water transfer common element contains additional negative economic impacts. The EIS/EIR states (Water Use Efficiency Component Technical Appendix, Page 2-1): "Efficiency can also be

[116] California Farm Burea Federation President Bill Pauli's Comments on CALFED, July 9, 1998.
[117] Department of Water Resources, The California Water Plan Update Bulletin 160-98, January 1998; Page 3-70.
[118] Regional Council of Rural Counties PDEIS/EIR Comments, June 30, 1998; Page 17.

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defined in economic terms: deriving the greatest economic output from a given input such as a unit of water... Program actions that facilitate a water transfer market will likely result in improved economic efficiency." Water agencies in the Sacramento Valley have played an important role in transferring water, on a temporary basis, to meet water supply needs during drought conditions. Areas of origin will oppose the concept that the definition of "efficiency" will dictate the transfer of water from beneficial uses in the area of origin to uses in export areas with water uses that are perceived to have a higher value.[119]

CALFED states that the program's water transfer policy "must also provide a means of ensuring that water transfers do not merely improve short-term water supply reliability at the expense of local communities or groundwater resources.[120] The CALFED program contains nothing in the proposed transfer policy providing such assurances.[121]

4. State Water Project and Federal Central Valley Project Concerns

Most of California's agricultural water use is in the Central Valley, and is where future water transfer activity is likely to be concentrated. Within the Sacramento and San Joaquin river basins, all appraisals of water transfers must begin with the recognition that the Federal Central Valley Project and the State Water Project absorb errors made in water transfers. This exposure results from the conditions of water rights permits under which the CVP and SWP withdraw water from the Delta and its tributaries. Those conditions, ordered by the State Water Resources Control Board, require the release of water from CVP and SWP reservoirs as needed to maintain specified water quality and flow criteria in the Delta. To the extent paper water transfers reduce the flow of water available to meet Delta criteria, the deficiencies must be

[119] Westside Water District written comments on the CALFED Bay/Delta Programmatic EIS/EIR, June 25, 1998 and Regional Council of Rural Counties PDEIS/EIR Comments, June 30, 1998.
[120] CALFED Bay-Delta Program Draft Programmatic EIS/EIR - March 1998; Page 2-15.
[121] Yolo County Flood Control & Water Conservation District Comments on CALFED Draft Programmatic EIS/EIR, June 8, 1998; City of Woodland written comments on the CALFED Bay-Delta PEIS/EIR, June 29, 1998; and Westside Water District written comments on the CALFED Bay/Delta Programmatic EIS/EIR, June 25, 1998.

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made up by release of additional water from Federal and State reservoirs. If subsequent runoff soon refills the reservoirs, there may be no net harm. However, under drought conditions, significant water supply impacts may result. Federal and State water contractors have an interest in ensuring transfers of Sacramento-San Joaquin basin water do not take water from the CVP and SWP without compensation and sell it elsewhere. (Conditions are somewhat different in other basins, but many of the principles described are applicable.)

5. Methods of Creating Water for Transfers

Water transfer proposals fall into one of six basic categories. The following discussion focuses on identifying and quantifying the new water produced or real water available for transfer in each category:

a. Fallowing

Fallowing requires a grower withhold irrigation water from a field, usually for an entire irrigation season. The withheld water can then be transferred to another use. Provided that the grower would, in fact, have irrigated in the absence of the transfer, fallowing produces real water, but not new water. Fallowing merely frees up an existing water supply for use elsewhere. The concept is simple, but a number of issues arise regarding the grower's intentions, the adequacy of the water supply, and crop water use in determining the amount of water to be transferred.

First, would the crop have been planted in the absence of the fallowing arrangement? Is it possible to determine with certainty what the grower would have done? A percentage of Central Valley cropland is fallow in any given year for various reasons (including normal rotation practices, federal acreage allotments and set-asides, weed control, and dedication to wildlife uses). In a short-term transfer situation, there is a chance that the land would not have been planted anyway, or that a lower water-using crop would have been planted. In a long-term transfer, there is the additional uncertainty of

predicting future cropping patterns and water use. An individual grower often has interests in a number of different farm parcels and crop acreage allotments can be shifted around. It is sometimes difficult to verify that the crop proposed for fallowing would really have been planted and that it will not show up elsewhere. In most cases, however, long-term crop and water records and personal knowledge of farm advisors or other observers can provide trustworthy information on the adequacy of a fallowing proposal.

Next, it is necessary to determine how much water would have been available to irrigate the crop proposed for fallowing. This requires information about the rights or contracts pursuant to which the parcel receives water. For a one-year transfer such as those in the Water Bank, the only issue is the current year's supplies. Long-term transfers can give rise to considerable uncertainty. For example, the future water supply of a CVP contractor can change due to droughts, operational restrictions, Congressional mandates, or policy changes that affect contract renewals. A prospective seller may be able to identify current water supply quantities, but this is no guarantee of future supplies.

After crop and water supply issues are identified, the final question is: **"How much real water is available for transfer?"** At first glance, it might appear that a grower should be able to transfer all the surface water that would not be diverted. That approach is sound if the water is to be transferred to a nearby grower with a similar operation. If a grower fallows 100 acres of rice, the 500 acre-feet of water that would have been taken from the irrigation canal could clearly be transferred to a neighbor to grow an additional 100 acres of rice. In reality, most transfers involve moving water to other areas or to different uses, which can substantially impact the transferable amount.

The transferable (real) water amount varies with the circumstances because only a portion of the water diverted from a supply source is consumed by the crop. Some diverted water is consumed by vegetation along canals and ditches. Some may seep to shallow groundwater that sustains nearby wetlands, some may percolate to deeper groundwater aquifers that supply other users or discharge to surface streams, and some returns directly to surface supplies through agricultural drains. In the Sacramento Valley, virtually all diverted water that is not used to grow crops remains in the system and is available to downstream (or groundwater) users. In parts of the San Joaquin Valley, some of the percolated water becomes unsuitable for further use due to quality degradation.

Consumptive use through evapotranspiration (water used by the crop) is gradually becoming accepted as the measure of water available for transfer. The 1992 CVP Improvement Act (Public Law 102 575) specifically designates "water that would have been consumptively used" and water "irretrievably lost to beneficial use" as water available for transfer. The latter phrase would include percolation to unusable groundwater in the western San Joaquin Valley. It almost certainly does not include water draining to wetlands or used by vegetation that provides significant wildlife habitat. Certainly, water percolating to usable groundwater cannot be considered "irretrievably lost to beneficial use," but a few prospective sellers hold a contrary view.

Recently adopted Water Code Sections 484(b) and 1725 apply to temporary water transfers. They introduce an element of uncertainty by defining "consumptively used" as *"...the amount of water which has been consumed through use by evapotranspiration, has percolated underground, or has been otherwise removed from use in the downstream water supply as a result of direct diversion."* (Emphasis added.) The reference to percolation broadens the definition beyond its traditional meaning and may encourage transfer proposals that are not

hydrologically sound (i.e. proposals that do not acknowledge the links between surface and groundwater). However, the italicized phrase clarifies that the legislature did not intend to authorize transfers of paper water or transfers that would injure other users. For example, percolation would be considered part of "consumptive use" only when the water percolated was irretrievably lost to subsequent beneficial use (the same approach as used by Public Law 102-575).

The consumptive use approach is technically sound since it generates real water, but it has one potential flaw; it may encourage those contemplating transfers to maximize water use prior to beginning the transfer process. Thus, development of an active water market may stimulate agricultural or urban water use that would not otherwise be economically justifiable. Lands that are not fully irrigated tend to be the less productive, marginal parcels; any grower with such lands and a water source might be tempted to start maximizing water use in anticipation of receiving compensation to stop.

If all parties agree that consumptive use is to be the measure of water available for transfer in a fallowing arrangement, and all agree on the quantity of such use (a subject in itself), the issue of land management arises. The extent to which such use depletes system water supplies must be taken into account. A long-term water transfer should provide for long- term management or include some adjustment for consumptive use of encroaching natural vegetation. Continued monitoring would be required to assure that the seller complies with the agreement.

b. Crop Shifts

One frequently mentioned drawback of fallowing is the potential for third party economic impacts related to the loss of agricultural productivity, such as a decrease in farm labor,

equipment purchases, seed and fertilizer purchases, etc.[122] Crop shifting provides a partial solution that can reduce third party impacts and still produce significant reductions in consumptive use. The concept is to substitute a crop that consumes less applied irrigation water for a crop that would use more water. Typical examples might involve switching from tomatoes to safflower or from corn to wheat.

The practical problems in applying the crop shift approach are essentially the same as those involved in fallowing. Additional complications can arise if the substituted crop grows in a significantly different season from the original crop. For example, winter wheat can be substituted for corn. Wheat is planted in the late fall and harvested in late spring. Wheat typically consumes a total of about two acre-feet of water per acre, much of which is furnished by natural rainfall. In dry years, one or more applications of irrigation water may be needed to bring the wheat crop to maturity. In contrast, corn grown during the summer and depends almost entirely on applied irrigation water. Therefore, the real water resulting from a wheat-for-corn switch varies with the wetness of the spring; the maximum amount of real water occurs in wet years and the least in dry years.

c. Groundwater Substitution

Under the groundwater substitution concept, a grower plants the same crop, but irrigates by pumping groundwater instead of exercising rights to surface supplies. The unused surface water is then available for use elsewhere.

Most groundwater substitution contracts allowed transfer of one acre-foot of unused surface diversion for each acre-foot pumped from the ground. This approach is based on the implicit

[122] The Agricultural Water Caucus Position on a Solution for the Bay-Delta - July 8, 1998 and Richard E. Howitt, Professor - UC Davis Department of Agricultural and Resource Economics publication "Economic Impacts of Irrigation Water Cuts in the Sacramento Valley"; June 1997.

assumption that return flows and groundwater recharge would be unchanged, regardless of the water source.

How much water pumped from the ground is really new? Water pumped from the ground does not come from some distinctly separate source; surface and groundwater supplies are generally interconnected.[123] In essence, groundwater withdrawals are borrowed from future streamflow. From a system standpoint, new water results only to the extent the borrowing can be repaid from future surplus flows.

Hydrologic reality, in a general way, requires sellers to avoid pumping from wells that appeared likely to draw water directly from nearby rivers. This approach minimizes the gross problems, but does not account for the fact that pumping that causes a local depression in groundwater levels anywhere creates an uncontrolled draft on future surface flow. If the groundwater recharges naturally, it will ultimately deplete future streamflow. The problem is that current knowledge of groundwater seldom permits prediction of just where or when that depletion will occur. In the Sacramento Valley, impacts on surface flow can occur in a matter of days or weeks. In overdrafted areas of the San Joaquin Valley, the impacts of additional groundwater pumping on streamflows may not occur within the foreseeable future.

Most groundwater transfers to date have been based on the implicit assumption that the induced future depletions of surface water will occur during times of surplus or that the risk of future impacts is low. In other words, the groundwater withdrawn for transfer is assumed to refill largely from future flows that are in excess of all in-basin demands and Delta outflow requirements. In practice, the recharge process begins when the pumps are switched on; it doesn't wait for a period of surplus Delta outflow. As a result, groundwater pumped in the Sacramento Valley is unlikely to be 100 percent new water. To the extent

[123] Department of Water Resources, The California Water Plan Update Bulletin 160-98, January 1998; Page 3-67.

transfer activities deplete streamflow that would otherwise be used to meet in-basin demands or Delta outflow requirements, additional CVP and SWP storage releases will be required to make up the difference.

Of course, there is timing to consider. The depletion of future surface water flows will likely occur during both excess flow and balanced flow periods. (Balanced flow periods are those in which reservoir releases plus unregulated flow approximately equal the water supply needed to meet Sacramento Valley in-basin uses, plus exports.) Reductions of surface flow during excess flow conditions simply reduce the amount of water going out the Delta into San Francisco Bay. Reductions of surface flow during balanced flow periods necessitate a like amount of water being released from CVP and SWP reservoirs to insure that adequate freshwater flow out of the Delta is maintained. This additional release of water from upstream reservoirs is a major source of concern with regard to impacts of groundwater substitution transfers on other water users.[124]

If the interconnection of groundwater with surface water is ignored, a groundwater transfer can give rise to what amounts to an involuntary reallocation of surface rights. If the demonstrable effect of groundwater pumping or groundwater substitution is to diminish the supply to which a surface appropriator is otherwise entitled, it is not a transfer of real water and should not be allowed to proceed. The debate continues about how clear and convincing the hydrologic evidence must be.

A very important subset of groundwater substitution is conjunctive use, which in the context of this discussion is the coordinated use of ground and surface waters. While straight groundwater substitution is a form of conjunctive use, it tends to induce additional recharge from surface waters. A more workable approach from the standpoint of avoiding impacts to

[124] Regional Council of Rural Counties Comments on Draft Programmatic EIS/EIR, June 30, 1998.

others is an accompanying recharge program. Such a program would be designed to offset the additional amount of groundwater withdrawn, either in advance or after the pumping occurs. Recharge could take the form of a percolation program, where additional surface water is spread over porous ground. Another alternative is referred to as "in-lieu recharge", whereby surface water is provided to water users whose normal supply is groundwater. In either case, the desire is to put additional surface water into storage in the groundwater basin during years when surface water is abundant. In a sense, such a program would be operating a groundwater basin like a reservoir.

Groundwater issues (including the matter of conjunctive use) can be very complex, depending on the specific water transfer proposal. These issues frequently must be explored in detail.

d. Direct Groundwater Delivery

Subject to a number of major limitations, groundwater in California may be pumped for out-of-basin transfer. One of the limitations on groundwater export is the superior right to the groundwater of all overlying landowners. Another is Water Code Section 1220, which prohibits most exports of groundwater from the Sacramento and Delta-Central Sierra Basins unless the pumping complies with a groundwater management plan approved by the voters in the areas overlying the affected basin. Water Code Sections 10750 et seq. authorize local water agencies to adopt groundwater management programs that could have significant impacts on groundwater extraction and export. Statutes creating particular groundwater management districts typically contain limitations on groundwater export. Although the Water Code sets stringent requirements on direct export of groundwater from the Sacramento and Delta Central-Sierra groundwater basins, a number of in basin transfers are being considered and a few have been carried out. In general, agriculture, particularly in the northern Sacramento Valley, is extremely wary of groundwater

pumping for transfer to other areas.[125] Several counties are exploring means of assuring local control of groundwater.

In concept, direct groundwater transfer could not be simpler: turn on the pump and let the water run into the river. In practice, the problems are similar to those encountered with groundwater substitution. If the wells draw from a groundwater body that recharges naturally, only some indeterminate portion of the water pumped can be considered new.

e. Conserved Water

The foremost example of the transfer of conserved water is Imperial Irrigation District's (IID) 1987 agreement with the Metropolitan Water District of Southern California. In this arrangement, water saved through lining of IID canals is made available to MWD.

The IID-MWD project generated a wave of enthusiasm for similar arrangements elsewhere. But the benefits of canal lining are less apparent in many other areas of California. In the Sacramento Valley and throughout much of the San Joaquin Valley, canal leakage tends to contribute to usable groundwater and/or supports riparian vegetation and wetlands. Reducing canal seepage can be quite beneficial to the canal owner, but it may produce relatively little new water from a system standpoint. In general, new water results only to the extent canal lining reduces: (1) groundwater discharge to surface streams during times of future excess flow; (2) percolation to unusable ground or surface water; or (3) consumptive use by vegetation that is not needed to maintain environmental, habitat, or wetland values.[126]

[125] Land Use Forum, Vol. 1, Number 5 - Fall 1992 "Water Transfers: Addressing Concerns of Agricultural Communities" by Paul M. Bartkiewicz.
[126] Refuge Water Supply Interagency Coordinated Program Task Force Report, May 29, 1998.

A number of other conservation techniques can be used to stretch agricultural supplies through more intense water management. These generally result in reducing applied irrigation water and drainage outflow. As with canal lining, the results can be quite beneficial to a water district, since a greater acreage can be irrigated with a given supply, or the volume of problem drainage water may be reduced. The benefits may be less clear in terms of overall contribution to system supplies, particularly where the drainage outflow is appropriated for another beneficial use downstream.

Evaluation of water made available through conservation is most challenging in the Sacramento Valley.[127] Most irrigated areas of the valley overlie a common groundwater basin and are linked by a network of surface streams and drains. Water leaving an upstream area usually contributes to the supply of downstream users (or to Delta outflow). Under these circumstances, new water can be created only by reducing losses to unusable water bodies (rare in the Sacramento Valley), reducing surface outflow during periods of excess Delta outflow, reducing consumptive use of crops, or environmentally acceptable reductions in consumptive use of non agricultural vegetation. Reducing percolation to groundwater depletes another part of the system and can penalize other users (by direct reduction of groundwater supplies, decreasing groundwater discharge to surface streams, or increasing percolation from surface supplies to groundwater). Reducing drainage outflow during the irrigation season merely reduces the supply available downstream.

f. Storage Withdrawals

The final source of water for transfer is the release of previously stored surface water that would not otherwise be released. Such storage withdrawals represent new water, provided the storage is refilled from future surplus flows. The amount of water available for transfer can be readily measured.

[127] CALFED Bay-Delta Program Draft Programmatic EIS/EIR - March 1998; Page 8.1-37.

The complications related to storage releases come after the releases are completed. Downstream water users can be harmed if the reservoir storage that was evacuated for transfer is refilled with flow that would otherwise have been available for downstream water right holders. To protect the lower priority users, storage withdrawals must include a refill clause. In essence, the reservoir owners agreed to defer refill of the storage withdrawn until a time of high runoff when additions to storage would cause no detriment to others. (For operational reasons, storage might be refilled earlier, but with the understanding that it might have to be released again if subsequent hydrologic conditions indicated it was stored at the expense of others.)

The refill concept is fair and equitable to all parties. It places a burden on the seller for the specific amount of water that is "real", which depends on the water supply in subsequent years and the conditions of refill of the reservoir. Similar refill constraints might overcome the principal reservations about groundwater transfers, but a practical groundwater refill criterion has not yet been developed.

6. Water Transfer Challenges

If water transfers are to play a meaningful role in California's water future, a number of policy issues must be resolved. Some of the issues are:

Does water marketing stimulate water use that would not otherwise take place? If people will be paid to stop using water, some sellers may start using as much water as possible to establish a higher base level of use.

Sooner or later, we must deal with problems that will arise from failure to recognize the interrelationship of surface and groundwater. Unintended reductions of surface water supplies may otherwise result.

Environmental interests, the local community, and CVP/SWP contractors have a stake in virtually every transfer proposal in areas tributary to the Sacramento-San Joaquin Delta; there is no such thing as a two-party water transfer that does not affect anyone else. Some mechanism is needed to assure that all interests are protected.

Water conservation accomplishments must be evaluated realistically, from a system perspective. Transfers of water made available through conservation should be undertaken only after thorough analysis of the effects on other water users and environmental values.

7. Future Directions

Mechanisms for evaluation and approval of water transfers are still being developed. The Bureau of Reclamation has developed guidelines for implementing transfers of CVP water under the CVP Improvement Act. Under the Costa-Isenberg Water Transfer Act of 1986, the Department of Water Resources is obliged to facilitate voluntary exchanges and transfers of water. That Act includes the Legislature's expression of public interest that such transfers be carried out "...in a manner that fully protects the interests of other entities which have rights to, or rely on, the water covered by a proposed transfer" (Water Code Section 475).

Every proposed transfer has some unique features. These features may be dependent on location, timing, whether it is a temporary or permanent transfer, and so on. While DWR has adopted specific criteria for evaluating temporary transfers, it has approached most other transfers only on a case-by-case basis. The guiding principle in DWR's evaluation procedure is protecting the rights of all parties. In making its determinations, DWR has tended to place any burden of proof on the transfer proponents. The key issue in these case-by-case evaluations is, "How conclusive must the proof be that other parties' rights will protected?"

It is not always possible to provide conclusive proof that a proposed transfer is benign to other parties. At the same time it is not always

possible to specify in advance what degree of proof may be acceptable. In general, as transfer proposals become more complex and uncertain they entail a higher degree of risk. Therefore, a more conservative evaluation or higher level of proof may be needed. This will require a substantial investment in exploration, testing, long-term monitoring, and implementation of mitigation measures.

The Bay Delta Advisory Council's Water Transfer Work Group is working to establish a "clearinghouse" for water transfer data. As presently constructed, it will collect data on the cumulative impacts of intra and inter watershed transfers, within the definitions established by current water law. This clearinghouse must not become part of the "public review process," creating a second CEQA process. CALFED must leave local control of transfers in place and simply establish a data bank type entity.[128] Enough regulatory oversight exist in the current system to ensure that transfers take place after environmental and third-party impacts have been satisfactorily addressed.[129]

H. Groundwater and Conjunctive Use

Annually, underground basins or aquifers, supply about 30% of the water used by cities and farms.[130] In drought years, it can jump to 60%. California's 1,200 surface water reservoirs hold about 45 million acre-feet (MAF), while groundwater supplies are estimated at 12.5 MAF.[131] In average years, about 1.4 MAF more is extracted from groundwater basins than is replaced.[132] In California, many cities rely exclusively on groundwater for their supplies. Other areas use groundwater to supplement surface supplies or to meet needs when surface water is not available.

An important difference between surface water and groundwater must be remembered when evaluating water supplies: The availability of information regarding water supplies. Surface water reservoirs are built to provide a

[128] Regional Council of Rural Counties, PDEIS/EIR Comments, June 30, 1998; Page 22 and Kern County Water Agency PEIS/R Comments, June 30, 1998; Page 19.
[129] Kern County Water Agency PEIS/R Comments, June 30, 1998; Page 19.
[130] Department of Water Resources, The California Water Plan Update Bulletin 160-98, January 1998; Page 3-64.
[131] *Ibid.*, Page 3-64.
[132] *Ibid.*, Page 3-68.

known capacity. Inflows and releases can be measured. And stream guages provide direct flow measurements. However, most groundwater basins have indeterminate capacities. Groundwater recharge to an entire basin cannot be directly measured. Therefore, total basin extractions and natural outflows cannot be quantified. In addition to physical differences between surface water and groundwater systems, statutory differences exist in the ways those types of water are administered. This also impacts the availability of information. For example, surface water reservoirs are required to have state water rights for the facility. All but the smallest dams are regulated by California's dam safety program. In contrast, groundwater may be managed by local agencies, but there are no statewide requirements to quantify the amount of water stored.[133]

Conjunctive use of groundwater and surface water is a strategy for stretching supplies. Conjunctive-use programs take advantage of surface water supplies during wet years to meet most needs and recharge groundwater basins, relying on stored groundwater reserves during dry years.[134] The difficulty with conjunctive use as a solution is that while groundwater basins are interconnected, aquifer structure is far from uniform and horizontal movement of groundwater is slow. As a result, management programs must be developed on the local level and supported by local affected groundwater users and communities. A "one-size-fits-all" approach will not work in all basins or sub-basins.[135]

As an example, CALFED has proposed to members of its Ecosystem Roundtable that funding for the Madera Ranch project come from its Water Acquisition program. The project would be operated by the Bureau of Reclamation. It would provide storage for a water reserve account that would assist the Department of Interior in meeting its requirements under the CVPIA to dedicate 800,000 acre feet to enchance fish and wildlife. Water to be stored would include spills from the San Joaquin and Kings rivers. In addition, CVP water would be pumped from the Delta. As a result, the Department of Interior proposes creation of a Water Reserve Account for environmental, agricultural and urban use. In the long-term (beyond the year

[133] *Ibid.*, Page 3-64.
[134] Association of California Water Agencies publication "Groundwater Facts"; August 1998.
[135] The Agricultural Water Caucus Position on a Solution for the Bay-Delta - July 8, 1998.

2000), the Water Reserve Account would be banked in the Madera Ranch Groundwater Banking Project.

The project has a banking capacity of 252,000 acre-feet per year and would allow extraction of up to 70,000 acre-feet annually. The capital cost estimate for Madera Ranch is $91,268,750. Annual operation and maintenance costs would run another $7,328,532. The agency's briefing material states, "Operational rules would be developed to protect adjacent landowners from adverse impacts to the aquifer. The operational rules would define the conditions for recharge operations to avoid damage from high water levels, and water bank pumping restrictions to protect private wells adjacent to the project."[136]

Local opposition to this project is expected for several reasons. First, additional humidity may cause problems for certain fruit trees and new waterfowl that may use the ponds could devistate local alfalfa crops. Second, farmers in the area have spents many years and hundreds of thousands of dollars to leach soil salts and alkali down, far enough to make the land productive. This project could bring the chemicals back up to crop root zones.[137] Madera and Merced County Boards of Supervisors intend to oppose this project by passing resoluitions against the project.[138]

CALFED's groundwater storage and conjunctive use options will not solve California's need for increased water supplies. CALFED must recognize the geologic and hydrologic limitations of groundwater storage. Any effort to manage groundwater conjunctively with surface water supplies must recognize impacts to third parties and be prepared to mitigate them. Further, the CALFED conjunctive use program has not been adequately analyzed, despite the significant effects the program may have on groundwater rights.[139]

[136] CALFED Bay-Delta Program Ecosystem Roundtable Member Packet for the August 31 Meeting.
[137] The Fresno Bee, "Water bank idea floated in Madera" by Mark Grossi; July 21, 1998
[138] Comments by Supervisor John Silva, Madera County; August 19, 1998.
[139] The Agricultural Water Caucus Position on a Solution for the Bay-Delta - July 8, 1998 and California Farm Burea Federation President Bill Pauli's Comments on CALFED, July 9, 1998.

I. Financing and the Costs of the Program

CALFED has assigned a cost projection to the common elements of the Program. Those costs are estimated to total capital costs of $4 Billion and annual Program costs of $133 Million. There are identified Water Quality and Upper Watershed Management element capital costs of $750 Million and annual costs of $25 Million. The Ecosystem Restoration Program Plan (ERPP), over a 30-year period, is estimated to cost $1.5 Billion. CALFED also estimates annual investments of over $50 Million may be required for the ERPP. CALFED's Water Use Efficiency and Water Transfer elements have projected capital costs of $750 Million, with annual costs of $25 Million. Finally, the Levee System Integrity element is estimated to have capital costs of $1 Billion and annual costs of $33 Million.[140] **[Appendix C]**

The Program will include a combination of Federal, State, and user funds. CALFED admits that neither one sector of society nor one revenue source will shoulder complete responsibility for paying to implement the ultimate solution alternative.

It is important also to remember CalFed's own Mission Statement and Solution Principles. CALFED is to "develop a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta System." In addition, the solution must satisfy six solution principles, and one of them is: "Be Affordable."

But what is "affordable?" Who will pay? How much will they pay?

Federal funding: To date, a fraction of the Program's multi-billion dollar costs have been paid. In 1996, Congress appropriated $143 million annually for ecosystem-related activities, and one year later approved $85 million to the Bureau of Reclamation for CALFED ecosystem restoration. Future federal funding, according to CALFED, is expected to be appropriated in the form of a consolidated line item for the CALFED solution.

[140] CALFED Bay-Delta Program, Draft Preliminary Cost Summary - CALFED Facility Components; Table G - 31; July 13, 1998.

State funding: In November 1996, state voters approved Proposition 204, which earmarks approximately $450 million for various CALFED improvements. However, in 1998, the State Legislature failed to agree upon a $1.7 billion water management bond, which would have funded a variety of CALFED projects.

User funding: CALFED defines user funding as "actions that benefits users directly are expected to be paid for with user funding." Sharing the costs based on benefits is the cornerstone of CALFED's plan. To accomplish this, CALFED stated that some type of new broad-based user charge will likely be necessary in order reach the near spectrum of users benefiting from a CALFED solution.[141] The problem is quantifying benefits. One may indirectly benefit from a healthy ecosystem while another may directly benefit because of water being transferred to one's own land. How do you then determine costs between two entirely different benefactors?

The purpose of this type of user funding, or taxing, would be to collect revenues directly from a cross-section of water users for the funding of the Environmental Restoration Project element of CALFED. While no dollar amount has been discussed, it fails to incorporate several significant historical facts. Under legislation implementing the Central Valley Project Improvement Act (CVPIA), water users were forced to turn over 800,000 acre feet of water for species/habitat restoration, without compensation. These same water users now pay into a $50 million "restoration fund" already in place through the CVPIA.

It is imperative that CALFED acknowledge these contributions in its financing package and credit these payments in some fashion. Failure to do so, would place a disproportionate cost share of the Environmental Restoration Project on this already overburdened market segment and add "double taxation" to the list of exorbitant costs for water in Northern and Southern California.

In the end CALFED admits that "there is no single best method that addresses all criteria in an optimal way." Since a preferred alternative has

[141] CALFED Bay-Delta Program Draft Programmatic EIS/EIR Technical Appendix: Implementation Strategy - March 1998; Page 18.

not been identified, it is difficult at this time to determine its costs and who will pay. Therefore, the "resolution of these issues will require the involvement of policy representatives of Federal and State agencies and stockholder interests."

VII. ERRORS & OMISSIONS

A. DWR's Bulletin 160-98 Calculations

During the June 9, 1998 public hearing testimony was given by Mr. Dennis O'Connor indicating a preliminary check of data contained in Bulletin 160-98 involving projected water demands appeared to be in error. The projections of the Bulletin 160-98 indicate projected water demand are expected to be nearly 250 gallons per capita per day. The potential difference, should this figure be too high is approximately 1.6 million acre feet on an annual basis.[142] The Chairman asked Mr. O'Connor to work with the Department of Water Resources personnel to substantiate the existence of any errors and return with his findings.

At the August 5, 1998 public hearing Mr. O'Connor presented compelling evidence of a significant discrepancy between historic urban water use and the 1995 base year demand. The difference results in what Mr. O'Connor estimated to be a *reduction* in projected water demand of 1.2 million acre feet. Mr. O'Connor testified that participants in the CALFED program must not only have confidence in the process, they must also have ***confidence in the data***, that is the basis of discussions. (Emphasis added) **[Appendix B]**

B. Refuge Water Supply Management

DWR Bulletin 160-98 states that in the spring of 1997, the Refuge Water Supply Interagency Coordinated Program (ICP) Task Force was formed as a result of discussions of CALFED and CVPIA programs. The purpose of these discussions was the need to have best management practices for water conservation on wildlife refuges. ICP Task Force members include the California Department of Fish and Game, the U.S. Bureau of Reclamation,

[142] Testimony of Dennis O'Connor, Assistant Director, California Research Bureau, Senate Select Committee on the CALFED Water Program Hearing - June 9, 1998.

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the U.S. Fish and Wildlife Service, and the Grasslands Resource Conservation District.[143]

At the March 1997 CALFED Water Use Efficiency workgroup meeting, California Department of Fish and Game staff and other personnel began work on environmental water use assurances for the Water Use Efficiency Program.[144] One of the goals of the ICP Task Force was to develop an interagency program outlining a common "methodology" for water management planning, including water conservation actions for the federal, State, and private refuges covered by CVPIA's refuge water supply provisions.

A copy of the May 29, 1998 Interagency Coordinated Program (ICP) Report produced by the ICP Task Force was obtained. The copy was incomplete, because computer conversion of the file did not include report graphics or tables. The text of the document allows review of the report's discussion of refuge water supply management.

The ICP Task Force Report states, "The issues of refuge water supply management, like any other complex problem cannot be resolved by attending to only one fragment of the puzzle. The approach must be multidisciplinary, tap into a broad base of resource expertise, and must also be adaptive to changing conditions and information, whether they are environmental, scientific, political, or social in nature."[145]

Another part of the ICP Task Force Report, Chapter Four, is entitled "Technical Factors Guiding Use of Refuge Water." The chapter contains the defining characteristics and classifies various ecosystem habitat types. In this same chapter is an analysis of the water requirements of the varieties of habitat. Requirements range in example, from Swamp Timothy Wetland with single irrigation, having a total water need of 4.1 acre-feet per acre to

[143] Department of Water Resources, The California Water Plan Update Bulletin 160-98, January 1998; Pages 4-27 and 6-24.
[144] Kern County Water Agency Comments on the Draft Programmatic EIS/EIR, June 30, 1998; Page 12.
[145] Refuge Water Supply Interagency Coordinated Program Task Force Report, May 29, 1998.

Permanent Marsh with a total water need of 13.25 acre-feet per acre. Committee staff took water use figures for the various habitats defined in the ICP Task Force Report and applied them to the habitat "target goal" acreage listed in CALFED's ERPP. ***Results show habitat water use to be more than 636,000 acre-feet of water above projected agricultural use of 3.75 acre-feet for the same acreage.*** **[Appendix D]**

There are two other statements made in the ICP Task Force Report which must be noted for this report. First, in Section VII, under item 2 "Secondary Decision Factors" the ICP Task Force states, "For much of the Central Valley, creating islands and edge for fall/winter wetlands increases diversity. However, to create island in spring and summer for nesting security in anything other than existing permanent or semipermanent wetlands is very expensive." Second, under the subheading "Water Conveyance," the report discusses the question of whether or not a manager can improve the efficiency of delivery by reducing evaporation or excessive seepage in delivery ditches. The ICP Task Force Report states, "On the Sacramento National Wildlife Refuge complex, approximately 20 percent of delivered water is lost from ditches. However, ***that loss is considered essential to support riparian habitat*** - so essential that additional water may have to be provided to this habitat type (Forrest 1997). Conveyance efficiency is a mixed blessing for wildlife." (Emphasis added) These statements directly reflect on CALFED's plan for habitat restoration and water use efficiency programs. First, the costs associated with "re-creation" of habitat can be identified and will be "very high." Second, not every CALFED action will be beneficial to the environment, without careful study.

The DWR Bulletin 160-98 establishes that the ICP Task Force was formed in the Spring of 1997, with a goal of developing a program to determine a common methodology for water management planning and conservation in refuges. Prior to the May 29, 1998 report, there was at least one draft produced in April 1998.

CALFED agencies were part of the original ICP Task Force and the Water Use Efficiency workgroup, at least discussed the Task Force. The CALFED Program must have been aware of the work of the group and the draft ICP

Task Force Report. At the time of the drafting of the March 1998 programmatic EIS/EIR, why didn't CALFED include any reference to the work of the ICP Task Force? Especially since the identifiable annual water use for the habitats listed in the ERPP would use over 636,000 acre-feet of water over projected average agricultural use for the same targeted acreages.

C. Trinity River

There is an omission of information that could result in significant and unavoidable impacts to the CALFED plan. The Trinity River is a regular and significant source of the Delta's fresh water. The Trinity River contributes an average of 1 million acre-feet per year to the Bay-Delta via the Sacramento River and has done so for 34 years.[146] Yet the EIS/EIR does not outline the impacts on program alternatives and common elements on the Trinity River Flow Decision as required by Section 3406(b)(23) of the CVPIA. Further, while CALFED includes the Trinity River in a listing titled "Physical, Regulatory and Operational Assumptions for Existing Conditions" as well as a section titled "No Action Based on their Status" as recently as June 1995,[147] CALFED totally omits the Trinity River Basin and its associated tributaries from any maps delineating the problem, solution and study areas for CALFED's evaluation.[148] Additional information indicates flow reductions of up to 600,000 acre-feet per year[149] are possible in diversions from the Trinity River to the Sacramento River. Such reductions would directly impact the Bay-Delta ecosystem.[150] This omission is inconsistent with the provisions and intent of Prop. 204 that includes the Trinity River in the definition of a delta tributary watershed.[151]

D. Boating/ Recreation

The Bay-Delta Region is a unique recreational boating resource because of its 1000 miles of waterways and over 12,000 berths. Recreational survey reports

[146] County of Trinity Comments on the Bay-Delta Program Draft Programmatic EIS/EIR; May 19, 1998.
[147] CALFED Bay-Delta Program Draft Programmatic EIS/EIR - March 1998; Page 2-6.
[148] Environmental Water Caucus Joint Comments on the Draft EIS/EIR, June 30, 1998; Friends of the River Comments in response to the CALFED DEIS/R, July 1, 1998; Sierra Club Comments on the CalFed Bay/Delta Program DEIS/R, June 30, 1998; et al.
[149] Central Valley Improvement Act, Section 3406(b)(23)
[150] Regional Council of Rural Counties Comments on Draft Programmatic EIS/EIR; June 30, 1998.
[151] California Water Code Section 78647.4(b)

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indicate boating participation accounts for over 35.2 million activity days per year in the area.

Recreation, along with agriculture and wildlife habitat, constitutes one of the three existing land uses in the Delta. Language in legislation that established the Delta Protection Commission in 1992, recognized recreation's significance to the area when it noted, "...the delta's waterways and marinas...[and] recreational boating within the delta is of statewide and local significance and is a source of economic benefit to the region..."[152] The EIS/EIR should recognize recreation as a benefical use and a missing component in the CALFED Program.

The EIS/EIR suggests numerous actions designed to protect habitat. These actions would have significant impacts on recreational boating activities. They include: adoption of speed zones; reductions in boat traffic; and temporary, seasonal, or permanent closure of Delta waterways. While mitigation of these impacts is recommended, here again the EIS/EIR does not seriously consider how mitigation is to be achieved. Nor does the document adequately address jurisdictional considerations and legal authorities regarding navigational waterways.[153]

During the August 5th public hearing, members of the Northern California Marine Association described extreme difficulties in communicating with CALFED. The Chairman notes the CALFED Implementation Strategy states, "The almost unanimous opinion expressed at BDAC Assurances Work Group meetings is that stakeholders would like to weigh in on decisions and advise agencies in a meaningful and timely manner throughout implementation."

CALFED should heed the advice of its advisory council and take immediate steps to ensure stakeholders from all industries involved in the Bay-Delta have a place in the development and implementation of the CALFED Program.

[152] Public Resources Code Section 29712.
[153] Norther California Marine Association Comments on the Programmatic EIS/EIR, 26 June 1998.

E. Mosquito/Vector Problems

CALFED has not sought out Best Management Practices (BMP) for the creation of wetlands that prevent or minimize mosquito development. These BMP's should be developed before the creation of wetlands, and not after to adequately address the concerns of mosquito and vector control. (Emphasis added) Increased mosquito development habitat will increase the overall mosquito population and increase the risk of disease to human and animals.

CALFED has also not addressed coordination between federal, state, and local districts. The issue of federal or state preeminence leaves special districts at a disadvantage when the need to control mosquitoes or other vectors conflicts with the goals of federal or state interests. Ensuring all landowners, public and private, adhere to the California Health and Safety Code will alleviate this problem. CALFED should also be required to reimburse local mosquito and vector control districts for any property acquired under its programs.[154]

Mosquito and vector control is also the center of another conflict between elements of the EIS/EIR. The document states, "The Water Quality Program (WQP) would have potential beneficial impacts as decreasing mosquito populations reduce the potential for disease transmission..."[155] This "benefit" is in conflict with the previously detailed testimony, given that the WQP would result in the construction of settling basins and other structures that would be designed to maintain a pool of stagnant water. The stagnant water detained within the structures would be mixed with high concentrations of organic material, an ideal environment for breeding mosquitoes.[156]

VIII. FLOATING A "HYBRID" - THE DRAFT OF A "DRAFT PREFERRED ALTERNATIVE"

On June 17th of this year CALFED presented the draft document "CALFED Bay-Delta Program Developing a Draft Preferred Alternative." to the Bay-Delta Advisory Council meeting in Fresno, CA. The document presented the concept of

[154] Testimony of Mr. David Brown, Manager of the Sacramento-Yolo Mosquito & Vector Control District; Senate Select Committee on the CALFED Water Program Hearing, August 5, 1998.
[155] CALFED Bay-Delta Program Draft Programmatic EIS/EIR - March 1998; Page 8.8-1.
[156] Regional Council of Rural Counties PEIS/EIR Comments, June 30, 1998; Page 18 and 19.

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"staged implementation" as applied directly to the CALFED plan. CALFED states the Program lends itself to staged implementation, by creating "linkages" for progressing between stages.[157] Further, CALFED indicates that this approach allows identification of actions for implementation that have general agreement and justification, and also identifying actions where uncertainty exists and developing conditions for moving beyond Stage 1.[158] Presentation of the preferred alternative in the framework of "staging," allows CALFED to test and intergate solutions into Program elements. It also serves as a means for CALFED to float a hybrid[159] of the three draft alternatives.

CALFED has been able to separate the storage and conveyance elements of the Program and assign different "triggers" or linkages required for implementation. In the process, they have been able to incorporate the isolated facility into all 12 potential configurations. This approach also allowed CALFED to make it nearly impossible for new storage facilities to be constructed.

IX. CHAIRMAN'S COMMUNICATIONS WITH CALFED

The Chairman has submitted Letters of Request for Information to the executive director of the CALFED Program:

The first letter, dated June 30, 1998, asked for the number of projects funded by CALFED, the amount of funding the projects received, and the acreage amounts and locations of land acquisitions.

CALFED's response to the June 30th letter contained most of the information requested. However, when the material was analyzed several problems were discovered. As a part of the response, a listing of over 70 projects funded by CALFED and over 80 "Individual Project Reports" (IPR) were included. Committee staff found several of the IPR's funding amounts not listed on the spreadsheet causing totals to be inaccurate. Further, some IPR's entires did not match amounts shown on a second tracking report used by the Ecosystem Roundtable and the Ecosystem Restoration Work Group. The IPR's contained some

[157] CALFED Bay-Delta Program, Developing a Draft Preferred Program Alternative - July 8, 1998; Page 2.
[158] *Ibid.*, Page 3.
[159] Testimony of Dan McCarroll, Legislative Coordinator, CALFED Bay Delta Program, Senate Select Committee on the CALFED Water Program Hearing - May 13, 1998; Page 25 - 26.

of the information relative to the approximate amounts of acreage involved in the project, however, the IPR's did not provide the geographic location beyond a general description of the "region" of origin. It was clear that CALFED's response was to provide the minimum level of "compliance" with the Chairman's request.

The second letter, dated July 1, 1998, requested CALFED to provide an organizational chart of the Program staff and a report identifying the consultants to the Program and the amount paid each consultant.

The CALFED response to the July 1st Chairman's letter, detailed the organizational structure and personnel assigned to each CALFED position, including "home" agency identification, if applicable. There is a vacancy in the chart dated July 9, 1998, of a GIS Coordinator. In a letter, CALFED's executive director stated, "As part of overall Program development CALFED is now developing a Geographic Information System (GIS) that will include information on habitat restoration, acquisition and species improvement projects." In light of the vacancy in the position listed, how and when does CALFED intend to make this information available?

Also, this response identified the number and area of expertise of consultants hired to assist CALFED. Since the beginning of the CALFED in 1994, the Program has contracted for consulting services in the amount of $20,937,165 and expended $19,276,266, to date. The breakdown of these expenditures is: $296,975 in 1994; $827,757 in 1995; $6,047,708 in 1996; $8,811,942 in 1997; and $3,291,884 as of July 31, for 1998.

The third letter, dated July 20, 1998, was a request for information involving the "evolution" of CALFED "target goals" of acreage contained in the ERPP. Specifically, acerage totals presented in the ERPP were developed as a result of some form of analysis by CALFED staff or consultants. This analysis identifed the geographic regions suited to the restoration of a particular habitat, as well as the location and size of the location. It is reasonable to request CALFED supply the documents, maps, charts, or other relevant documents used in the formulation of these acreage goals.

The fourth letter, dated July 21, 1998, requested additional a listing of projects submitted to CALFED for funding during the FY '98 and FY '99. The request

asked CALFED to identify projects that recieved disbursements from Category III and Prop. 204 monies and which projects that are still awaiting funding.

CALFED's executive director provided a number of information packages in response to the July 21st letter that complied with the Chairman's request.

On September 1, 1998, the Chairman sent a fifth letter in response to correspondence recieved from CALFED's executive director. The executive director's letter outlined CALFED's position on the testimony offered by Mr. Dennis O'Connor and the errors in the Bulletin 160-98 water use projection data. The Chairman asked CALFED to detail their plan to correct the impacts of the faulty data.

CALFED has not responded to the Chairman's letters of July 20, 1998, nor the September 1, 1998. The only response to either request has been a telephone conversation with CALFED staff, initiated by Committee staff. During that call CALFED staff stated the July 20th request was turned over to a CALFED staff member for review.

The Chairman finds this failure to respond not only inexcusable, but contemptuous of the mandate given the Select Committee by members of the California State Senate.

VII. ISSUES NEEDING FURTHER STUDY

As detailed earlier in this report, the number of areas for potential examination by the Committee were numerous. While this report probes a number of these areas, that will continue to be examined, several significant issues remain for review in upcoming public hearings:

A. Water rights and Area of Origin Protection

The CALFED Program could have significant impacts on Areas of Origin. It may also be involved in rewriting major sections of California's water law. Especially in regards to development of future storage, CALFED must provide assurances that Area of Origin laws will be incorporated into any implementation of a preferred alternative. Because these topics are complex,

additional hearings that focus on the impacts of CALFED are vital to the oversight functions of this Committee.

B. CEQA/NEPA requirements

This report details several areas where the EIS/EIR falls short of CEQA/NEPA requirements. Stakeholders from the agricultural, urban, and environmental sectors have identified either direct obviation of these requirements or a lack of scientific foundation for principles as stated by CALFED. As noted, CALFED must provide accurate and complete information so that all parties may understand and assist in implementing the preferred alternative. Further, for CALFED to act as an honest broker for all program participants, it must act in a manner consistent with such a role. Accordingly, the Committee will fully explore CALFED's responsibilities under these environmental acts in future hearings.

C. Impacts on Urban Development

Pursuant to Resolution 252, the Committee needs to explore impacts of the CALFED Program on urban development in the Bay-Delta, especially within CALFED's defined problem and solution areas. It is important to understand the challenges and stresses such development will present to implementation of the preferred alternative. Likewise, it is important to determine the economic impacts and potential conflicts between stakeholder industries.

D. CALFED's Proposed Alternative

CALFED is scheduled to announce its preferred draft alternative on October 9, 1998. The Committee will need to hold legislative hearings on the costs of planning, construction, management and operation of the CALFED proposal. An examination will also need to be conducted into which sectors of the economy and the environment will benefit from the proposal. Finally, the Committee must determine how CALFED will be financed and who would pay for any changes it recommends.

VIII. CHAIRMAN'S RECOMMENDATIONS

Based on the written comments and testimony presented to the Senate Select Committee on the CALFED Water Program to date, the Chairman makes the following recommendations:

A. CALFED Procedures

RECOMMENDATION: Serious questions have been raised about the scientific basis of DWR Bulletin 160-98 estimates. CALFED must state with certainty that the foundation of EIS/EIR assumptions are based on sound science and accurate data. The Chairman strongly urges CALFED to correct inaccuracies included in the modeling and assumptions of the EIS/EIR, by working with the California Research Bureau, the Department of Water Resources and other CALFED agencies to correct the errors identified in the Bulletin 160-98 methodology.

RECOMMENDATION: The EIS/EIR lacks necessary economic information allowing the public to assess the impacts of the plan on their respective regions. CALFED has also failed to adequately identify meaningful mitigation strategies. Additional errors and missing information outlined in this Report make a judicious re-evaluation necessary. CALFED should delay the release of the preferred draft alternative and correct the massive deficiencies of economic analysis in the EIS/EIR. Failure to include this information makes it impossible for CALFED to credibly comply with the solution principle of no redirected impacts "...when viewed in their entirety, within the Bay-Delta, or to other regions of California."

RECOMMENDATION: CALFED's solutions must rely on all stakeholders in the Bay-Delta participating. Presently, urban and agricultural interests bear the brunt of water use efficiency and water quality program program impacts. The role of environmental responsibilities is not addressed in the EIS/EIR. CALFED should incorporate data contained in the Refuge Water Supply ICP Task Force Report into the EIS/EIR and the Ecosystem Restoration Program Plan. The Chairman requests CALFED explain how they will compensate for the additional water use of lands converted to habitat.

RECOMMENDATION: There are clearly defined guidelines and procedures for State agencies to exercise the authority granted to them by the the legislative process. One of the chief reasons for these procedures is to prevent the abuse of power. Bulletin 160-98 states that CALFED has suggested that the State Water Resources Control Board could be asked to "pursue its obligations to investigate waste and unreasonable use more vigorously" as part of a water use efficiency plan. The Chairman requests CALFED to explain the intent of exercising the Constitutional authority of the State Water Resources Control Board as a part of the Program.

RECOMMENDATION: California must increase flood control protection and storage capacity for additional water yield to benefit anticipated needs. These facilities would increase supply, enhance groundwater recharge capabilities, improve habtiat along the Pacific Flyway, and other environmental needs. This is efficient use of our resources are a principle part of responsible planning for future generations. CALFED should elevate the storage element, from a *variable* to a **common** element of the CALFED Program.

RECOMMENDATION: The CALFED Program has converted over 17,000 acres of land to habitat. These aquisitions have been made without "safe harbor" regulations in place to protect adjacent property owners. CALFED puts neighboring property owners at risk without providing proper safeguards. While the Bay-Delta Advisory Council Assurances Work Group is trying to formulate these regulations, CALFED ***must*** develop them on a *priority* basis.

RECOMMENDATION: CALFED has failed to identify the locations of land aquisitions and the economic impacts of land conversions on local governments. Geographic Information System (GIS) resources exist that allow CALFED to identify the location of state and federally owned land, classified by type of habitat. GIS can also identify the exact location of property aquired by CALFED. CALFED should work with participating agencies to develop and present this information. Inclusion in the EIS/EIR will allow local governments to evaluate the loss of tax revenues and give

CALFED a basis for developing appropriate mitigation measures to offset those losses.

RECOMMENDATION: In addition to CALFED's Program plans involving land aquisitions of more than 390,000 acres, the Report has identified numerous plans and programs of participating CALFED agencies. All of these plans focus on habitat aquisition and management, with varied amounts of acreage targeted for conversion. All plans by the state and federal agencies participating in the CALFED Program need to be detailed and their objectives thoroughly discussed in a comprehensible manner. All plans, state and federal, that deal with land use changes, water supply and water rights and/or use modifications, land acquisitions, re-directed economic and/or physical impacts should be fully identified and analyzed by CALFED.

RECOMMENDATION: CALFED is a "program" and not an entity accountable for its actions. While state and federal agencies have their regulatory authority, the Program's progression indicates the need for final decision making responsibility. Without proper organizational structure, the Legislature and the public will continue to lack confidence in the CALFED Program's fairness, equity, and direction. The Chairman requests CALFED to suggest the remedy to best solve this deficiency.

RECOMMENDATION: CALFED states its programmatic EIS/EIR does not meet the "project specific" requirements of the California Environmental Quality Act. The Office of Planning and Research developed objectives and criteria for agencies of the State in preparing EIR's and negative declarations. One of these criteria, establishing "significant effect" in California Public Resources Code Section 21083, Subsection (c) states, "The environmental effects of a project will cause substantial adverse effects on human beings, either *directly* or *indirectly*." (Emphasis added) The intent of this language and the mandates of CEQA on CALFED agencies seems clear. The Chairman requests CALFED explain how these requirements apply to participating agencies, but don't apply to the Program.

B. Legislative

RECOMMENDATION: CALFED is an ongoing program, approaching the end of Phase II and the beginning of Phase III. Based on the scope of the

mandate of Resolution 252, the need to examine the requirements of CEQA/NEPA on the Program, and CALFED's impacts on water rights and areas of origin, the Chairman has requested an extension of the term of the Committee. The Chairman is also reviewing member requests to hold hearings in Northern, Central, and Southern California.

RECOMMENDATION: CALFED has failed to respond to communicatons from the Chairman regarding key elements of the plan. Additionally, in at least one case, the response from CALFED bordered on inadequate. Letters of request from the Chairman represent communications from the California State Senate. CALFED should respond to legislative inquiries in a timely, accurate, and complete manner or the Chairman will be forced to issue subpeonas to obtain the information and schedule hearings of inquiry on the issue.

RECOMMENDATION: CALFED targets over 390,000 acres of land for conversions to a variety of habitat. Other state and federal agency plans and programs target large amounts of land for similar purposes. The total cumulative impacts of all land conversions must be considered. The legislative intent of the CEQA exemption for land aquisitions for wildlife habitat purposes, was not meant for massive land aquisition plans. The Chairman will introduce legislation that will subject all land acquisitions for wildlife conservation purposes, to the requirements of CEQA. The Chairman will also urge similar legislation be introduced on the federal level.

C. Fiscal Audit and Reporting

RECOMMENDATION: Statements of the U.S. Senate Appropriations Committee, the lack of the established reporting requirements under Proposition 204, and the accounting and tracking errors discovered in materials provided to the Chairman, cause a sufficient question of the current accounting practices of the CALFED Program. As a result, the Chairman will ask the Controller of the State of California and the U.S. Government Accounting Office (GAO) to organize an audit of CALFED. The Controller will be asked to provide the Legislature with a report of the audits findings.

RECOMMENDATION: Upon completion and transmittal of the results of the audit requested of the Controller and U.S. GAO, the Chairman will introduce legislation requiring the Director of the Resources Agency to produce an annual report of CALFED Program expenditures for Legislative review.

APPENDIX

Estimated Ave. Sacramento River Outflows and the Loss Without Additional Storage Facilities

LAKE/DAM NAME	CAPACITY (AF)	DAYS TO FILL
Shasta	4,552,100	99
Berryessa	1,620,000	35
Trinity Lake	2,500,000	54
Oroville	3,538,000	77
Folsom	1,010,000	22
Camanche	417,100	9
New Melones	2,420,000	53
Friant	520,500	11
Pine Flat	1,000,000	22

Jan - Jun Sacramento River Average Daily Flow Diff. For WY '98 vs. WY '97:	23,177	Cubic Ft/Sec

Appendix A

Statement of Dennis O'Connor,
Assistant Director, California Research Bureau
Presented To The
Senate Select Committee On CalFed Water Program
August 5, 1998

Chairman Johannessen, Members, for the record I am Dennis O'Connor, Assistant Director for Environment and Natural Resources for the California Research Bureau.

Mr. Chairman, on June 9, 1998, I testified before this committee on how DWR projected urban water demand through the year 2020. I described how DWR used a two-step process. That is, first they forecast urban per capita daily consumption. They then multiply that forecast by the Department of Finance's population forecast.

I then described how DWR forecasts per capita daily consumption. Briefly, DWR first establishes base year consumption, and then forecasts changes to per capita consumption based on expected socio-economic effects and conservation efforts.

Then I explained that DWR establishes base year consumption by examining the historical pattern of water use and adjusts for hydrologic conditions.

Finally, I showed the Committee a chart showing historic urban water demand and DWR's estimated base year consumption. I have attached a slightly reformatted version of that chart, labeled Chart 1, to my printed testimony.

This chart shows a gap of about 60 gallons per capita daily (gpcd) between historic water consumption and DWR's 1995 estimate of average year demand.

While DWR agreed with my description of its methodology, DWR strongly disagreed with the chart. In their view, the chart made an apples-to-oranges comparison that did not properly reflect the relationship between historic urban water demand and DWR's 1995 estimate.

Since June, DWR has been very accommodating in trying to resolve this issue. We have had numerous meetings, telephone calls, e-mails etc., and they have provided me with the necessary data sets. The result of my research is:

There is still a gap between DWR's 1995 base year estimate and historic demand, although it is not as large as I originally thought it was.

There are three reasons why the chart shown on June 9, 1998 showed such a large gap between historic urban water use and the 1995 base year demand.

1. ***DWR mis-labeled a key chart in both the current draft Bulletin 160-98*** **AND** ***the previous final version of Bulletin 160-93.***

In both the draft Bulletin 160-98 and the final Bulletin 160-93, DWR included a chart labeled "Urban per Capita Water Use." In draft Bulletin 160-93, DWR labeled the vertical axis "gallons per capita daily." However, in the final Bulletin 160-93, DWR labeled the vertical axis "Urban Applied

Water Use (gallons per capita daily)". Moreover, the text described the chart as urban applied water use. So naturally, I used the chart from the draft Bulletin 160-98 as the source for the historic urban applied water use shown in Chart 1.

However, discussions with DWR revealed that the chart in fact did not show urban applied water use. The chart actually showed urban municipal and industrial production (also known as urban M&I production).

Urban M&I production is one of two components of urban applied water. It represents the water urban water agencies put into their system for deliveries to their customers. The other component of urban applied water is self-supplied water. This is the urban water supplied by private wells. For some regions, like southern California, self-supplied water is a rather insignificant part urban applied water. However, in areas like the San Joaquin Valley where there are a number of canneries, etc., that get their water from their own private wells, self-supplied water is very important.

Consequently, Chart 1 understates historic urban water use by the amount of self-supplied water. Statewide, self-supplied water accounts for about eight gpcd. The consequence of DWR's mis-labeling of the chart in Bulletin 160, then, is that we can account for about eight of the 60 gpcd discrepancy shown on Chart 1.

2. *DWR changed how it accounted for water in the draft Bulletin 160-98, and did not describe the change in the text.*

In the previous Bulletin 160-93, as with all prior editions of Bulletin 160, DWR used four categories of water use: Urban, Agriculture, Environment, and Other. Other included major conveyance facility losses, recreation uses, and energy production.

However, in the current draft Bulletin 160-98, DWR used three categories of water use: Urban, Agriculture, and Environment. DWR spread Other water use across the remaining three water use categories. This means that the table in draft Bulletin 160-98 labeled "Urban Applied Water" actually included urban applied water *plus* a portion of Other. However, nowhere in draft Bulletin 160-98 did DWR discuss this break with tradition.

Consequently, Chart 1 understates historic urban water use by the amount of attributed to Other water. Statewide, the Other water DWR attributed to urban water use is about 16 gpcd. So, the consequence of DWR's undocumented change in accounting is that we can account for another 16 of the 60-gpcd discrepancy shown on Chart 1.

Now, in all fairness to DWR, part of the reason for releasing a draft version of a report is to help identify these kinds of oversights. Moreover, correcting for these two errors puts us back to an apples-to-apples comparison. Chart 2 shows how these two corrections account for about 24 gpcd, or about 40 percent of the gap between historic urban M&I production and DWR's 1995 base.

3. DWR's "normalization" process overstates baseline consumption

The purpose of normalization is to remove the year to year fluctuations in demand due to annual changes in hydrologic patterns.

To do so, DWR divides the state first into major hydrologic regions. It then divides each hydrologic region into planning sub-areas and then further divides the planning sub-areas into detailed analysis units or DAUs. For illustrative purposes, I will focus on the South Coast Hydrologic Region and DAU 96 – Orange. (See Chart 3.)

For each DAU, DWR uses production data from select "representative agencies" as the basis for its normalization. For DAU 96, the agencies are: Anaheim, Buena Park, Costa Mesa, Fullerton, Garden Grove, Huntington Beach, Orange, Laguna Beach, and Santa Ana.

To establish the normalized 1995 demand, DWR did not want to use production from the five-year drought nor the first couple of years after the drought. This is because after the 1976-77 drought, demand quickly rebounded to its pre-drought level. (See Chart 4.) So, to establish the 1995 normalized demand, DWR extrapolated the 1980 to 1988 trend in urban M&I production to 1995. They then adjusted the estimate down slightly to adjust for the beginning of the Urban BMPs (Best Management Practices) which were designed to increase the level of urban water conservation and thereby reduce demand.

The key assumption behind this approach is that trends in people's water use habits and practices that existed in 1980-1988 would continue on to 1995 as if the drought never occurred. That is, beyond some minor changes from toilet retrofits, etc., the five-year drought experience did not induce people to permanently change how they used water.

The data suggest otherwise. Chart 5 shows actual M&I production for the Orange DAU through 1995. The chart shows that actual production appears to have stabilized at a new lower level. The difference between the "Normalized" 1995 and actual production in 1995 is 30 gpcd, or about 47,000 acre-feet per year.

The Orange DAU is not unique. Virtually all south coast cities show similar water use patterns. DWR does not have complete data through 1995 on urban M&I production for all representative cities in the south coast hydrologic region. So, I combined the data for those cities for which DWR does have a full data set. The cities are: Anaheim, Banning, Downey, Fullerton, Inglewood, Los Angeles, Manhattan Beach, Orange, Pasadena, Redlands, Santa Ana, and Santa Monica. These cities have a combined population of just over 5 million, or about 1/3 of the south coast hydrologic region.

As shown in Chart 6, urban M&I production in the south coast does not appear to be returning its pre-drought trend. That is, the 1987-92 drought appears to have permanently changed how people in southern California use water.

More recent data further support this observation. The City of Los Angeles, in its *Urban Water Management Plan* for fiscal year 1996-97 observes, "Water use in Los Angeles increased by about 2 percent from the previous fiscal year.... The slight jump in sales can be attributed mainly to population growth, as citywide water conservation levels remain solid at 20 percent."*

Assuming the water use patterns shown in the previous charts apply statewide, the balance of the gap can be explained by DWR's normalization process. (See Chart 7.) DWR's normalized 1995 M&I production estimates appear to be overstated by about 15 percent. That works out to approximately 1.2 million acre-feet, or 20 percent more than the reservoir holding capacity of Folsom Dam.

There are technical issues with DWR's normalization approach as well.

Perhaps the most important has to do with how DWR selects the "representative" agencies for the DAUs. DWR tries to select agencies that best represent the water use of the DAU. Sometimes, like with the Orange DAU, it is easy – there are a number of agencies able and willing to provide the necessary data.

However, it is not always easy to find representative agencies for given DAUs. Take, for example, DAU 90 – San Fernando. The City of Los

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* City of Los Angeles, *Urban Water Management Plan: Annual Update Report*, Fiscal Year 1996-97, http://www.dwp.ci.la.ca.us/water/supply/uwmplan/

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Angeles provides water to most of the DAU. However, DWR attributes all of Los Angeles's water use to DAU 89 – Coastal. That means two things. First, water use patterns in the Coastal DAU are skewed (probably upwards) by water use patterns in the San Fernando Valley. Second, it means that there are not any agencies well suited to represent water use in the San Fernando Valley.

DWR's solution is to use representative agencies from outside of the DAU. For the San Fernando Valley, DWR used San Gabriel Valley cities. For both the North Riverside and South Riverside DAUs (DAUs 100 & 104), DWR used the same four cities: Banning, Corona, Hemet, and Riverside. For the Temecula DAU (DAU 110), DWR used Corona, Hemet, and Escondido.

There is a potentially serious problem with this approach. While it is possible that water use in these areas show similar *patterns*, it seems unlikely that the absolute level of per capita water demand in these areas are the same. Riverside and Corona have different micro-climates than Banning and Hemet. Different cities have different mixes of businesses and industries. Family income and other socio-economic factors differ. And most important, different water agencies sell water at different prices and under different water conservation regulations.

These differences might or might not be important. What is important is that all interested parties agree that DWR has taken the best approach to estimating baseline demand – and on this point, there is no consensus.

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Why is this important?

As I testified last June, DWR forecasts 2020 demand based on projected changes to this base. If the base is too high, the 2020 demand forecast is too high.

Moreover, CalFed is using these year 2020 forecasts for their alternative's analysis. If CalFed is trying to meet an overstated demand, they will exclude otherwise viable options because they cannot meet the overstated demand.

Finally, a small error can generate a lot of water. A difference of 10 gpcd is equal to 360,000 acre-feet per year, the capacity Hetch Hetchy. A difference of 1 million people (which is less than the amount DOF revised its year 2000 population forecast between its official 1993 and its 1997 interim forecast) is equivalent to 224,000 acre-feet a year, – a bit more than capacity of Pardee Reservoir.

Conclusions

In conclusion, I have two recommendations and a comment.

1. ***DWR needs to describe much more explicitly the hows and whys of its urban demand estimates in Bulletin 160-98.***

To its credit, DWR recognizes that there is a problem with their draft Bulletin 160-98 and is working to correct and clarify both the text and the supporting tables and charts.

2. DWR needs to revisit its normalization methodology.

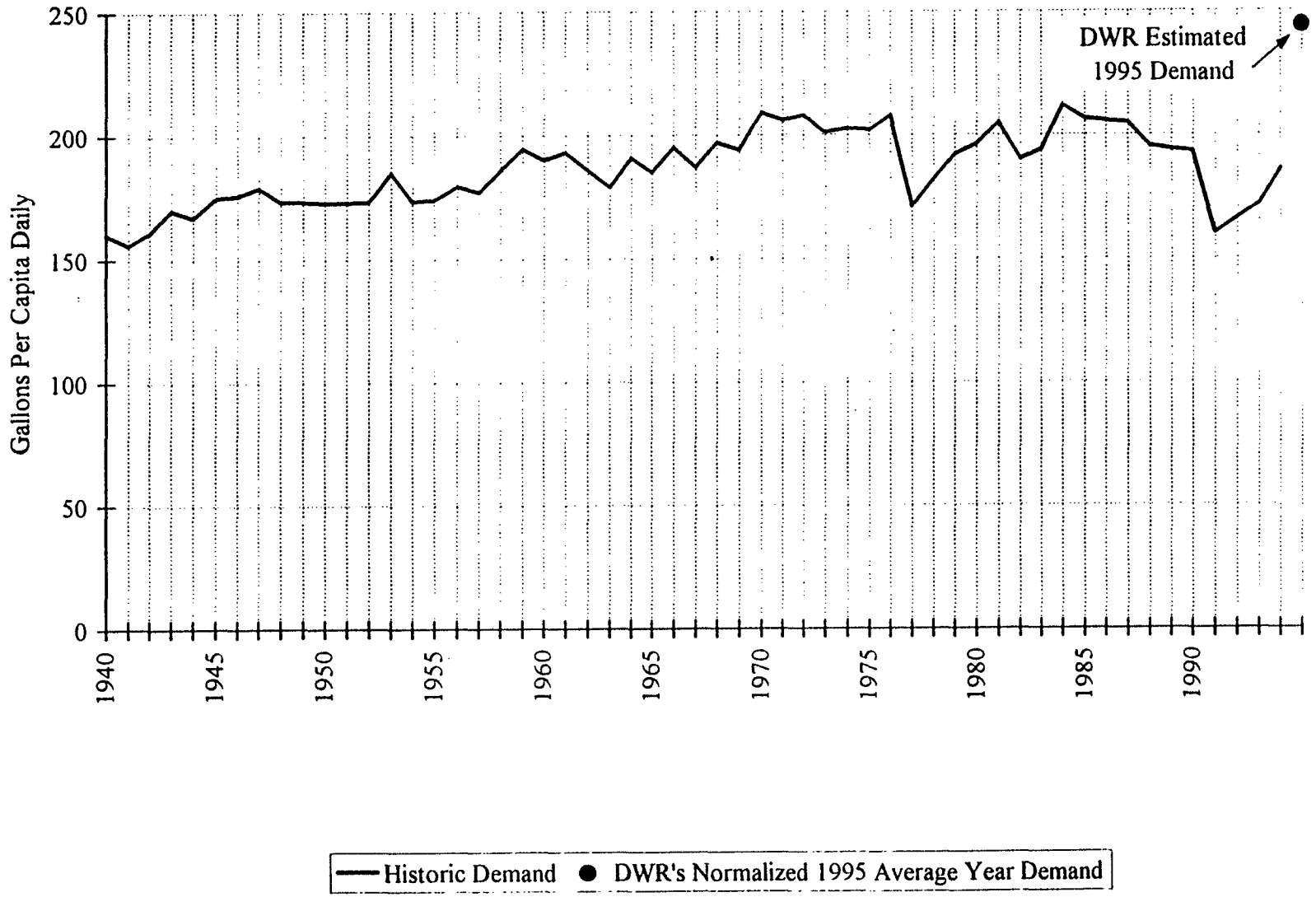
As you might imagine, my testimony last June generated a lot of interest within the water world. Hallway discussions suggest that people on all ends of the water spectrum are uncomfortable with using 1980-1988 trends to set 1995 base conditions. This is especially true since actual trends differ greatly from DWR's 1995 base.

Comment

As I noted in June, if the CalFed alternative is to meet the solution principles (implementable, affordable, durable, etc.) it is important that the underlying forecasts be as accurate as possible. What I neglected to mention, is that it is just as critical that all involved in the CalFed process feel comfortable with the forecasts' accuracy as well. This is a key assurance issue. Both accuracy and the perception of accuracy are equally important.

I will be happy to answer any question.

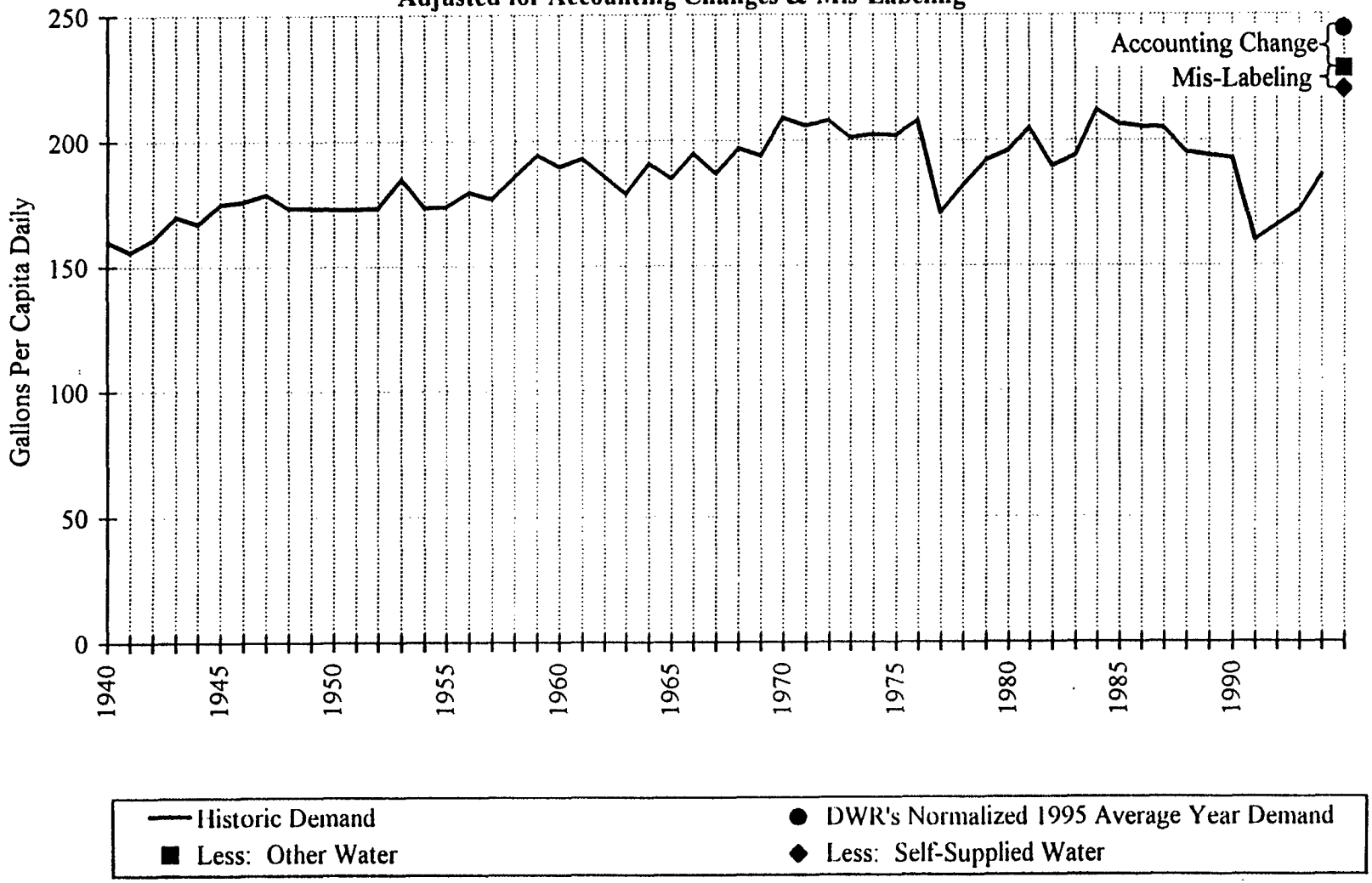
Chart 1
Urban Water Consumption -- Historical Demand and DWR's Estimated Base Year



Sources: DWR
Bulletin 160 Figure 4-5 and Table 4-10

California Research Bureau, California State Library

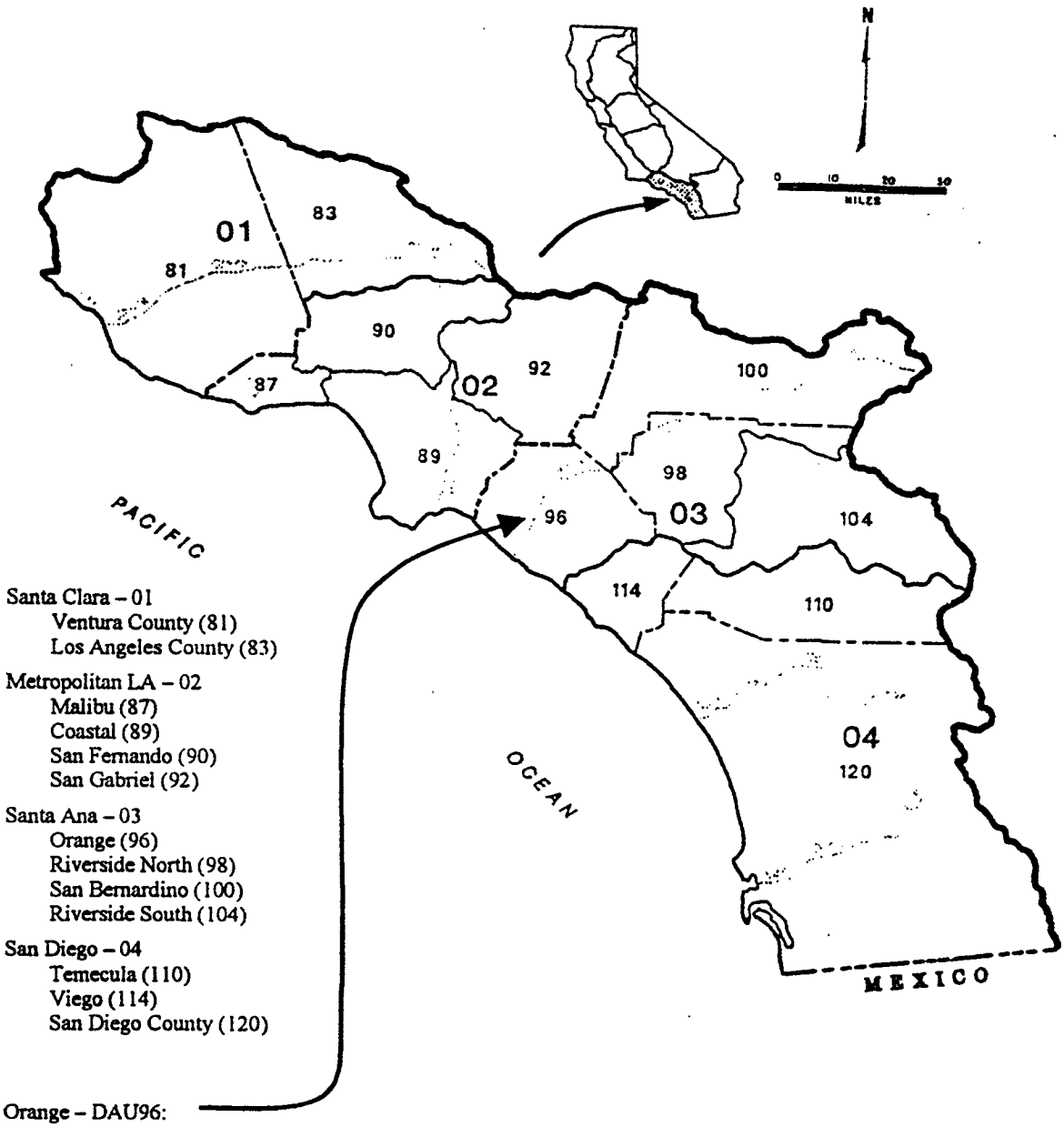
Chart 2
DWR's Normalized 1995 Average Year Demand
Adjusted for Accounting Changes & Mis-Labeling



Sources: DWR data, CRB analysis
Bulletin 160 Figure 4-5 and Table 4-10; DWR Staff

California Research Bureau, California State Library

Chart 3
South Coast Hydrologic Region
Planning Sub-Areas and Detailed Analysis Units



Santa Clara – 01
- Ventura County (81)
- Los Angeles County (83)

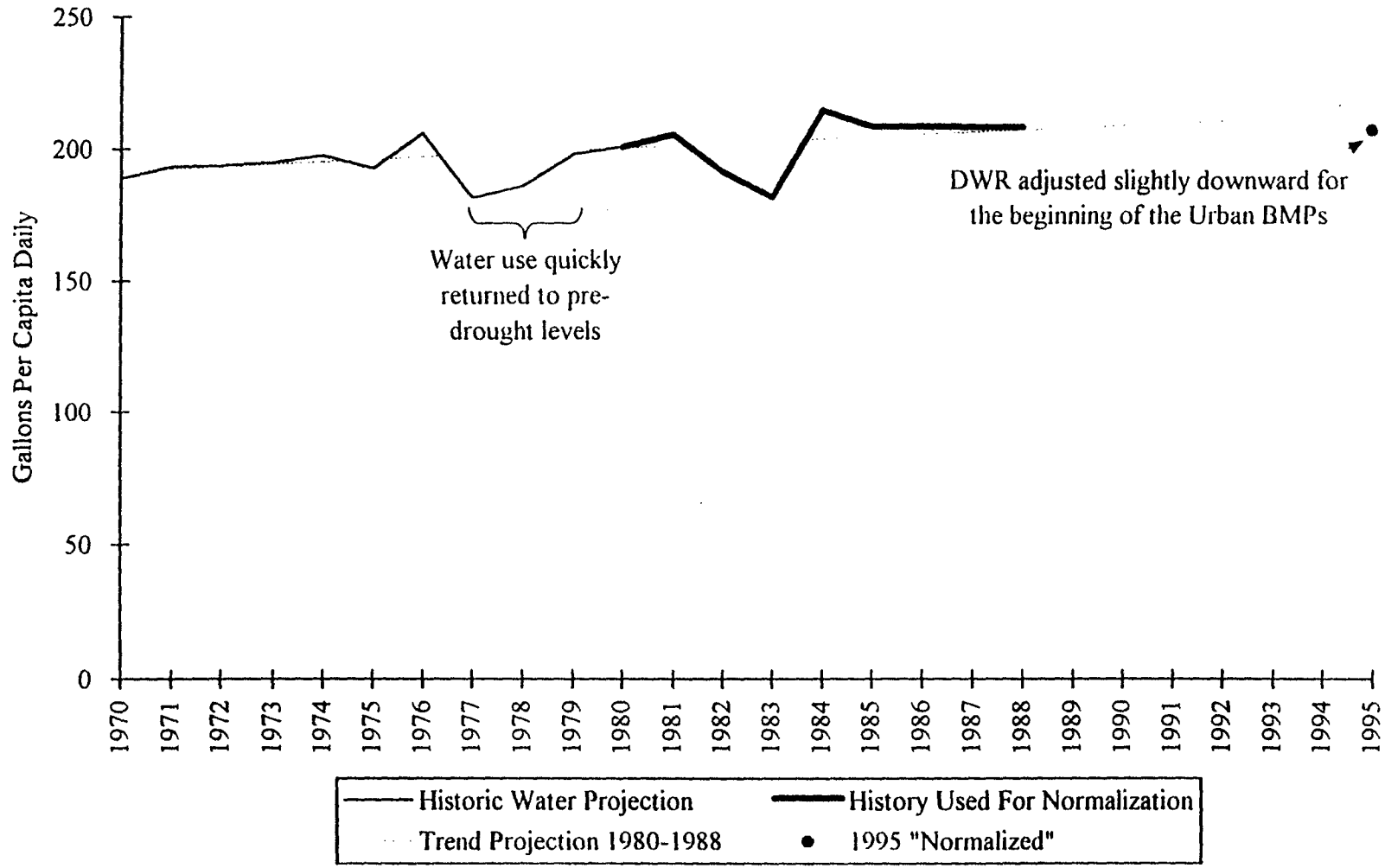
Metropolitan LA – 02
- Malibu (87)
- Coastal (89)
- San Fernando (90)
- San Gabriel (92)

Santa Ana – 03
- Orange (96)
- Riverside North (98)
- San Bernardino (100)
- Riverside South (104)

San Diego – 04
- Temecula (110)
- Viego (114)
- San Diego County (120)

Orange – DAU96:
- Anaheim
- Buena Park
- Costa Mesa
- Fullerton
- Garden Grove
- Huntington Beach
- Orange
- Laguna Beach
- Santa Ana

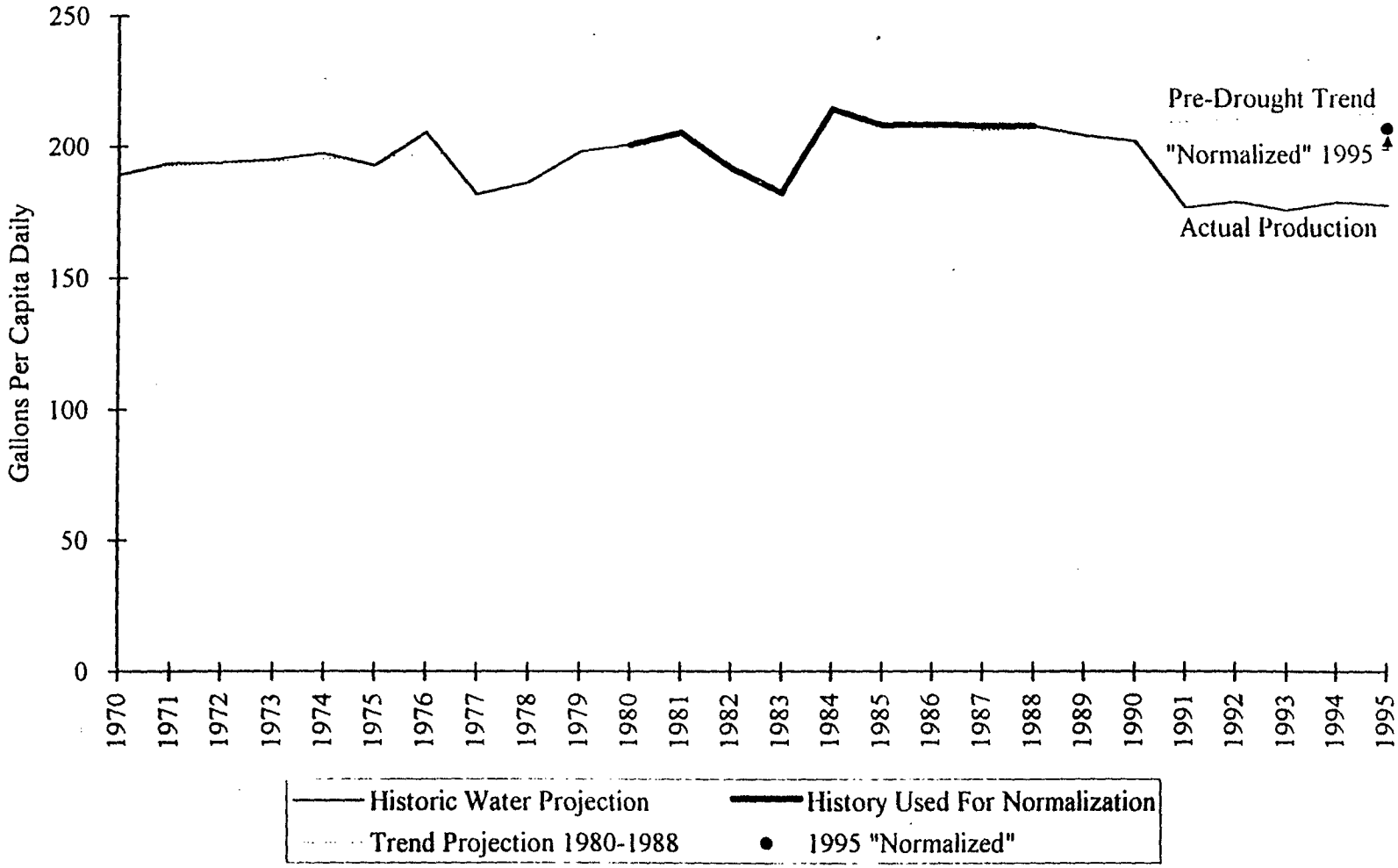
Chart 4
DWR "Normalized" 1995 Urban Water Production
Based On 1980 - 1988 Trend



Source: DWR
Urban Water Production: Orange DAU

Anaheim, Buena Park, Costa Mesa, Fullerton, Garden Grove, Huntington Beach, Laguna Beach, Orange, Santa Ana

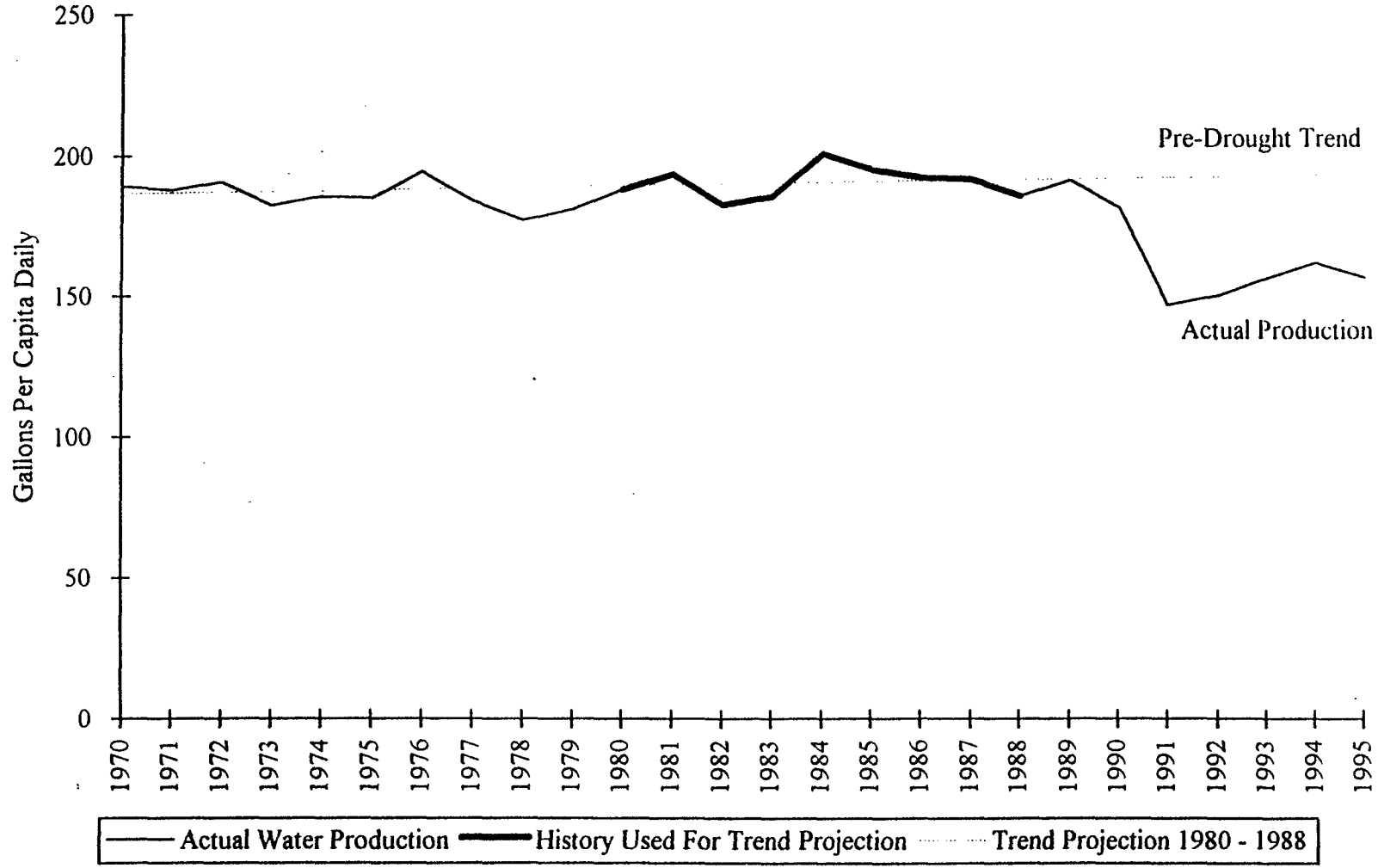
Chart 5
Urban Water Use In Orange DAU
Has Not Returned To Pre-Drought Levels



Source: DWR
Urban Water production: Orange DAU

Anaheim, Buena Park, Costa Mesa, Fullerton, Garden Grove, Huntington Beach, Laguna Beach, Orange, Santa Ana

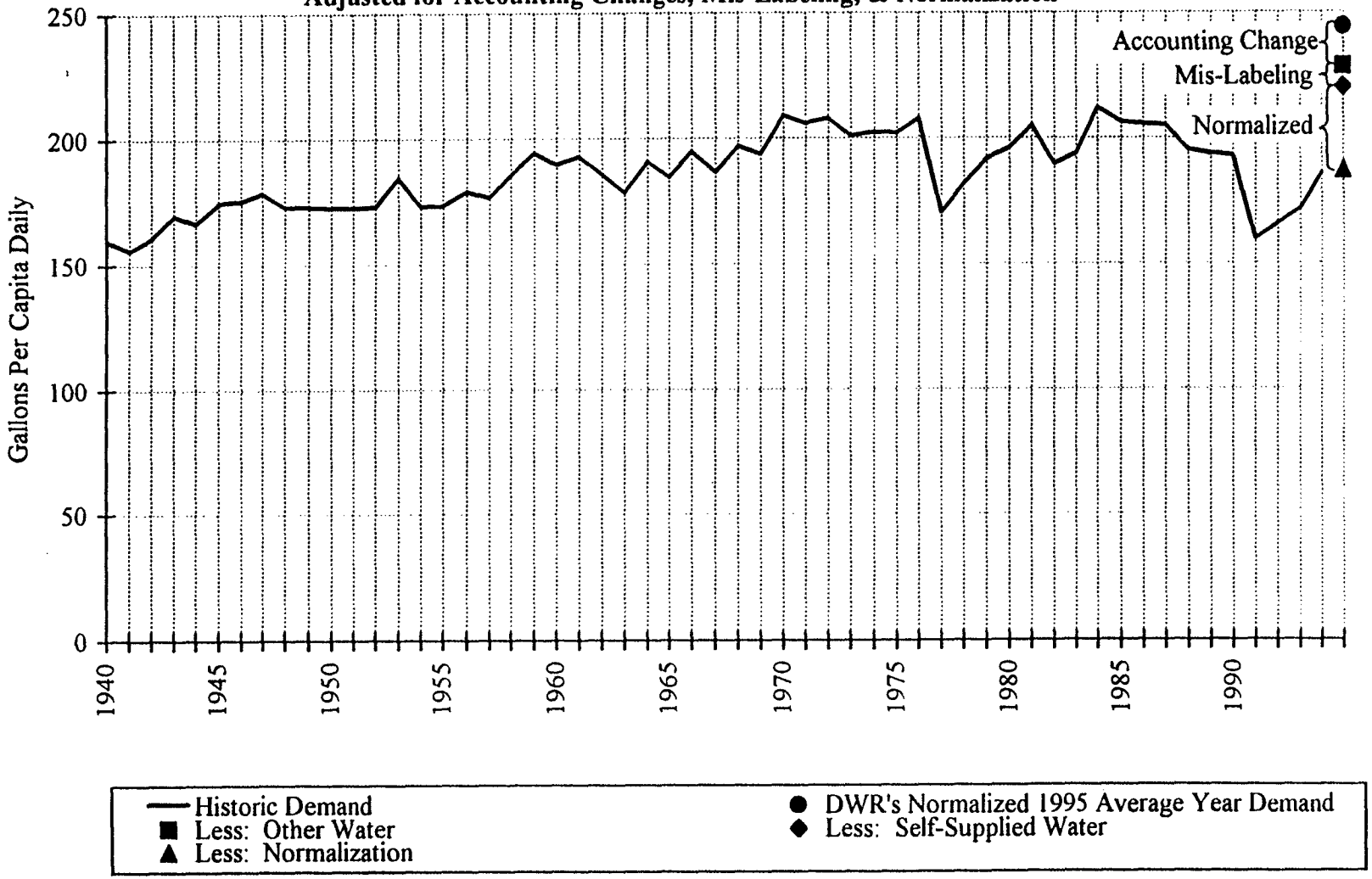
Chart 6
There Is No Evidence That Urban Water Production In the South Coast Hydrologic Region Is Returning to Pre-Drought Levels



Urban Water Production, South Coast Hydrologic Region,
Cities for which DWR has complete data, 1970 - 1995

Anaheim, Banning, Downey, Fullerton, Inglewood, Los Angeles, Manhattan Beach, Orange, Pasadena, Redlands, Santa Ana, Santa Monica

Chart 7
DWR's Normalized 1995 Average Year Demand
Adjusted for Accounting Changes, Mis-Labeling, & Normalization



Sources: DWR data, CRB analysis
Bulletin 160 Figure 4-5 and Table 4-10; DWR Staff

California Research Bureau, California State Library

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ALTERNTIVE COST SUMMARY

CALFED ALTERNATIVE	STORAGE		DELTA CONVEYANCE		COMMON PROGRAMS		TOTAL CAPITAL COST	TOTAL ANNUAL COST (Includes Capital Repayment, Energy Cost, and O&M)
	CAPITAL COST ($ Million)	ANNUAL COST ($ Million)	CAPITAL COST ($ Million)	ANNUAL COST ($ Million)	CAPITAL COST ($ Million)	ANNUAL COST ($ Million)	($ Million)	($ Million)
1A					$4,000	$133	**$4,000**	**$133**
1B			$430	$32	$4,000	$133	**$4,430**	**$165**
1C	$4,383	$329	$482	$36	$4,000	$133	**$8,865**	**$498**
2A			$1,413	$106	$4,000	$133	**$5,413**	**$239**
2B	$6,036	$452	$1,413	$106	$4,000	$133	**$11,449**	**$691**
2D	$2,647	$198	$1,899	$142	$4,000	$133	**$8,546**	**$473**
2E	$6,036	$452	$1,271	$95	$4,000	$133	**$11,307**	**$681**
3A			$1,905	$143	$4,000	$133	**$5,905**	**$276**
3B	$7,179	$538	$1,905	$143	$4,000	$133	**$13,084**	**$814**
3E	$7,179	$538	$2,401	$180	$4,000	$133	**$13,580**	**$851**
3H	$6,036	$452	$2,375	$178	$4,000	$133	**$12,411**	**$763**
3I	$6,304	$473	$4,540	$340	$4,000	$133	**$14,844**	**$945**

TABLE G

Identifiable Water Use for ERPP

Type of Land/Habitat	Number of Acres(*)	AC/FT to Manage(+)	Acre Feet
Nontidal Perennial Aquatic Habitat	500	13.25	6,625
Fresh Emergent Wetland (Marsh)	45,000	7.40	333,000
Seasonal Wetlands	89,000	7.40	658,600
Riparian and Riverine Aquatic Habitats	24,000	8.00	192,000
Perennial Grassland	6,000	4.25	25,500
Agricultural Lands	75,000	4.25	318,750
Totals:	239,500		1,534,475

Average Acre-Feet Applied per "Agricultural" Acre: 3.75

Total Acre-Feet For Ag Use:	**Acre-Feet Difference Between Habitat Use vs. Ag Use:**
898,125	636,350

(*) - Acreage amounts from CALFED ERPP - March 1998 Draft
(+) - AC/FT amounts in ICP Task Force Report - May 29, 1998

Appendix D