Chapter 8. Compliance with Applicable Laws, Policies, and Plans and Regulatory Framework

The CALFED Bay-Delta Program must comply with a myriad of environmental laws, regulations, and policies in fulfilling its purpose and mission. Levels of compliance sometimes depend on the nature of the proposed action. This chapter documents the laws, regulations, and policies with which the Program must comply at the programmatic level; many of these laws also will apply to project-specific, second-tier documents.

8.1	ENVIRONMENTAL COMPLIANCE AT THE
	PROGRAMMATIC LEVEL 8-1
8.2	REGULATORY FRAMEWORK 8-12
8.3	DRINKING WATER REQUIREMENTS 8-17
8.4	FEDERAL AND STATE COORDINATION FOR A
	DELTA SOLUTION 8-21
8.5	PUBLIC TRUST 8-23
8.6	WATER USE EFFICIENCY 8-23
8.7	AREA OF ORIGIN 8-24



8. Compliance with Applicable Laws, Policies, and Plans and Regulatory Framework

This chapter lists programmatic-level environmental compliance requirements, the regulatory framework, and other environmental policies and plans to which the Program is subject. This list will be a reference for site-specific project planning, permit processing, and environmental documentation requirements that would take place during Phase III of the CALFED Program.

As a cooperative interagency effort, the CALFED Bay-Delta Program (Program) is required to comply with several federal and state environmental laws and regulations, including NEPA and CEQA. Because of the programmatic nature of this document, however, not all environmental laws and regulations (or all aspects of those laws and regulations) pertain to the Program at this phase of the process. A Programmatic EIS/EIR allows agencies to evaluate the potential effects of a program as a whole and simplifies preparation of subsequent project-specific environmental documents. Under this approach, called "tiering," the Programmatic EIS/EIR addresses the broad issues relating to a project, and additional environmental documentation for project-specific impacts are prepared when necessary. This approach reduces duplication of broad policy decisions when future individual aspects of the Program are under review. These second-tier documents must incorporate the Programmatic EIS/EIR by reference.

During Phase III, second-tier site-specific environmental documents will be prepared for the individual Program actions that will be developed and implemented during Phase III. Second-tier documents will be prepared after the Programmatic EIS/EIR is certified; these documents will concentrate on issues specific to the individual parts of the Program elements, including the site chosen for the action. Second-tier documents will focus on project-specific impacts and the mitigation measures necessary to reduce potential impacts.

8.1 ENVIRONMENTAL COMPLIANCE AT THE PROGRAMMATIC LEVEL

8.1.1 NEPA/CEQA

NEPA requires that an EIS be prepared for all major federal actions with significant environmental impacts. Similarly, CEQA requires that state agencies prepare an EIR for projects with significant environmental impacts that they approve. Under these statutes, the environmental documentation and



analysis are circulated for public review and comment before a final document is completed. A final Programmatic EIS/EIR is released after public comments have been carefully reviewed, responded to and, if appropriate, incorporated into the document. Both NEPA and CEQA provide for different kinds of Programmatic EIS/EIRs, depending on the nature of the project, including programmatic and individual project EIS/EIRs.

The Program is a joint effort between federal and state government agencies. Accordingly, this Programmatic EIS/EIR was prepared to comply with both NEPA and CEQA. The document contains information on the No Action Alternative, the Preferred Program Alternative, other Program alternatives considered, mitigation strategies, potential benefits, and potentially significant adverse impacts that could result from implementing the proposed actions. State and federal officials agreed in December 1999 to extend the 1994 Bay-Delta Accord until state and federal approval of the CALFED Program's Final Programmatic EIS/EIR, but not later than September 15, 2000. The Bay-Delta Accord established the primary framework for the CALFED Program. It is expected that a ROD—and perhaps accompanying agreements—will replace the Bay-Delta Accord.

Both NEPA and CEQA require that an agency consider the environmental effects of its actions at the earliest point in time in which the analysis is meaningful. During extensive public scoping meetings, CALFED determined that the wide array of potential actions, the broad geographic area affected, the length of time for implementation, and the inter-related nature of the resources and goals for the CALFED Program indicated that a programmatic-level environmental review would allow for fuller disclosure and improve the opportunity for decision makers and the public to consider alternatives. Identifying and analyzing the potential future combined effects of a proposal allow a greater opportunity to design actions that avoid, minimize, or mitigate identified impacts. The Programmatic EIS/EIR then can be used to tier more detailed environmental documents for individual actions during Phase III.

Assumptions used in the "programmatic impact analysis document" analyses are clearly laid out in the documentation and were explained in several public meetings held throughout the process. The reader is referred to Chapter 10 and Attachment A in the Programmatic EIS/EIR for detailed information about the public review process and the assumptions, respectively.

As a programmatic general plan-level document, the Programmatic EIS/EIR does not analyze site-specific impacts of future projects at specific locations and therefore cannot predict with certainty which impacts will occur or what site-specific mitigation measures are appropriate for second-tier projects. Consequently, the Programmatic EIS/EIR identifies mitigation strategies, approaches tailored to the type of impacts anticipated as a result of CALFED Program projects that will provide the basis to structure more specific mitigation measures.

For each potentially significant environmental impact, one mitigation strategy or more is identified. These mitigation strategies will be considered as part of second-tier environmental review by any agency proposing to undertake projects that are within the scope of the Programmatic EIS/EIR. Where a second-tier project involves impacts that are addressed in the programmatic impact analysis document, the applicable mitigation strategies can be used to formulate site-specific mitigation measures and enforcement programs. The commitment to consider mitigation strategies, and to apply and enforce mitigation measures pursuant to those strategies, will be included in the ROD/CERT. In addition, any state or federal project funded through legislation that provides for projects to be consistent with, or in accord with, the CALFED Program would need to demonstrate compliance with this mitigation monitoring program as set forth in the Mitigation Monitoring Plan adopted at the time of the ROD/CERT.

NEPA and CEQA are intended to inform decision makers and the public of the environmental consequences of the proposed action, provide an analysis of alternatives, and ensure consideration of mitigation options. The governance, financing (including cost-sharing), and assurance structures do not cause physical changes to the environment or affect the analysis of anticipated impacts, alternatives, or mitigation options. Therefore, these structures are not analyzed in the Programmatic EIS/EIR.

As noted previously, second-tier site-specific environmental documents will be prepared for individual projects, where potentially significant environmental impacts require such analysis. Second-tier documents will be prepared to concentrate on issues specific to the individual project being implemented and site(s) chosen for the action before construction can be initiated.

Most areas of NEPA and CEQA overlap, but some sections in NEPA have no CEQA counterparts. These areas, such as the relationship between short-term uses of the environment and the maintenance of long-term productivity, are included in the Programmatic EIS/EIR. In some cases, NEPA categories were thought to be broader than those under CEQA—for example, irreversible and irretrievable commitments of resources (a NEPA category) rather than any significant irreversible environmental changes (a CEQA category). In those instances, the Program chose to document the environmental consequences under the broader requirements.

A more detailed discussion of the nature and organization of this Programmatic EIS/EIR can be found in the Preface and in Chapter 4. Past and future Program public involvement efforts are discussed in Chapter 10.

8.1.2 FEDERAL/STATE ENDANGERED SPECIES ACTS

Both the federal and state governments enacted endangered species acts (ESAs) to ensure that projects do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species. The MSCS for the CALFED Program is an approach to fulfilling the requirements of the federal ESA, the California ESA, and the Natural Community Conservation Planning Act (NCCPA) that may be used by entities implementing CALFED Program actions. Specifically, the MSCS:

- Analyzes the effects of the CALFED Program on 243 evaluated species and 18 Natural Community Conservation Plan (NCCP) communities for the federal and state ESAs and NCCPA purposes.
- Identifies species goals ("recovery," "contribute to recovery," or "maintain") for each of the 243 evaluated species and conservation measures to achieve the goals.
- Specifies two types of conservation measures for achieving the species goals: (1) measures to avoid,
 minimize, and compensate for the Program's adverse effects on NCCP communities and evaluated
 species; and (2) measures to enhance NCCP communities and evaluated species that are not directly
 linked to the Program's adverse effects.
- Provides for the preparation of action-specific implementation plans (ASIPs) that strengthen and simplify compliance with federal and state ESAs and the NCCPA for CALFED Program actions.

The MSCS provides a two-tiered approach to compliance with federal and state ESAs and the NCCPA that corresponds to CALFED's two-tiered approach to compliance with NEPA and CEQA. The MSCS

provides a program-level evaluation of the CALFED Program under the federal ESA and the NCCPA, just as the Programmatic EIS/EIR provides a program-level evaluation under NEPA and CEQA. ASIPs are intended to complement the second-tier, project-level environmental review of CALFED Program actions that is anticipated in the Programmatic EIS/EIR.

The MSCS will serve as the biological assessment of the entire CALFED Program for purposes of programmatic compliance with Section 7 of the federal ESA. Based on the MSCS and other relevant information, the USFWS and NMFS will prepare programmatic biological opinions for the CALFED Program. Subsequently, as CALFED Program actions or groups of actions are identified and defined, ASIPs can be prepared that use information and analyses in the MSCS and the programmatic biological opinions. The ASIPs will serve as the biological assessment of the Program actions or groups of actions; the ASIPs will provide necessary details about the actions and their impacts on species and NCCP communities evaluated in the MSCS. The USFWS and NMFS then will use the ASIPs to develop action-specific biological opinions.

The NCCPA provides for the preparation of NCCPs. NCCPs identify and provide for the regional or area-wide protection and perpetuation of natural wildlife diversity, while allowing compatible and appropriate development and growth, and may be used for compliance with the California ESA. The MSCS will be submitted to DFG as a proposed programmatic NCCP. Based on the MSCS and other relevant information, DFG will determine whether the MSCS complies with the NCCPA. If DFG determines that the MSCS complies with the NCCPA, DFG will prepare an NCCP approval and issue supporting findings. As under the federal ESA, once specific CALFED Program actions or groups of actions are identified and defined, ASIPs that use information and analyses in the MSCS and the programmatic NCCP approval will provide necessary details about the actions and their impacts on species and NCCP communities evaluated in the MSCS. The ASIPs then can serve as project-specific NCCPs for individual Program actions or groups of actions.

The MSCS helps to assure that CALFED Program actions can be completed in accordance with federal and state ESAs and the NCCPA; and that the compliance process will be systematic, efficient, and predictable. The MSCS will not provide the CALFED Program with general authority to take endangered species or threatened species. However, the MSCS compliance process provides the means by which CALFED implementing entities may obtain authorizations under the federal ESA and the NCCPA to allow incidental take of endangered or threatened covered species that may be caused by specific CALFED Program actions or groups of actions.

8.1.3 FISH AND WILDLIFE COORDINATION ACT

Under Subsection 2(a) of the Fish and Wildlife Coordination Act (FWCA), federal agencies are responsible for consulting with the USFWS and NMFS to conserve wildlife resources by preventing loss and damage, as well as providing for their development and improvement in connection with water resource projects. FWCA Subsection 2(b) requires the USFWS and NMFS to (1) report its recommendations for wildlife conservation and development, and the expected results; and (2) describe the damage to wildlife attributable to the project and the measures proposed for mitigating or compensating for these damages.

The USFWS and NMFS will not issue a separate FWCA Report on the CALFED Program for incorporation into the Programmatic EIS/EIR. The Programmatic EIS/EIR for the CALFED Program includes an impact analysis that was developed in coordination with the USFWS and NMFS. The USFWS' and NMFS' recommendations for improving the Program and reducing impacts on fish and

wildlife have been incorporated into the Program and the Programmatic EIS/EIR. Because of this extensive coordination, the incorporation of the USFWS's recommendations, and the programmatic nature of the CALFED Program, the USFWS and NMFS believe that the requirements of Section (b)(2) of the FWCA have been fulfilled. However, future CALFED Program actions that tier from the Programmatic EIS/EIR have not fulfilled the requirements of Section (b)(2) of the FWCA. Separate FWCA reports will need to be completed for those Phase III actions. The USFWS and NMFS will complete FWCA reports for appropriate Phase III actions, presenting their agency's recommendations to avoid, minimize, and mitigate project impacts on fish and wildlife resources. FWCA reports represent the USFWS' and NMFS' recommendations and are not binding conditions. Although FWCA reports are not subject to public review and comment, they will be available for public and stakeholder review following their completion.

8.1.4 COMPLIANCE WITH SECTION 404(b)(1) GUIDELINES AND SECTION 401

The alternatives being analyzed in this Programmatic EIS/EIR include numerous activities that would involve the discharge of dredged or fill material to waters of the United States (including wetlands). As such, these activities require authorization under Section 404 of the Clean Water Act (CWA) before they can proceed (Section 404 permits). Activities which would require Section 404 permits range from projects involving significant construction of new infrastructure (such as new surface water storage facilities) to less controversial projects (such as creating new wetland habitat by contouring land and changing local hydrology).

The Corps issues Section 404 permits. Before the Corps can issue a Section 404 permit for a project, it must determine, among other things, whether a proposed project complies with regulations issued by EPA pursuant to Section 404(b)(1) of the CWA (Section 404(b)(1) Guidelines). The Corps cannot determine whether to issue a Section 404 permit for a particular project until a project-specific administrative record is developed to permit a determination as to whether the project complies with the Section 404(b)(1) Guidelines as well as relevant regulatory requirements. Because project-specific evaluations for the CALFED Program will only be completed after the ROD for this Programmatic EIS/EIR, no site-specific Section 404 permits will be issued for Program projects at the time of the ROD. However, the Corps, EPA, and Program staff are developing a memorandum of understanding (MOU) to facilitate timely consideration of Section 404 permits for Program projects.

The MOU has not been finalized but is scheduled to be completed by the time of the ROD. Conceptually, it will provide a mechanism for integrating information developed at the programmatic level (including the Programmatic EIS/EIR) into the site-specific decisions on Section 404 permits. Programmatic information of particular relevance to the Section 404 permits includes:

- Description of Program projects that are likely to need Section 404 permits, including assessment of the purpose and need for these projects.
- Analysis of alternatives to surface storage, including groundwater storage, water use efficiency, and transfers.
- Assessment of the economic costs and environmental impacts of specific surface storage alternatives in the Integrated Storage Investigation.

• Description of the conveyance strategies under consideration and the process for further evaluation of the conveyance options.

A critical issue that the MOU is designed to address is the extent to which less environmentally damaging alternatives to surface storage (for example, groundwater storage, water use efficiency, and transfers) can be practicably implemented and the extent to which these alternatives can contribute to project purposes, since the Section 404(b)(1) Guidelines only authorize issuing Section 404 permits if there are no less environmentally damaging practicable alternatives to the proposed discharge. Thus, the MOU is intended to document the commitments in the ROD to pursuing these less environmentally damaging alternatives to surface storage and set forth a process for assessing the need for additional storage in light of the commitments to alternative approaches to addressing Program goals.

8.1.5 THE COASTAL ZONE MANAGEMENT ACT

Under the Coastal Zone Management Act (CZMA) of 1972, coastal states are required to develop Coastal Zone Management Programs, and federal agencies are required to certify that any proposed activities in or affecting the coastal zone are consistent with the State's program. In California, the San Francisco Bay Conservation and Development Commission (BCDC) oversees the San Francisco Bay segment of California's Coastal Zone Management Program. Among other areas, BCDC also has permit jurisdiction over projects in certain waterways up to the Sacramento-San Joaquin Delta (east of Chipps Island) that empty into the Bay and in specific saltponds and managed wetlands.

The Program has prepared a Programmatic Coastal Zone Management Act Consistency Determination that documents the possible effects of the Preferred Program Alternative on coastal resources. The consistency determination documents the actions that the Program will take to ensure that the Preferred Program Alternative is carried out in a manner consistent, to the maximum extent practicable, with the CZMA and the California Coastal Act of 1976. Since the March 1998 Draft Programmatic EIS/EIR did not contain a Preferred Program Alternative, a Programmatic CZMA Consistency Determination for the Program was not previously submitted to the BCDC. The CALFED Program provided a draft CZMA Consistency Determination to the BCDC in August 1999. A Programmatic CZMA Consistency Determination will be presented to the BCDC in summer 2000.

8.1.6 THE NATIONAL HISTORIC PRESERVATION ACT

Federal agencies or other federally funded entities must consider the effects of their projects on historic properties under Section 106 of the National Historic Preservation Act (NHPA). NHPA regulations require that a federal agency take the lead in complying with Section 106 and outline procedures to allow for comment on the proposed actions by the Advisory Council on Historic Preservation.

The Program is taking a two-step approach to comply with Section 106 of the NHPA. The first step consisted of a Class I overview of cultural resources in the study area and a programmatic evaluation of the consequences attributable to each Program alternative. The second step will be completed after specific actions stemming from the Preferred Program Alternative are started. At that time, federal agencies will follow 36 CFR 800 procedures before beginning these actions. A discussion about cultural

resources can be found in Chapter 7 of this document, as well as in the March 1998 Cultural Resources Technical Report.

Program staff also coordinated analysis of historic sites in the study area with the State Historic Preservation Office.

8.1.7 THE FARMLAND PROTECTION POLICY ACT AND MEMORANDA ON FARMLAND PRESERVATION

Two policies require federal agencies to include assessments of the potential effects of a proposed project on prime and unique farmland. These policies are the Farmland Protection Policy Act of 1981 (FPPA) and the Memoranda on Farmland Preservation, dated August 30, 1976, and August 11, 1980, respectively, from the U.S. Council on Environmental Quality. Under requirements set forth in these policies, federal agencies must determine these effects before taking any action that could result in converting designated prime or unique farmland for nonagricultural purposes. If implementing a project would adversely affect farmland preservation, the agencies must consider alternative actions to lessen those effects. Federal agencies also must ensure that their programs, to the extent practicable, are compatible with state, local, and private programs to protect farmland. The NRCS is the federal agency responsible for ensuring that these laws and polices are followed.

NRCS involvement in the Program will follow the tiered approach used in the NEPA/CEQA process. The analysis of the impacts of the Preferred Program Alternative and the other Program alternatives on prime and unique farmland is provided in Chapters 4 and 7 of this document. During Phase III, the NRCS will comment on project-specific analysis of an individual proposed action's effect on prime and unique farmland. As mentioned at the beginning of this document and in Chapters 4 and 7, mitigation strategies outlined in Chapter 7 will serve as a foundation for project-specific actions.

The analyses of impacts of the Preferred Program Alternative and the other Program alternatives on agricultural resources were coordinated with the NRCS. These analyses can be found in Chapters 4 and 7 of this document, as well as in the March 1998 Agricultural Resources Technical Report.

8.1.8 THE FEDERAL AGRICULTURE IMPROVEMENT AND REFORM ACT OF 1996

The Federal Agriculture Improvement and Reform Act of 1996, also known as the 1996 Farm Bill, became law in April 1996. Title III of the Act includes conservation provisions designed to provide landowners with various incentives and technical assistance for incorporating sound conservation practices into farming, grazing, and livestock operations. The 1996 Farm Bill replaces and incorporates parts of previous farm bills, including the Food Security Act of 1985 and the 1990 Farm Bill.

Under Title III, the Wetlands Reserve Program and the Conservation Reserve Program of the Food Security Act of 1985 are extended to 2002. Changes in the programs, addressed in previous farm bills, provide landowners with more options for protecting wetlands and highly erodible land. The wetland conservation provisions were modified to provide farmers with more flexibility to meet wetland conservation compliance requirements. Changes include expanding areas where mitigation can be used;

allowing mitigation by restoration, enhancement, or creation; and changing the abandonment clause. Title III also addresses a new Wildlife Habitat Incentives Program to help landowners improve wildlife habitat on private land. A Flood Risk Reduction Program was established to provide incentives for moving farming operations from frequently flooded land. NRCS is the federal agency responsible for implementing the conservation provisions of the 1996 Farm Bill.

8.1.9 EXECUTIVE ORDER 11988 (FLOODPLAIN MANAGEMENT)

Executive Order 11988 is a flood-hazard policy for federal agencies, requiring them to take actions to reduce the risks of flood losses; to restore and preserve the natural and beneficial values served by floodplains; and to minimize flood impacts on human safety, health, and welfare.

At the programmatic level, the Program has complied with Executive Order 11988 by discussing the potential effects of the Preferred Program Alternative and the other Program alternatives on flooding and mitigation strategies in Chapter 7 and in the March 1998 Flood Control Technical Report.

8.1.10 EXECUTIVE ORDER 11990 (PROTECTION OF WETLANDS)

Executive Order 11990 is an overall wetlands policy for all agencies managing federal lands, sponsoring federal projects, or providing federal funds to state or local projects. The order requires federal agencies to follow avoidance, mitigation, and preservation procedures with public input before proposing new construction in wetlands. When federal lands are proposed for lease or sale to nonfederal parties, Executive Order 11990 requires restrictions to be included in the lease or conveyance to protect and enhance the wetlands on the property. Executive Order 11990 can restrict the sale of federal land containing wetlands; however, it does not apply to federal discretionary authority for nonfederal projects (other than funding) on nonfederal land.

Discussions about the effects of the Preferred Program Alternative and the other Program alternatives on wetlands can be found in Chapters 5, 6, and 7 of this document, as well as in the Ecosystem Restoration Program Plan and the March 1998 Vegetation and Wildlife Technical Report.

8.1.11 EXECUTIVE ORDER 12898 (ENVIRONMENTAL JUSTICE)

Executive Order 12898 requires federal agencies to identify and address adverse human health or environmental effects of federal programs, policies, and activities on minority and low-income populations that could be disproportionately high. Federal agencies must ensure that federal programs or activities do not directly or indirectly result in discrimination on the basis of race, color, or national origin. Federal agencies must provide opportunities for input into the NEPA process by affected communities and must evaluate the potentially significant and adverse environmental effects of proposed actions on minority and low-income communities during environmental document preparation. Even if a proposed federal project would not result in significant adverse impacts on minority and low-income populations, the



environmental document must describe how Executive Order 12898 was addressed during the NEPA process.

Chapter 7 in this document describes the effects of the Preferred Program Alternative and the other Program alternatives on minority and low-income populations—in particular, Section 7.14. The March 1998 Agricultural Resources, Urban Resources, and Recreation Resources Technical Reports also address this topic.

The Program developed a separate document detailing plans for multi-cultural public outreach, in addition to its general Outreach Program. The multi-cultural outreach plan includes meeting with ethnic community leaders throughout the state, focusing a media campaign on ethnic media, and identifying public forums that could be hosted by the Program and various community-based organizations. Chapter 10 of this document describes the Program's public involvement plan, which includes the opportunities for minority, low-income communities, and Indian tribal committees to provide input on the preparation of the Programmatic EIS/EIR.

8.1.12 EXECUTIVE ORDER 13007 (INDIAN SACRED SITES) AND APRIL 29, 1994 EXECUTIVE MEMORANDUM

Executive Order 13007 is a policy for federal agencies regarding how to accommodate Indian sacred sites. This order requires federal agencies with statutory or administrative responsibility for managing federal lands to: (1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners; (2) avoid adversely affecting the physical integrity of such sacred sites; and (3) where appropriate, maintain the confidentiality of the sacred sites.

The April 29, 1994, "Executive Memorandum on Government-to-Government Relations with Native American Tribal Governments," issued by President William J. Clinton, deals with government-to-government relations with Native American tribal governments. Under this memorandum, federal agencies that undertake activities affecting Native American tribal rights or trust resources should implement them in a knowledgeable, sensitive manner that is respectful of tribal sovereignty. The memorandum outlines principles, clarifying how the federal government should operate in a government-to-government relationship with federally recognized Native American tribes.

The potential effects of the Program on Indian sacred sites are unknown and will be determined when specific projects are evaluated. Specific implementation projects for the Program have not yet been identified; at the programmatic level, however, impacts on Indian sacred sites appear unlikely. As specific implementation projects are evaluated, adverse impacts on Indian sacred sites will be disclosed and mitigation provided, as needed.

The Programmatic EIS/EIR does not address specific projects. If projects or activities are proposed for an area that contains a reservation, rancheria, or any Indian trust asset, consultation will take place early in the planning process. At the programmatic level, it is not possible to determine whether projects will be proposed for any reservation or rancheria; however, government-to-government consultation will be provided as needed.

CALFED has initiated broad tribal consultations on the CALFED Program. These consultation efforts include: (1) working with EPA's Regional Tribal Operations Committee (RTOC) to provide briefings

at its meetings about the CALFED Program and how to best encourage tribal participation, (2) conducting a CALFED briefing at the EPA Tribal Environmental Conference, (3) appointing an RTOC nominee to the BDAC to help represent tribal interests, and (4) providing funds to enhance tribal participating in identifying and analyzing potential impacts from future projects on tribal interests.

8.1.13 FEDERAL CLEAN AIR ACT

The Federal Clean Air Act (FCAA) was enacted to protect and enhance the nation's air quality in order to promote public health and welfare and the productive capacity of the nation's population. The FCAA requires an evaluation of any federal action to determine its potential impact on air quality in the project region. California has a corresponding law, which also must be considered during the EIR process.

During Phase III of the Program, when specific projects are identified, coordination is required with the appropriate air quality management district as well as with EPA. This coordination would determine whether the project conforms to the FCAA and the State Implementation Plan (SIP).

Section 176 of the FCAA (42 U.S.C. Section 7506[c]) prohibits federal agencies from engaging in or supporting in any way an action or activity that does not conform to an applicable SIP. Actions and activities must conform to a SIP's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and in attaining those standards expeditiously. EPA promulgated conformity regulations (codified in 40 CFR Section 93.150 et seq.).

This Programmatic EIS/EIR discusses the potential air quality impacts of the Preferred Program Alternative and the other Program alternatives in Section 5.8.

8.1.14 CLIMATE CHANGE

The federal government recognizes that global climate change is a serious environmental concern. The continued emissions and changes in sinks of greenhouse gases must be viewed under NEPA as a reasonably foreseeable impact, given the current state of scientific knowledge. Therefore, federal agencies must analyze the extent to which their proposed and ongoing actions and activities could influence such emissions and sinks. Such analyses should consider how federal actions could affect global climate change and, to the extent possible, how global climate changes could affect federal actions.

The Program is proposing significant investments to improve water quality, ecosystem quality, water supply reliability, and levee system integrity. Durability of the Program could be adversely affected by future climate changes. Likewise, Program-related construction and operations could contribute to greenhouse gas production. Two potential effects of global warming of particular concern for the Program are changes in sea levels and precipitation.

The geologic record shows marks from floods and droughts, evidence of past substantial changes in global and regional climates. Sea level changes also are directly related to extremes in climate change. For example, sea levels were from 2 to 6 meters higher than present levels during the last interglacial period 125,000 years ago, and approximately 120 meters below present levels during the last ice age 20,000 years ago. Sea levels have increased by 10-25 cm over the last century. Given this fluctuation, the Delta—with sea levels near current levels—likely has existed for only a small amount of geologic time.

It is difficult to estimate future sea level changes. Not enough is known about how the ice sheets in Greenland and Antarctica will react to global warming or about how much global warming may occur. Global warming may cause ice sheets and land-based glaciers to melt and also could cause thermal expansion of sea water. Sea levels actually could decrease if global warming causes precipitation at very high latitudes to increase and results in water stored as ice sheets.

A literature search indicates that sea level rise currently is estimated at approximately 1.5 millimeters annually. One study estimates that global warming may cause further rise of about 18 cm (0.7 foot) by 2030. Also, if current trends in greenhouse gas emissions continue, the same study estimates the rise could be up to 1 meter (3.3 feet) above current levels by 2100. EPA estimates that sea levels could rise globally approximately 20 inches (ranging between 6 and 38 inches) by 2100, and that average global temperatures could increase by 2 degrees Celsius (ranging between 1 and 3.5 degrees Celsius). Each degree Celsius of warming will shift temperature zones by about 100 miles northward (or 500 feet up in elevation).

This shift in temperature could affect species distribution in the Bay-Delta system and the effectiveness of the Ecosystem Restoration Program. Considering the potential of a 1- to 3.5-degree Celsius increase in global temperatures by 2100, the greenhouse gases that could be generated by the Program would be infinitesimal. However, the Program could contribute to the cumulative impacts of the potential temperature changes.

Rising sea levels could cause significant adverse impacts on the Delta system (for example, on habitat, water supply, and agriculture) if levees are overtopped or if substantial future investments are required to prevent overtopping. Higher sea levels could increase salinity levels throughout the Delta and for many miles inland, which could alter the effectiveness of Program habitats and likely would change the entire Delta ecosystem. Water diversions from Delta channels likely would be abandoned and moved inland to areas of lower salinity. While these changes are potentially significant over the long term (hundreds or thousands of years), they are unlikely to significantly alter Program facilities or operations within the foreseeable future (20-50 years).

Temperature changes could result in more variable precipitation and runoff patterns from year to year and season to season. EPA estimates that California could experience increased winter runoff and decreased spring and summer runoff, which could result in decreased water supply and reliability in the Central Valley basin. If earlier flooding becomes more frequent, competition for remaining scarce water supplies could increase.

8.1.15 FEDERAL WATER PROJECT RECREATION ACT

The Federal Water Project Recreation Act requires federal agencies with authority to approve water projects to include recreation development as a condition of issuing permits. Recreational development must be considered along with any navigation, flood control, reclamation, hydroelectric, or multi-purpose water resource project. For example, a Federal Energy Regulatory Commission license to operate a hydroelectric facility usually includes an obligation to construct specific recreation facilities in order to provide for anticipated demands. CALFED compliance with the requirements of the Federal Water Project Recreation Act will occur at the project-specific level. A programmatic discussion of recreation impacts is included in Section 7.7.

8.1.16 DAVIS-DOLWIG ACT

The Davis-Dolwig Act declares that recreation and fish and wildlife enhancement are among the purposes of state water projects. It specifies that costs for recreation and fish and wildlife enhancement not be included in prices, rates, and charges for water and power to urban and agricultural users. Under the Davis-Dolwig Act, land for recreation and fish and wildlife enhancement must be planned and initiated at the same time as any other land acquisition for the project. CALFED compliance with the requirements of the Davis-Dolwig Act will occur at the project-specific level. A programmatic discussion of recreation impacts is included in Section 7.7.

8.1.17 STATE, REGIONAL, AND LOCAL PLAN CONSISTENCY

Determining consistency with state, regional, and local plans is not possible without specific actions. Since this is a programmatic document, coordination consisted primarily of circulating the Programmatic EIS/EIR to recognized state clearinghouses and local government agencies affected, as well as submitting the document to federal, state, and local elected representatives for review and comment as designated by Executive Order 12372. To fully comply with NEPA and CEQA, the Program will coordinate with appropriate state and local jurisdictions within the study area during Phase III.

8.2 REGULATORY FRAMEWORK

Several laws and regulations affect the existing environment in California, and these must be considered in assessing the potential impacts of future actions. Below is a brief discussion of those regulatory and legal requirements applicable to the Program. These requirements are presented here rather than under the various resource descriptions to provide a complete overview of the regulatory framework in one place and to avoid repetition.

8.2.1 Delta Protection Commission

The Delta Protection Commission (DPC) is a state regional planning agency with authority over a 450,000-acre portion of the Delta. The authorizing legislation was passed in 1992 (PRC Section 29700 et seq.), and the Commission started meeting in January 1993. The DPC was charged with preparing a regional land use and resources management plan for the Delta to protect and enhance the three existing land uses: agriculture, wildlife habitat, and recreation. The plan was adopted in February 1995. Local governments were required to ensure that their general plans conformed with the regional plan; local general plan amendments were completed in March 1997. The DPC has appeal authority over the local government amendments. The 19-member DPC includes six state agency directors, five county supervisors, three city council members, and five reclamation district representatives. The DPC was initially slated to disband on January 1, 1997, but its authorization has been extended by the legislature until the year 2010.

8.2.2 THE DELTA PROTECTION ACT OF 1959

The Delta Protection Act of 1959 requires adequate water supplies for multiple uses (for example, agriculture, municipal and industrial, and recreation) in the Delta. The Act also provides for Delta water exports under certain conditions that are spelled out in the California Water Code and other regulatory requirements. Since the law was passed, various water quality and flow objectives have been established by the SWRCB and the Central Valley Regional Water Quality Control Board (RWQCB). These objectives are to ensure that the amount and quality of water in the Delta is sufficient to satisfy the multiple uses. For example, water quality objectives require limiting Delta water supply operations, particularly the SWP and CVP, that affect the balance of fresh water and salt water in the Delta.

8.2.3 PORTER-COLOGNE ACT

In 1967, the Porter-Cologne Act established the SWRCB and nine regional boards as the primary state agencies with regulatory authority over water quality and appropriative surface water rights allocations. The SWRCB administers the Porter-Cologne Act, which provides the authority to establish WQCPs that are reviewed and revised periodically; the Porter-Cologne Act also provides the SWRCB with authority to establish state-wide plans.

The nine RWQCBs carry out SWRCB policies and procedures throughout the state. The SWRCB and the RWQCBs also carry out sections of the federal CWA—administered by EPA—including the National Pollutant Discharge Elimination System (NPDES) permitting process for point source discharges and the CWA Section 303 water quality standards program.

WQCPs, also known as basin plans, designate beneficial uses for specific surface water and groundwater resources, and establish water quality objectives to protect those uses. RWQCBs issue waste discharge requirements for the major point-source waste dischargers, such as municipal wastewater treatment plants and industrial facilities. In acting on water rights applications, the SWRCB may establish terms and conditions in a permit to carry out WQCPs.

The Enclosed Bays and Estuary Plan and the Inland Surface Waters Plan enacted by the SWRCB set numerical and narrative criteria for toxic metals and organic compounds. Litigation in 1994 against the plans resulted in their being revoked, and the SWRCB is not considering readopting them. Instead, in early 2000, EPA promulgated numeric objectives for metals and organic compounds under the CWA through the California Toxics Rule; and the SWRCB is developing an implementation policy to support this rule. Both numerical and narrative water quality objectives are established to protect beneficial uses, including human health and aquatic life. Once approved by EPA, the objectives become enforceable under the CWA and the Porter-Cologne Act.

The Delta is under the jurisdiction of the Central Valley (Region 5) and the San Francisco Bay (Region 2) RWQCBs, which carry out policies and procedures adopted under their respective WQCPs. The most recent basin plan was adopted in 1995. Amendments to the basin plan to control agricultural subsurface drainage and lower San Joaquin River water quality objectives currently are being considered for adoption.

8.2.4 DECISION-1485 AND THE 1978 WATER QUALITY CONTROL PLAN

In 1978, the SWRCB adopted the WQCP for the Sacramento-San Joaquin Delta and Suisun Marsh (1978 Delta Plan). At the same time, the SWRCB adopted Water Right Decision-1485 (D-1485). Predecessors to D-1485 were D-1379 and D-1275. D-1485 required water diverters to comply with the water quality objectives in the 1978 Delta Plan. The objectives in the plan were designed to protect natural resources by maintaining Delta water quality in at least as good condition as its condition would have been in the absence of the CVP and SWP. D-1485 also required monitoring and study of Delta aquatic resources. One effect of D-1485 was the amendment of Reclamation and DWR permits to operate the CVP and SWP. Later that year, the legality of D-1485 and the 1978 Delta Plan was challenged. Two things resulted from that legal challenge: a new Delta plan was developed, and a new draft water rights decision was issued.

In 1986, the State was required to revise its water quality standards based on the "Rancanelli Decision" (United States v. State Water Resources Control Board (1986) 182 Cal. App. 3d 82). The Rancanelli decision directed the SWRCB to balance all beneficial uses of Bay-Delta waters—including fishery and other instream uses—and to modify existing water rights if necessary to achieve that goal. Pursuant to that decision, the SWRCB began a hearing process—known as the Bay-Delta hearings—to review and amend the 1978 Delta Plan. After this hearing process, the SWRCB issued revised water quality objectives in the 1991 Delta WQCP for Salinity, Temperature, and Dissolved Oxygen (1991 Delta Plan).

The SWRCB conducted a water right hearing to take evidence and recommendations about measures to protect fish and wildlife. After the hearing, the SWRCB issued a draft water right decision (D-1630) in 1993 that included interim water rights terms and conditions. Actions taken by NMFS and the USFWS to protect winter-run chinook salmon and Delta smelt resulted in withdrawal of D-1630 after the hearing and before the decision had been adopted. However, several new Delta water management concepts originally presented in D-1630 have been partially adopted in other actions taken by the SWRCB, DWR, Reclamation, fishery protection agencies, and other regulatory agencies.

8.2.5 1995 WATER QUALITY CONTROL PLAN

In March 1994, the SWRCB started developing new water quality objectives. The SWRCB released a draft version on December 15, 1994—the same day that the Bay-Delta Accord was signed. The SWRCB then released an EIR documenting the effects of carrying out the plan. The 1995 WQCP was adopted in May 1995 and incorporated several elements of EPA, NMFS, and USFWS regulatory objectives for salinity and endangered species protection. The 1995 WQCP objectives are expected to be fully implemented with a new water right decision that replaces D-1485. The major changes associated with the 1995 WQCP in relation to the 1978 and 1991 Delta Plans and associated D-1485 requirements are listed below.

- Water-year classifications are based on the 40-30-30 Sacramento Valley Four River Index and the 60-20-20 San Joaquin Valley Four River Index. The outflow requirements from February through June depend on the previous month's Eight River Index runoff volume.
- Delta outflow requirements are the combination of fixed monthly requirements and estuarine habitat requirements (expressed as "X2," the position of the 2 ppt salinity). Because the X2 requirements in

the 1995 WQCP depend on the previous month's Eight River Index runoff, the required outflow must be calculated for each month.

• Combined SWP and CVP Delta exports are limited to a percentage of the Delta river inflow (which does not include rainfall). These percentages range between 35 and 45% from February through June, depending on the Delta inflow, and 65% the rest of the year. Export pumping during the pulse flow is limited to an amount equivalent to the pulse flow during half of April and half of May.

8.2.6 CLEAN WATER ACT—SECTION 303(D)

Section 303 of the CWA requires all states to conduct triennial reviews to evaluate and, where necessary to protect the designated uses for the state's waters, revise water quality standards. In California, the SWRCB is the recognized entity responsible for implementing the triennial review process.

The triennial review process of Section 303 is particularly well suited to the adaptive management approach to ecosystem protection being proposed in the CALFED Program. CALFED intends to work with the SWRCB, RWQCBs, and EPA to assure that the implementation of the Water Quality Program, Ecosystem Restoration Program, and other CALFED Program elements is consistent with and, where appropriate, incorporated into the ongoing regulatory programs based on Section 303.

Section 303(d) of the federal CWA requires that states develop a list of water bodies with impaired water quality. The Section 303(d) list identifies impaired water bodies and sources of contamination, such as mine drainage, agricultural drainage, urban and industrial runoff, and municipal and industrial wastewater discharges. The SWRCB is responsible for developing the Section 303(d) list.

The Program is using the Section 303(d) list as revised in 1998 for assessment of existing environmental water quality problems in the Central Valley and Bay-Delta. This list includes waterbodies that were considered for Water Quality Program actions. The Water Quality Program will continue to use the Section 303(d) list and other information as proposed actions are considered for implementation.

8.2.7 FEDERAL GUIDANCE ON WATER QUALITY FOR TOXIC POLLUTANTS

EPA developed National Guidance on Water Quality Criteria (CWA Section 304[a]) for pollutants to protect human health and aquatic life. Relevant pollutants are identified under Section 307 of the CWA. These criteria were used by the SWRCB to develop the 1991 Inland Surface Water Plan, which was subsequently invalidated by California courts.

8.2.8 Suisun Marsh Preservation Agreement

The Suisun Marsh Preservation and Restoration Act of 1979, and the 1987 Suisun Marsh Preservation Agreement (SMPA) among federal and state agencies, were designed to mitigate the effects of CVP and SWP operations and other upstream diversions on water quality in the marsh. The agreement, which is being amended, includes specific water quality objectives for salinity in Suisun Marsh channels. The CVP

and SWP will submit the amended agreement to the SWRCB for approval in the upcoming Bay-Delta Water Right hearing.

As part of the Suisun Marsh preservation efforts, a salinity control structure (tidal gate) was installed on Montezuma Slough in 1998. D-1485 also directed Reclamation and DWR to develop a protection plan for the marsh. D-1485 set water salinity standards for Suisun Marsh from October through May to preserve the area as a brackish-water tidal marsh and to provide optimum conditions for plant production as food for waterfowl.

The SWRCB's 1995 WQCP includes the SMPA normal and deficiency-period standards for the western Suisun Marsh; and recommends that the SMPA parties should "continue the actions, including facility plans, identified for implementation of the SMPA."

The Suisun Marsh also falls under other water quality criteria, including the California Toxics Rule promulgated by EPA under the CWA in early 2000. The rule establishes ambient water quality criteria for priority toxic pollutants for California inland waters, enclosed bays, and estuaries—including Suisun Marsh.

8.2.9 WATER RIGHTS

There are two basic types of water rights applicable to surface water in California: riparian water rights and appropriative water rights. Riparian water rights are based on ownership of land adjacent to a water body, while appropriative water rights are unrelated to riparian land ownership and are historically based on the principle of "first in time, first in right."

Riparian water rights are not lost if they go unused and are not quantified unless they are adjudicated. Landowners with these rights can divert portions of a water body's natural flow for reasonable and beneficial use on their land, provided the land is within the same watershed as the water body and on the smallest parcel adjacent to the water body. According to the SWRCB, during times of water shortage, all riparian water rights holders must share the available supply according to each landowner's reasonable requirements and uses.

Most of the water rights in California are appropriative water rights. These rights are based on the concept that the first to claim and beneficially use a specific amount of water has a superior claim to those of later appropriators. Appropriative rights are quantified and could be lost if unused. All appropriations existing before 1914 have seniority based on the day when they were initiated. Appropriative rights obtained after 1914 require permits and licenses issued by the SWRCB. The SWRCB issues appropriative rights with conditions to protect other water rights holders, including Delta and upstream riparian water users, and to protect the public interest, including fish and wildlife resources. The quantity and quality of water used by existing riparian and senior appropriative users can be limited only by subsequent appropriations in limited circumstances when the senior rights are not legally injured.

There is no state-wide groundwater regulation in California, unlike other western states. Rather, there is a patchwork system of local groundwater management, ordinances, adjudicated basins, and statutes. For example, California Water Code Section 1220 restricts direct export of groundwater within the combined Sacramento and Delta-Central Sierra basins unless pumping is in compliance with a groundwater management plan adopted by a county board of supervisors. Pursuant to Water Code Section 1215, however, this restriction does not apply to CVP or SWP operations. Water Code

Section 1220 does not define what constitutes a groundwater management plan. For groundwater substitution transfers subject to Water Code Sections 1011.5 and 1745.10, "replacement pumping" is not permitted unless it is consistent with a groundwater management plan for that area or the water supplier determines that no long-term overdraft impact will result.

The SWRCB has no jurisdiction over groundwater transfers but does have authority to prohibit "waste or unreasonable use" of groundwater. Furthermore, the Board asserts that it has the authority to consider impacts on groundwater in its review of water rights change petitions. Any long-term transfer requiring CEQA documentation also would include an analysis of impacts on groundwater.

Several Sacramento Valley counties have passed ordinances regulating the export of groundwater. Similar ordinances have been adopted or considered by some San Joaquin Valley counties. Many counties and water districts also have developed or are developing groundwater management programs.

8.3 DRINKING WATER REQUIREMENTS

Drinking water regulations primarily define requirements for treated water quality and not the regulations or requirements noted above that mainly apply to discharges into receiving waters. The following are the regulatory water quality requirements for drinking water.

8.3.1 SAFE DRINKING WATER ACT

The Safe Drinking Water Act (SDWA) (PL 99-339) became law in 1974 and was reauthorized in 1986 and again in August 1996. Through the SDWA, Congress gave EPA the authority to set standards for contaminants in drinking water supplies. Amendments to the SDWA provide more flexibility, more state responsibility, and more problem prevention approaches. The law changes the standard-setting procedure for drinking water and establishes a State Revolving Loan Fund to help public water systems improve their facilities and to ensure compliance with drinking water regulations and to support state drinking water program activities.

Under the SDWA provisions, the California Department of Health Services (DHS) has the primary enforcement responsibility. The California Health and Safety Code establishes DHS authority and mandates drinking water quality and monitoring standards. To maintain primacy, a state's drinking water regulations cannot be less stringent than the federal standards.

8.3.2 NATIONAL PRIMARY DRINKING WATER STANDARDS

National Primary Drinking Water Standards include maximum contaminant levels (MCLs), which set the maximum permissible levels of contaminants that are legally allowed in the distribution system of a public water system. Standards also include sampling frequency, location, and reporting requirements. The federal and state MCLs are enforceable and must be met by appropriate public drinking water systems. The MCLs generally are derived based on health effects, but some are derived from balancing the technologic and economic concerns that are directly related to domestic water supply use.

Health effects information is developed in the risk assessment process as part of the derivation of the MCLs. Maximum contaminant level goals (MCLGs) are the maximum levels of contaminants in drinking water at which no known anticipated adverse effect on human health would occur and that allow an adequate margin of safety. MCLGs are nonenforceable health goals that are based only on health.

Primary standards also include treatment techniques when it would be economically or technically infeasible to set an MCL. Use of specific treatment technology would most generally be required where any level of a contaminant can cause near-term harm to health, as where filtration and disinfection are required to protect against waterborne illness.

The Phase I Rule was promulgated in 1987 and contains MCLs, MCLGs, and best available technologies (BATs) for eight VOCs. Phase II and IIB rules were promulgated in 1991, and regulated an additional 16 synthetic organic chemicals (SOCs), 10 VOCs, and 7 inorganic chemicals (IOCs). Phase II and IIB rules contain MCLs, MCLGs, and treatment techniques for these chemicals. The Phase V Rule was promulgated in 1992 and regulates 13 SOCs, 5 IOCs, and 3 VOCs. Phase V established MCLGs, MCLs, laboratory criteria, and BATs for these 23 chemicals.

8.3.3 NATIONAL SECONDARY DRINKING WATER REGULATIONS

In 1979 and 1991, EPA established the National Secondary Drinking Water Regulations (NSDWR), or secondary MCLs. These standards apply at the point of delivery to the consumer and generally involve protecting drinking water taste, odor, or appearance. Federal secondary MCLs are nonenforceable; however, state secondary MCLs are enforceable for all new systems and new sources of water developed by existing systems. In California, DHS regulates and enforces secondary drinking water standards.

8.3.4 Trihalomethane Regulations

Trihalomethane (THM) regulations apply to all public water systems that serve more than 10,000 people. Large utilities began monitoring for total trihalomethanes (TTHMs) in November 1980. The regulation established an MCL of 100 μ g/L in a distribution system. This MCL was reduced to 80 μ g/L in November 1998 and will be applied over the next few years to all community water systems. The TTHMs include the summation of chloroform, bromodichloromethane, dibromochloromethane, and bromoform con-centrations. THMs can form when water is treated with a disinfectant. Compliance with the MCL is based on the annual average of at least four representative sampling points for each treatment plant. Twenty-five percent of the samples are taken in the distribution system, representing the maximum residence time of water in the system. At least 75% of the samples are collected from representative sites in the distribution system. These representative sites are determined by the number of people served, sources of water, and treatment methods.

8.3.5 FEDERAL LEAD AND COPPER RULE

EPA promulgated the final Lead and Copper Rule in 1991 (56 FR 26460). Under this rule, the first flush water samples from consumers' taps should be monitored. If more than 10% of these samples contain greater than the AL of 0.015 mg/L for lead or 1.3 mg/L for copper, actions may be required—potentially including optimization of control treatment, source water treatment, and public education. The Lead and Copper Rule eliminated the lead MCL and the secondary copper MCL.

8.3.6 FEDERAL SURFACE WATER TREATMENT RULE

EPA promulgated the Surface Water Treatment Rule (SWTR) in June 1989 to protect against *Giardia lamblia*, *Legionella* (a bacterium), and viruses in the nation's surface water drinking water sources and in groundwater sources influenced by surface water. These contaminants were included on the list of 83 contaminants under EPA regulation, according to the 1986 SDWA amendments.

The SWTR requires all utilities with a surface water supply, or a groundwater supply influenced by surface water, to provide adequate disinfection and, under most conditions, filtration. Avoidance from surface water supply filtration is provided on rare occasions where the source water supply meets extremely rigid water quality requirements and there are strong controls on sources of contamination in the watershed. California law requires each utility to perform a watershed sanitary survey at least every 5 years.

Water systems with clean and protected source waters that meet source water quality and site-specific criteria may not be required to filter. Systems that are not required to filter (that is, meet the federal filtration avoidance criteria) do not have to meet disinfectant contact time continuously. A 1-day "disinfectant holiday" per month is provided as part of the federal filtration avoidance criteria. For utilities required to filter, June 1993 was the deadline to meet filtration requirements and performance criteria for both turbidity and disinfection.

In July 1995, EPA proposed an Enhanced Surface Water Treatment Rule (ESWTR) as an amendment to the SWTR. The amendment provides additional protection against disease-causing organisms such as *Giardia lamblia*, *Cryptosporidium parvum*, and viruses in drinking water. The ESWTR outlines several alternatives for treatment requirements based on source water concentrations for these pathogens.

Disinfectants/Disinfection By-Products Rule. The 1986 amendments to the federal SDWA required EPA to propose a rule for disinfectants and DBPs. The rule must balance the need for protection from cancercausing chemicals (by-products) with the need for protection from pathogenic microbes (bacteria, viruses, and protozoans) that are killed by disinfection. In 1992, EPA began a rule-making process, called the "Reg-Neg" process. Negotiators in the process included state and local health and regulatory agency staff, elected officials, consumer groups, environmental groups, and representatives from public water systems. The Reg-Neg process resulted in a two-stage approach for regulation development.

The Stage I Disinfectant/Disinfection By-Products Rule (D/DBPR), was promulgated in November 1998. Compounds affected under Stage I regulations of the D/DBPR are TTHMs, total haloacetic acids, TOC, bromate, chlorine, chlorine dioxide, and chlorite.

For Stage II, EPA and water utilities are collecting data on parameters that influence DBP formation, occurrence, and treatment in drinking water through the Information Collection Rule, and have undertaken wide research on health effects and treatment of DBPs and microbial contaminants. Based on this information and research, EPA will evaluate the Stage I regulations and make changes as necessary. Draft Stage II regulations are expected in early 2001; final Stage II regulations are required by May 2002.

Federal Total Coliform Rule. The Total Coliform Rule became effective in 1990. The rule establishes microbiological standards and monitoring requirements that apply to all public water systems. Compliance is based on the presence or absence of total coliforms in a sample, rather than an estimate of coliform density.

8.3.7 CALIFORNIA SURFACE WATER TREATMENT REGULATIONS

State surface water treatment regulations derived from amendments to the National Primary Drinking Water Regulations. State regulations, found in Title 22 of the CCRs, became effective in 1991. Like the federal rule, the State required multi-barrier treatment for microbiological contaminants, effective June 1993. Unlike the federal rule, all public water systems in California must filter their surface water and groundwater influenced by surface water. Due to high start-up costs, this aspect of the regulation was amended to allow qualifying systems to avoid filtration, similar to the federal rule.

8.3.8 CALIFORNIA TOTAL COLIFORM REGULATIONS

California's total coliform regulations are in Title 22, Chapter 15 of the CCRs, and are analogous to the federal regulations. DHS sets the enforceable drinking water standard for total coliforms, which is identical to that of the federal rule.

A list of contaminants currently regulated for drinking water by both EPA and DHS is in the affected environment and environmental consequence sections of the March 1998 Water Quality Technical Report. The list identifies the federal regulation and the section of the regulation, as well as the MCL or treatment technology, associated with each contaminant. In California, DHS promulgated regulations for several contaminants at levels below EPA MCLs.

8.3.9 CALIFORNIA NONPOINT SOURCE PROGRAM

Nonpoint source pollution (NPS) in California is addressed in the Porter-Cologne Act and two primary federal statutes, CWA Section 319 and Coastal Zone Act Reauthorization Amendments (CZARA) Section 6217. Enacted by Congress in 1987, CWA Section 319 required California to develop an assessment report detailing the extent of nonpoint pollution and a management program specifying nonpoint source controls, in order to obtain federal funding to carry out nonpoint source controls. In 1990, Congress passed Section 6217(c)(1) of the CZARA. These amendments require the state to "develop and implement management measures for nonpoint source pollution to restore and protect coastal waters...," which serves as an update and expansion of the existing NPS program.

The California Nonpoint Source Management Plan, adopted by the SWRCB in 1988, outlines a systematic approach to managing nonpoint source pollution in the state. Three approaches form the basis for California's program: voluntary implementation of BMPs, regulatory-based encouragement of BMPs, and effluent limitations.

In February 1994, the State initiated a comprehensive process to consider the CZARA requirements and update the existing state-wide Nonpoint Source Program, rather than create a separate program to deal exclusively with coastal waters. The State's updated program, described by the Coastal Nonpoint Pollution Control Submittal (September 1995) and Initiatives in Nonpoint Source Management (September 21, 1995), calls for managing nonpoint sources on a watershed basis and focuses on nonpoint source problems associated with pesticides, grazing, urban runoff, hydromodification, and abandoned mines.

8.4 FEDERAL AND STATE COORDINATION FOR A DELTA SOLUTION

8.4.1 BAY-DELTA FRAMEWORK AGREEMENT AND BAY-DELTA ACCORD/RESTORATION COORDINATION

A Bay-Delta Framework Agreement was signed in June 1994 by the Federal Ecosystem Directorate and the Governor's Water Policy Council of the State of California. The framework established a comprehensive program in the Bay-Delta estuary for coordinated and cooperative environmental protection and water supply. The Principles for Agreement, also known as the Bay-Delta Accord, was signed on December 15, 1994 and has been extended until the adoption of the ROD—but in no event later than September 15, 2000.

The Bay-Delta Accord also included a commitment by the agency and stakeholder signatories to develop and fund non-flow-related ecosystem restoration actions to improve the health of the Bay-Delta ecosystem. This commitment is commonly referred to as "Category III." Some of the specific non-flow factors that were identified as part of the Category III commitment include unscreened water diversions, waste discharges, water pollution prevention, fishery impacts due to harvest and poaching, land-derived salts, exotic species, fish barriers, channel alterations, riparian wetlands loss, and other causes of estuarine habitat degradation.

Category III actions are expected to result in long-term benefits regardless of the final Preferred Program Alternative configuration. The Category III actions were required to be consistent with any alternative configuration and provide early implementation benefits. This implementation also will provide valuable information for adaptively managing the system later in the program. Category III projects were required to have appropriate environmental documentation, result in no significant adverse cumulative impacts, and not limit the choice of a reasonable range of alternatives.

A Category III Steering Committee was formed to administer the first rounds of Category III funding. In 1996, the administration function for Category III funds was shifted to CALFED's Restoration Coordination Program, which receives input from the Ecosystem Roundtable; the BDAC; and the general public. The Ecosystem Roundtable is a subcommittee of the BDAC specifically created to provide input from a broad cross section of stakeholder interests to the Restoration Coordination Program.

To date, CALFED's Ecosystem Restoration Program has received more than 800 proposals and has funded 272 projects, at an approximate cost of \$284 million. The Program has funded fish screens, fish ladders, land acquisition, and habitat restoration; and has focused research and monitoring designed to provide information that will improve future restoration efforts. Funding of CALFED ecosystem restoration projects is a cooperative effort between state and federal agencies, stakeholders, and the public. CALFED has received ecosystem restoration funds from four primary sources, including approximately \$32 million from the California Urban Water Agencies, \$60 million from Proposition 204 state bond funds, \$160 million from the Federal Bay-Delta Act, and \$2 million from EPA watershed funding. Ecosystem restoration funds are administered through the cooperative efforts of the CALFED agencies. For additional information about projects funded to date, visit the CALFED web site at http://calfed.ca.gov under the Ecosystem Restoration topic.

Ecosystem restoration projects may be selected as directed programs or through a public solicitation process. A directed program results when CALFED directs funds to a specific project activity identified because of its ability to help the Program achieve its long-term ecosystem restoration goals. All ecosystem restoration projects are evaluated for their technical merit and undergo a multiple-step approval process that involves agencies, stakeholders, and the public. The CALFED Policy Group makes the final funding recommendations to the California Secretary for Resources and the U.S. Secretary of the Interior.

In 1999, the Restoration Coordination Program began the transition from early ecosystem restoration to implementing the long-term Ecosystem Restoration Program. After the ROD is signed, the agencies will begin full implementation of the long-term Ecosystem Restoration Program.

As the long-term Program developed, the priorities and project selection processes were revised to ensure that expenditures were consistent with the overall direction of the Program and efficiently targeted ecosystem restoration through adaptive management.

8.4.2 CENTRAL VALLEY PROJECT IMPROVEMENT ACT

The USFWS and Reclamation jointly are responsible for carrying out the CVPIA. The Act includes provisions intended to restore anadromous fish populations, improve and facilitate water transfers, implement water conservation actions, provide water for wildlife refuges in the Central Valley, and improve flows on the Trinity River for anadromous fish.

Many of the CVPIA provisions parallel elements of the Program. The Ecosystem Restoration Program also has the responsibility of improving coordination among fish and wildlife restoration programs in the Central Valley. In 1999, functional integration began between the Ecosystem Restoration Program and the CVPIA. In particular, the CVPIA's Anadromous Fish Restoration Program (AFRP), Anadromous Fish Screen Program, and Water Acquisition Program, among others, overlap closely with the Ecosystem Restoration Program.

8.4.3 CALIFORNIA-FEDERAL OPERATIONS GROUP

The 1994 Bay-Delta Framework Agreement also established the California-Federal Operations Group (CALFED Ops Group) to coordinate SWP and CVP operations. The group recommends changes in combined Delta operations that could provide additional fish protection and allow Delta exports with

reduced fishery impacts. The CALFED Ops Group specifically was charged with recommending operational changes to minimize incidental take and satisfy other ESA biological opinion requirements based on real-time fish monitoring results.

Other responsibilities of the CALFED Ops Group include carrying out fish protection measures through information exchange and strategy discussions, satisfying 1995 WQCP water quality objectives, and cooperating with the Interagency Ecological Program (IEP) to (1) determine factors that affect Delta habitat and the health of fisheries, and (2) identify appropriate corrective measures for the CVP and SWP. The IEP is a consortium of agencies who work together to develop a better understanding of the estuary's ecology and the effects of water project operations on the physical, chemical, and biological conditions of the San Francisco Bay-Delta estuary. The IEP provides information about the factors that affect ecological resources in the Sacramento-San Joaquin Estuary that allows for more efficient management of the estuary. The 10 member agencies of the IEP are the state agencies of DWR, DFG, and the SWRCB; the federal agencies of the USFWS, Reclamation, USGS, Corps, NMFS, and EPA; and the nongovernmental organization, The San Francisco Estuarine Institute.

8.5 PUBLIC TRUST

When planning and allocating water resources, the State of California must consider the public trust and preserve for the public interest the uses protected by the trust. In common law, the Public Trust Doctrine protects navigation, commerce, and fisheries uses in navigable waterways. However, the courts have expanded the doctrine's application to include protecting tideland, wildlife, recreation, and other public trust resources in their natural state for recreational, ecological, and habitat purposes as they affect birds and marine life in navigable waters. In the *National Audubon Society v. Superior Court* (1983) 33 Cal 3d 419, the California Supreme Court ruled that in administering water rights laws and approving water diversions, the State also has a duty of continuous supervision over the taking and use of appropriated water to protect these public trust uses. The 1986 Rancanelli decision applied the Public Trust Doctrine to decisions by the SWRCB and held that this doctrine must be applied by the SWRCB in balancing all the competing interests in the uses of Bay-Delta waters (*United States v. SWRCB* (1986) 182 Cal. App. 3d 82).

8.6 WATER USE EFFICIENCY

Two California water use efficiency laws require water suppliers to plan for water conservation activities. The first is the Urban Water Management Planning Act (California Water Code Section 10610 et seq.). This act requires every public or private urban water supplier who meets certain operational criteria to prepare, adopt, and submit to DWR an urban water management plan, and to update the plan at least once every 5 years. These operational criteria include providing water directly or indirectly for municipal use to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually.

An urban water management plan must include the following:

- Estimates of past, current, and future water use.
- Identification of current conservation and recycling measures.
- Analysis of potential alternative conservation measures.

The plan must include water shortage contingency provisions, as well as provisions for using recycled water optimally in the water supplier's service area.

The second law is the Agricultural Water Conservation and Management Act (California Water Code Section 10520 et seq.), which provides that agricultural water suppliers may institute water conservation or water management programs.

Under California Water Code Section 10904, DWR assists agricultural water suppliers in implementing efficient water management practices to improve agricultural water use efficiency.

8.7 AREA OF ORIGIN

When the CVP and the SWP were being planned and developed, area-of-origin provisions were added to the California Water Code to protect local northern California supplies from being depleted as a result of the projects. County-of-origin statutes reserve water supplies for counties in which the water originates, if the SWRCB determines that an application for assignment or release from priority of state water rights filings will deprive the county of water necessary for its current and future development. Provisions of watershed protection statutes require that elements of the CVP and SWP not deprive the watershed or the area where water originates (or immediately adjacent areas that can be conveniently supplied with water) of the prior right to water that could be reasonably required to supply the present or future beneficial needs of the watershed area, any of its inhabitants, or property owners.

Through the provisions of the Delta Protection Act of 1959 (see Section 8.2.2), the Delta area is subject to the county-of-origin and watershed protection laws. The Act also requires the CVP and SWP to provide salinity control in the Delta and an adequate water supply for water users in the Delta. (The Delta Protection Act of 1992 relates to land use and therefore is not included in this discussion about area-of-origin protections.)

Additional area-of-origin protections were enacted in 1984 that cover the Sacramento, Mokelumne, Calaveras, and San Joaquin Rivers; the combined Truckee, Carson, and Walker Rivers; and Mono Lake. These protections prohibit exporting groundwater from the combined Sacramento River and Delta basins, unless the export complies with local groundwater plans.

Chapter 9. NEPA/CEQA Monitoring

The CALFED Bay-Delta Program will establish a process to ensure that issues and information developed in the Programmatic EIS/EIR are adequately addressed and considered in future tiered environmental documents. This chapter presents the monitoring process and contains a mitigation monitoring and reporting plan as required by CEQA.

9.1	INTRODUCTION	9-1
9.2	NEPA/CEQA MONITORING PROCESS	9-2
9.3	CEQA MONITORING AND REPORTING	9-2



9. NEPA/CEQA Monitoring

9.1 INTRODUCTION

Projects and activities that implement the CALFED Preferred Program Alternative will be monitored to ensure that issues and information developed in this Programmatic EIS/EIR process are adequately addressed and considered. CALFED will accomplish this by having the agencies agree that for any projects within the scope of this Programmatic EIS/EIR, subject to additional CEQA or NEPA review, and for which that agency has responsibility for approving some portion of the second-tier project, the agency will commit to review all applicable mitigation strategies and consider each one that is applicable at the project level. This commitment will be included as part of the ROD/CERT that will conclude this Programmatic EIS/EIR process. Any project funded with legislation providing that the funds be used for projects consistent with or in accord with the CALFED Program would need to demonstrate its compliance with this mitigation monitoring program. If and when a continuing CALFED governing agency with authority to carry out CALFED Program projects is created by legislation, this policy will be applied to that new agency as well.

Projects and activities implementing the Preferred Program Alternative will undergo future environmental analysis as required by NEPA and CEQA that will tier from this Programmatic EIS/EIR. This section describes the process that will be used to monitor the tiered environmental documents so that they adequately provide the more specific information necessary to evaluate the environmental consequences of the second-tier project, address issues identified in this Programmatic EIS/EIR, and conform to the CALFED Program. As a programmatic monitoring plan, the monitoring process carries out Section 21081.6 of CEQA that requires public agencies to adopt a reporting or monitoring program whenever a project or program is approved that includes mitigation measures identified in an environmental document.

The CALFED agencies elected to prepare a Programmatic EIS/EIR very early in development of the Program to fully disclose the general environmental consequences of a complex, long-term program. The Programmatic EIS/EIR presents information at a broad planning level of detail, including descriptions covering regional and solution area impacts. The precise impacts cannot readily be identified at this early planning stage; consequently, descriptions of anticipated environmental, economic, and social effects are presented to disclose the maximum range of effects.

Mitigation strategies that can be applied in future tiered projects are proposed to address significant adverse environmental consequences. Discussion of cumulative and growth inducing impacts is general, corresponding to the level of analysis of the Programmatic EIS/EIR. To make adequate determinations of project-specific environmental consequences, additional information is required; future NEPA/CEQA documents will be prepared to handle the site-specific analysis.

It is CALFED's intent that the information, issues, and mitigation strategies developed during the Programmatic EIS/EIR process be used, considered, evaluated, and disclosed in subsequent NEPA/CEQA documents that are prepared to implement the Preferred Program Alternative. Cumulative and growth-inducing impacts will be presented in these documents as appropriate within the context of the overall CALFED Preferred Program Alternative and site-specific environmental document. Mitigation strategies developed in the Programmatic EIS/EIR must be considered and specific mitigation measures proposed for significant adverse impacts identified in the tiered environmental documents.

9.2 NEPA/CEQA MONITORING PROCESS

The NEPA/CEQA monitoring process will include review, guidance, and reporting components. These activities will be conducted within CALFED or its governance successor. One possible monitoring program under development is the Comprehensive Monitoring, Assessment, and Research Program (CMARP). If the CMARP process is not selected as the institutional framework, another framework or CALFED governance successor will need to provide for long-term NEPA/CEQA monitoring. Regardless of the governing institution, the NEPA/CEQA monitoring process will be used for any Preferred Program Alternative implementing activities or projects that tier from this document and trigger NEPA or CEQA review.

CALFED will provide guidance to lead agencies preparing NEPA/CEQA environmental documents that tier from this programmatic document. Guidance will include information listing the environmental consequences and mitigation strategies presented in the Programmatic EIS/EIR, issues from comments received, and additional relevant information developed since completion of the Programmatic EIS/EIR. The need for cumulative and growth-inducing impact evaluation in the context of the overall CALFED Program will be explained. CALFED will prepare a checklist to assist in ensuring that the tiered document considers the relevant information. Additional information will be made available to the agency preparing the tiered document as necessary.

A reporting system will be developed to advise the CALFED governing body or future management institution of the status of NEPA/CEQA monitoring. Written reports summarizing the NEPA/CEQA status of implementation projects will be provided to the governing body on a periodic basis. A tracking system for implementation projects in the NEPA/CEQA stage of development will be necessary to manage and track project status.

9.3 CEQA MONITORING AND REPORTING

Section 21081.6 of CEQA requires that public agencies adopt a reporting or monitoring program whenever a project or program is approved that includes mitigation measures identified in an environmental document. The NEPA/CEQA monitoring process will meet this CEQA requirement.

The analyses presented in this Programmatic EIS/EIR provide information to decision makers and the general public on the range of possible environmental consequences associated with each Program alternative. Mitigation strategies are proposed where potentially significant adverse environmental impacts have been identified. The mitigation strategies provide an array of actions that could be used to mitigate significant adverse environmental impacts. The mitigation strategies are to be used to guide proposed

mitigation measures in subsequent project-specific environmental documents. Because all the potential actions and impacts for tiered projects cannot be anticipated at a programmatic level, each project needs to select those strategies and actions applicable to the specific location and type of action. For example, it may be possible to apply the agricultural resources mitigation strategy of using public land for Program activities in some geographic locations where suitable public land exists, but not in other locations where little or no public land is available. The lead agency for the tiered environmental document also may develop and consider additional site-specific mitigation measures.

At the project-specific level of environmental review, the lead agency will review the site characteristics, size, nature, and timing of proposed actions to determine whether the impacts of the specific projects are potentially significant or can be mitigated to a less-than-significant level. However, since it is not possible to precisely assess the site-specific impacts or potential for mitigation of project-level impacts at this time, this document treats these impacts at a programmatic level as potentially significant. Where it is anticipated that feasible mitigation measures may not be available to reduce these impacts to a less-than-significant level, based on currently available information, this document treats these impacts at the programmatic level as potentially significant and unavoidable. Future review in tiered environmental documents will be needed to determine the impacts of specific actions and appropriate mitigation for project-specific actions. A separate CEQA monitoring and reporting plan also is required for site-specific projects for which an EIR is prepared.

The CEQA monitoring and reporting, therefore, is to ensure that the mitigation strategies discussed in the Programmatic EIS/EIR are considered and adequately addressed when specific projects are developed. The specifications for implementation project monitoring and reporting could be developed during preparation of environmental documents for specific projects, during review of draft environmental documents, or both.

According to the 1996 Tracking CEQA Mitigation Measures under AB 3180 from the Governor's Office of Planning and Research, a program for monitoring and reporting on mitigation measures should contain certain components. These components are presented below, modified to meet the Program's need to monitor and report on whether the mitigation strategies in the Programmatic EIS/EIR have been considered in project-specific analysis.

- Assemble a list of mitigation strategies adopted in the Final Programmatic EIS/EIR. This list could be a checklist or table.
- Establish a process and schedule for checking that mitigation strategies are being considered while
 environmental documents are being prepared for specific projects. This schedule needs to be flexible,
 given the phased and undetermined timing of future projects.
- Describe a means of recording compliance at the time of each check. This could include completing a checklist or otherwise documenting that a review or other activity had been conducted, indicating that the mitigation strategies have been considered.
- Assign to specific people or agencies the responsibility for monitoring how the mitigation strategies and related conditions of approval have been considered.
- Ensure that the monitoring reflects the independent judgment of the public agency responsible for the program, if the monitoring is to be contracted to private individuals or firms.

- Provide funding for the monitoring program.
- Provide a mechanism for responding to a failure to adequately consider any mitigation strategy.
- Provide a mechanism for implementing remedial measures, should monitoring indicate that the mitigation is not performing as anticipated.

Many institutions, both within and outside the Program partnership, are involved in monitoring and applied research that can contribute to the design and assessment of environmental rehabilitation programs. The Program will need to prepare for Congress, the California Legislature, government agencies, stakeholders, and the general public a status report that describes the Program's effectiveness in achieving the stated program goals.

Chapter 10. Public and Agency Involvement

Since its beginning, the CALFED Bay-Delta Program has made substantial efforts to involve the public in its information-gathering and decision-making process in order to ensure that Program goals and objectives are understood and supported. Public and agency involvement includes public workshops, multi-cultural outreach, community presentations, scientific review panels, and special teams made up of agency experts.

10.1	PUBLIC INVOLVEMENT	10-1
10.2	AGENCY INVOLVEMENT	10-13
10.3	FUTURE CALFED ACTIONS	10-15



10. Public and Agency Involvement

10.1 PUBLIC INVOLVEMENT

Public and agency involvement through outreach and education has been a focus of the CALFED Bay-Delta Program (Program) since its initial stages. These efforts have helped shape the Program, as well as develop the Programmatic EIS/EIR. For nearly 3 years, the Program has relied on continuous comments and involvement from individuals and groups who have a stake in finding long-term solutions for the problems affecting the Bay-Delta system.

Participants representing rural, agricultural, municipal, and industrial water users; fishing interests; environmental organizations; businesses; and the general public have helped to define problems and evaluate alternatives to solve the challenges confronting the Bay-Delta system.

To date, thousands of Californians have contributed to the Program by participating in public meetings and workshops—volunteering time, sharing expertise, and expressing ideas and opinions.

During Phase I, which ended in September 1996, the Program held scoping meetings, technical workshops, public information meetings, and public Bay-Delta Advisory Council (BDAC) work group meetings. This commitment to active public involvement has continued through Phase II, with additional public meetings, presentations before focused groups, media outreach, special newsletter mailings, regularly updated information on the Program's website, and a toll-free public information telephone line.

10.1.1 Public Workshops

Beginning in August 1995, 12 day-long workshops were conducted in Sacramento over a 3-year period—four workshops in 1995, five in 1996, and three in 1997. Open to the general public, the intensive working sessions focused on providing a solid framework for the solution-finding process. Using brainstorming techniques, informal debate, and analysis, an average of 100 participants at each workshop worked together to help identify the problems facing the Bay-Delta system, establish objectives for problem solving, and develop the actions necessary to achieve the objectives.

These workshops were a vital part of the public outreach program and provided an opportunity for the many different interests in the Bay-Delta system to share perspectives, reach common understandings, and develop cooperative solution alternatives.

10.1.2 PUBLIC MEETINGS

In addition to the public workshops, 28 open-house public meetings were conducted to provide the general public who did not attend public workshops or other meetings the opportunity to learn about the Program and to express their views and concerns. Each public meeting featured an informal, open-house session with displays and informational materials, followed by a prepared general presentation about the Program.

During Phase I, 14 public meetings were held in 13 communities throughout California to identify problems in the Bay-Delta system, including Redding, Red Bluff, Sacramento, Walnut Grove, Stockton, Oakland (2), Los Banos, Fresno, Bakersfield, Pasadena, Long Beach, Costa Mesa, and San Diego. Between September 1995 and May 1996, another six public meetings were held to acquaint Californians with the Program, solicit early public comment on Bay-Delta possible solutions, and gauge local public reaction to the 10 draft alternatives. During Phase II, eight more public meetings were held in communities from Chico to San Diego in 1997, to inform stakeholders and the public about the Program's progress and the process to identify a preferred alternative, as well as to solicit input on the alternatives. Two additional public meetings were held following the end of the March 1998 Draft Programmatic EIS/EIR comment period: on Roberts Island on July 27, 1998, and in Stockton on September 9, 1998—both Delta communities. These additional meetings were in conjunction with a BDAC meeting.

Notices for the public meetings were sent to addresses on the Program public outreach database, and meeting packets were sent to all key agency staff and other target audiences. To encourage participation at the events, the Program conducted heavy advance publicity before each meeting. Attendance ranged from 23 to 200 at each meeting. Total attendance for all the meetings was more than 2,000.

10.1.3 PROGRAMMATIC EIS/EIR SCOPING AND COMMENT MEETINGS

As part of the programmatic EIS/EIR process, eight scoping meetings were held around the state to solicit input into the scope of the environmental review process. All scoping meetings were held in April 1996—in Oakland, Walnut Grove, Red Bluff, Long Beach, San Diego, Pasadena, Bakersfield, and Sacramento.

Seventeen public hearings were held across the state to gain input into the March 1998 Draft Programmatic EIS/EIR. More than 400 people spoke at these hearings, which were held in Ontario, Fresno, Oakland, Burbank, Bakersfield, Santa Cruz, Irvine, Walnut Grove, Chico, San Diego, Pittsburg, Redding, San Jose, Vacaville, Yuba City, Stockton, and Santa Rosa. A similar public hearing effort was scheduled for public comments about the June 1999 Draft Programmatic EIS/EIR. Sixteen public hearings were held across the state, at which more than 800 people spoke. The meetings were held in Stockton, San Bernardino, Huntington Park, Salinas, Oakland, Pasadena, San Diego, Costa Mesa, San Jose, Antioch, Santa Rosa, Los Banos, Visalia, Chico, Redding, and Sacramento.

10.1.4 PHASE II REPORT WORKSHOPS

The Phase II Report, outlining the selection process for the Preferred Program Alternative, was released in December 1998. In January 1999, the Program held five public workshops about the report. Workshops averaged about 40 participants each, and were held as far north as Red Bluff and as far south as San Diego. Other public workshop cities included Lodi, San Jose, and Visalia.

10.1.5 MULTI-CULTURAL PUBLIC OUTREACH

Because of California's diverse population, public outreach efforts are designed to reach minority communities. These efforts recognize that in each cultural and ethnic community, the messages about the Program, the methods for dissemination, and the approaches to soliciting involvement and input differ significantly.

Notices about the March 1998 Draft Programmatic EIS/EIR release and the public meetings were placed in several ethnic media outlets, such as Asianweek, Los Angeles Sentinel, Oakland Post, La Opinion, El Sol, and La Voz De La Frantera. These efforts were duplicated with the release of the December 1998 Phase II Report and the June 1999 Draft Programmatic EIS/EIR.

Throughout the development of the Program, program staff met with a number of stakeholders, representing minority and multicultural business, government, agriculture, social services, and industry, to discuss their interests relating to the Program. The Program overview fact sheet was translated into Spanish, Chinese, Japanese, Korean, and Vietnamese. Notices regarding the availability of these translated documents and public meeting notices were sent to statewide media outlets that target multi-cultural communities. The fact sheets also are available on the Program's website.

10.1.6 Speakers Bureau/Community Presentations

Since the beginning of the Program, CALFED representatives have spoken at more than 100 formal conferences and meetings sponsored by various stakeholder groups and agencies. In addition, the Program hosted several informal meetings with individuals and small stakeholder groups. As part of an organized CALFED Speakers Bureau program, the presentations allowed discussions about the Program and made written materials and audiovisual elements available where appropriate to increase outreach effectiveness.

A partial list of the organizations and conferences to which the Program has provided formal presentations includes:

- Agro-Business Annual Conference
- American Society of Civil Engineers
- American Water Works Association, Cal-Nevada Section
- Association of California Water Agencies
- Bay Conservation and Development Commission
- California Association of Nurserymen
- California Chamber of Commerce
- California Groundwater Association



- California Science Teachers Association
- California Water Clearinghouse
- California Water Law Conference
- Commonwealth Club of California
- Continuing Legal Education Conference
- County Supervisors Association of California
- Delta Protection Commission Ecological Indicators Workshop
- Environmental Water Caucus
- Interstate Council on Water Policy
- League of California Cities
- Los Angeles Chamber of Commerce
- Metropolitan Water District of Southern California
- Mid-Pacific Region Water Users Conference
- Mojave Water Agency
- Orange County Water Committee
- Regional Council of Rural Counties
- Restoration Roundtable
- Sacramento River Preservation Trust
- Sacramento Valley Westside Canal Association
- Save San Francisco Bay Association
- San Francisco Estuary Project Implementation Committee
- Shasta Alliance
- State Water Contractors
- Southern California Area Governments
- Southern California Water Committee
- Three Valleys Municipal Water Agency Symposium
- U.S. Bureau of Reclamation Innovations Conference
- Water Education Foundation
- Water Forum
- Water Reuse Association of California
- Water Policy
- Western Water Policy Review Advisory Commission

10.1.7 EDUCATIONAL MATERIALS/DIRECT MAIL

To help educate the public on the multiple issues and objectives associated with the Program, an extensive library of educational resources was developed. Materials such as Program newsletters, progress updates, fact sheets, brochures, a conference exhibit, and slide shows and videos, are routinely distributed to the public and made available at workshops and presentations.

The Program was a co-sponsor of a public television documentary, "Setting a Course for the California Bay-Delta." This documentary aired on various public television stations in California, including Sacramento, the Bay Area, Riverside, and San Bernardino. The 60-minute program provided a history of the Bay-Delta, a discussion of the Program effort to solve the problems in the system, and an explanation of why this issue is important to Californians. The documentary was developed and produced by the Water Education Foundation, a nonprofit educational organization. Other co-sponsors and participants in the documentary included stakeholder groups and CALFED agencies.



From the Program's inception, a database was compiled of interested public and group participants identified through various public outreach events and meetings. To date, the Program's mailing list exceeds 6,000 names of people throughout the state interested in Bay-Delta activities. About every 6 weeks, some form of written material is sent to this list, describing Program aspects or soliciting public involvement. Since 1995, thousands of copies of written materials about the Program have been distributed to interested groups and individuals throughout the state.

In January 1999, the Program debuted a 10-minute video about the Phase II Report. A limited number of copics are available for public presentations.

The Program also routinely submits articles to stakeholder organizations, such as the Southern California Water Committee, for publication in their regular newsletters.

10.1.8 MEDIA CONTACTS

Information about the Program has been publicized to hundreds of media outlets throughout California. Regular mailings of news releases, meeting and milestone announcements, and Program updates were sent to water and environmental reporters covering Bay-Delta and related issues. While most of the releases are for English readers, the Program also has issued releases to Armenian, Chinese, Japanese, Korean, Spanish, and Vietnamese newspapers, as well as to publications that serve primarily African-American and Native American readers.

The Program's managers and staff have conducted hundreds of interviews with reporters from both print and electronic media from around the state. Program managers, CALFED agencies, and stakeholder representatives also briefed the editorial boards of several major daily newspapers: Bakersfield Californian, Chico Enterprise Record, Contra Costa Times, Fresno Bee, Los Angeles Times, Redding Record Searchlight, Sacramento Bee, San Francisco Chronicle, and the San Jose Mercury News.

Several formal media events were coordinated to recognize Program milestones. The first event, held on December 15, 1995, recognized the first anniversary of the Bay-Delta Accord and featured presentations from the Program's state and federal member agencies. Phase I completion and the release of the three proposed alternatives were the focus of a September 3, 1996 event. A similar event was conducted for the release of the March 1998 Draft Programmatic EIS/EIR. At both events, BDAC members and several stakeholders joined state and federal agency representatives to brief reporters. On December 18, 1998, the Phase II Report was officially released after a press conference that featured speeches by then-Governor Pete Wilson and Secretary for the Interior Bruce Babbitt. The Phase II Report identifies the framework of the Preferred Program Alternative. A Framework for Action, released on June 9, 2000, outlines future steps for the Program.

10.1.9 LEGISLATIVE BRIEFINGS

The Program has maintained regular liaison with members of the U.S. Congress, California State Legislature, and appropriate subcommittees and local governments throughout the state. Staff visited Washington, D.C., in November 1995, June 1996, and October 1997 to brief key legislators as well as the Program's agency personnel. Staff also testified before several legislative committees, including the Congressional Subcommittee on Water and Power Resources, the California Senate Agriculture and



Water Committee, and the California Senate Appropriations Committee. Additionally, staff offered extensive input into the process of drafting SB 900. This bill later was passed by California voters as Proposition 204, the "Safe, Clean, Reliable Water Supply Act," which provides, among other things, funding and support for the Program's activities and goals.

10.1.10 PROJECT PUBLIC INFORMATION LINE/PROJECT WEBSITE

The Program established an information hotline, (916) 654-9924, and a toll-free number, (800) 700-5752, to encourage public input and involvement. The information hotline is updated regularly, and a response system ensures expedient followup to questions from interested members of the public and groups. In addition, the Program developed a web site at http://calfed.ca.gov that contains Program information, technical documents, and public information materials. The website is a source for public information officers of stakeholder organizations, who can download current information and distribute these materials to their audiences.

10.1.11 NEPA/CEQA NOTICES

A Notice of Intent/Notice of Preparation (NOI/NOP) for the original programmatic EIS/EIR was issued in March 1996, and a supplemental NOI reflecting the expanded scope of the EIS/EIR, including the MSCS, was issued in August 1997. The Notice of Availability for the March 1998 Draft Programmatic EIS/EIR was posted on March 16, 1998. The Notice of Availability for the June 1999 Draft Programmatic EIS/EIR was posted on June 25, 1999.

10.1.12 MULTI-SPECIES CONSERVATION STRATEGY PLAN SCOPING MEETINGS

Additional scoping meetings were held regarding preparation of the MSCS. The MSCS is designed to promote long-term habitat protection as well as recovery of threatened and endangered species in the study area.

Five scoping meetings were held in 1997—in Redding, Sacramento, Los Banos, Irvine, and Berkeley—to solicit input from the public and stakeholders concerning the elements and scope of the MSCS.

No public meetings were held specifically for the MSCS since 1997. Public outreach was achieved primarily through either the Ecosystem Restoration Work Group or the Assurances Work Group and BDAC meetings.

10.1.13 Public Comment Letters

Program efforts to solicit public involvement and input resulted in more than 1,500 letters from private citizens, businesses, and public agencies as well as several thousand form letters and postcards. In addition



to the more than 400 spoken comments at the 17 public hearings, the Program estimated that more than 10,000 individual comments were received on the March 1998 Draft Programmatic EIS/EIR. These comments were important to development of the Preferred Program Alternative and modifications to Program elements. More than 1,400 comment letters were received regarding the June 1999 Draft Programmatic EIS/EIR, in addition to several hundred form letters and postcards. The Program estimates that approximately 10,000 comments were received on the June 1999 Draft Programmatic EIS/EIR. These comments were reviewed and many were used to correct or modify this Final Programmatic EIS/EIR. Please see the Response to Comments publications for documentation of these comments.

10.1.14 SCIENTIFIC REVIEW PANEL

A scientific review panel was created, hosting eight nationally recognized scientists with broad expertise in landscape ecology, fisheries and aquatic biology, physical processes, and terrestrial and wetlands ecology. The panel was formed to assess and evaluate the scientific validity and rationale of the scientific concepts contained in the Ecosystem Restoration Program.

A 4-day workshop, held from October 6 through 9, 1997, allowed a facilitated panel discussion with the Scientific Review Panel, which resulted in written recommendations to the Program for refining the Ecosystem Restoration Program. Members of the public were invited to attend, and to provide verbal and written comments on the process. After their workshop, the Scientific Review Panel submitted recommendations to the Program about the Ecosystem Restoration Program. A summary of these recommendations can be found on the Program's web site at http://www.calfed/events/scientific_review.html.

10.1.15 BROMIDE PANEL

Since analyses indicated that the Preferred Program Alternative could profoundly affect bromide concentration (a potential carcenogenic) in drinking water supplies from the Delta, the Program assembled a panel of independent, nationally recognized scientific experts to deliberate and provide relevant recommendations. Panelists were collaboratively chosen by members of the Water Quality Technical Group. The panelists areas of expertise included chemistry of DBP formation, source control, health effects of DPBs, water treatment, and drinking water regulation development. The panel met on September 8 and 9, 1998, and published its report in November 1998. The complete report of the Bromide Panel is contained in the Water Quality Control Program Plan to the Programmatic EIS/EIR.

10.1.16 DIVERSION EFFECTS ON FISHERIES TEAM

The Diversion Effects on Fisheries Team (DEFT) was formed in February 1998 to evaluate the technical issues related to diversion impacts on fisheries. DEFT members include stakeholders and representatives from member agencies. Since it was formed, DEFT has met regularly to evaluate the likelihood of fisheries recovery under the three alternatives presented in March 1998, and to develop modified alternatives that would recover fish species. DEFT developed a list of seven entrainment losses or other effects that needed to be reduced, as well as eight programmatic actions to maximize the chances of a through-Delta conveyance meeting the Program purpose. These lists are summarized in the December 1998 Phase II



Report. The agencies continue to meet regularly to discuss and analyze the potential effects on fisheries from water project operations.

10.1.17 BAY-DELTA ADVISORY COUNCIL

The BDAC was established in May 1995 under the Federal Advisory Committee Act. Formed to assist Program leaders, the council consists of 31 stakeholder representatives appointed by then-Governor Wilson and President Clinton, through Secretary of the Interior Babbitt. BDAC members came from diverse backgrounds and represent water districts and utilities, environmental organizations, the California Farm Bureau, Indian tribes, environmental justice interests, business, local government, energy, and sport fishing organizations from throughout the state. The group of citizen advisors initially were commissioned to help define problems in the Bay-Delta system, assure broad public participation, comment on environmental reports, and advise on proposed solutions.

In October 1998, consultants conducted interviews of most BDAC members and some Program staff to evaluate the effectiveness of the council and its work groups. In all, 44 people were interviewed to assess the role and effectiveness of the council and its work groups in advising the Program on key policies and Program components. The results of the evaluation were presented to the BDAC at its January 1999 meeting. Among the highlights of the consultant's report:

- The BDAC should focus on three critical issues during 1999: (1) reaching agreement on the staged approach to the Preferred Program Alternative, (2) resolving the complex issues of Program governance, and (3) financing the Program.
- The BDAC should continue a regular schedule of meetings through 1999, about half of which should
 be held outside Sacramento. BDAC deliberations should focus on a narrowed set of Program policy
 topics. To obtain the greatest benefit from these sessions, stakeholder and BDAC panels as well as
 facilitated break-out groups should be used.
- Certain BDAC work groups should be retired and others restructured to develop alternate, taskfocused public venues for input on specific Program components. Some of these public meetings should be convened in conjunction with BDAC meetings.
- CALFED Policy Group members routinely should be included at BDAC meetings to strengthen communication and interchange between the groups.
- The BDAC's role should be clarified vis a vis a public input process, such as the Ecosystem Roundtable. Participation guidelines for BDAC members in 1999 should be adopted to supplement those adopted in November 1996.

The BDAC met regularly through 1999 and early 2000. Chair Mike Madigan and Vice-Chair Sunne McPeak submitted a recommendation on the CALFED Solution to Deputy Secretary of the Interior David Hayes and Secretary for Resources Mary Nichols in a letter dated May 24, 2000. The recommendation suggests that CALFED commit to making the analyses that are needed to: (1) develop and better refine the CALFED Solution early in the implementation process, (2) assure a carefully considered balance and integration among goals that compete for limited water and land resources, and (3) establish the ground rules and boundaries that will govern implementation of the CALFED Solution. The letter will be part of a formal submittal from the BDAC to the CALFED Policy Group.



10.1.18 BDAC WORK GROUPS

Six subgroups to the BDAC provide input into specialized areas of the Program. Each subgroup holds public meetings to study specific Program areas. As a result of the BDAC consultant's findings, some of these work groups have been retired or restructured.

Water Use Efficiency Work Group. The seven-member Water Use Efficiency Work Group addressed policy issues related to efficient water use and water demand management. Categories considered by the group included urban water conservation, agricultural water conservation, water recycling, and temporary or permanent land fallowing. This work group has been retired.

Key questions of the work group included:

- What general approach is most appropriate to implement water use efficiency measures—regulatory, market, or a combination?
- How can water use efficiency be structured to complement the other water supply components of each alternative?
- What is the appropriate level of effort for water use efficiency measures in each alternative, and how should the level be set?
- Should water use efficiency measures be specified in alternatives, or should a target level of reduced demand be specified and the selection of measures left to water users?

The work group produced summaries of each of these issues for the BDAC to promote a better understanding and consideration by the full BDAC. Products developed by the group have been critical in Phase II development of the Preferred Program Alternative.

Although the BDAC work group is retired, other work groups have formed to focus on specific areas of water use efficiency. An Urban Water Use Efficiency Group is established, and plans for a Water Recycling Work Group are underway; these groups are not BDAC work groups, but their meetings are open to the public.

Ecosystem Restoration Work Group. This work group's primary focus was to identify and develop options to address policy issues related to developing an effective ecosystem restoration strategy for the Program. In light of the consultant's report, the work group was suspended. The group is still in existence but has not met since early 1999.

Finance Work Group. This group was retired. The six-member work group met regularly since April 1996 to identify key financial issues and problems that must be addressed for the Program to succeed. The work group also examined a range of alternative ways to address these issues and problems that could lead to building a workable consensus solution. Public discussions about overall finance issues continued at BDAC meetings. These discussions focused on spending priorities.

Governance Work Group. This work group was formerly named the Assurances Work Group. The Governance Work Group has been reconfigured to include a BDAC co-chair from the business community and has appointed additional BDAC members to the work group. Previously, the Assurances Work Group focused on identifying the assurance needs for each Program element and the ways in which

those assurances could be provided. The Governance Work Group focuses on one of the assurances issues—the governance structure (institutional and decision-making arrangements) to implement the CALFED Program over the long term.

The Governance Work Group will meet on an as-needed basis while the governance proposal is being developed. The work group reports to the BDAC on its recommendations and comments regarding CALFED governance.

Water Transfers Work Group. This work group was instrumental in helping develop the Program's water transfer framework, including identifying issues and constraints, and developing potential solution options. The work group was particularly helpful in developing the concept of a water transfer information clearinghouse.

In early 1999, this work group was retired, and many of its functions were assumed by multiple groups focused on specific Stage 1 implementation projects. These groups are comprised of agency representatives, water users, and environmental community representatives. These groups are participating in formulating actions during Stage 1 implementation, such as quantifying and defining carriage water, reservoir refill criteria, third-party impacts, and the role of the public in overseeing a transfers clearinghouse.

Watershed Work Group. This work group was formed by the BDAC in summer 1998 and was instrumental in developing the Watershed Program Plan. The group has a very broad-based membership, made up of representatives from public agencies and local watershed interests, and is now providing advice to the BDAC and the CALFED agencies on how to implement the Program in Phase III.

Ecosystem Roundtable. The Ecosystem Roundtable is a stakeholder forum established as a subgroup of the BDAC. Members of this group represent a cross section of stakeholders interested in and affected by habitat restoration activities in the Bay-Delta system.

Meeting on a quarterly or as-needed basis, the Ecosystem Roundtable provides advice and recommendations to the BDAC and the Program on funding and coordinating existing and anticipated state and federal habitat restoration programs.

Delta Drinking Water Council. The Delta Drinking Water Council was formed in fall 1999 to advise the BDAC and the CALFED agencies on adaptations to the CALFED Drinking Water Improvement Strategy. Under the scrutiny of the Council, a combination of actions and studies will be developed and performed to drive important decisions on additional measures or sets of measures that would be most appropriate to meet CALFED's drinking water quality objectives.

10.1.19 GROUNDWATER OUTREACH PROGRAM

Appropriate and effective groundwater management will be essential to the success of the Program. As part of the Storage and Conveyance elements, the Program is looking to facilitate additional conjunctive use and groundwater banking opportunities; this could be one way to help maximize the overall water supply and protect groundwater resources. The Program initiated a groundwater outreach component to help identify and address stakeholder concerns about groundwater use and management, with special emphasis on conjunctive use projects.



The Program contacted and met with dozens of individuals—including private citizens, water managers, water district board members, and elected officials—to learn about local concerns regarding conjunctive use programs and to determine which entities would be interested in participating in a locally controlled conjunctive use program. The Program also conducted workshops in both the Sacramento and San Joaquin Valleys to present the status of the groundwater program, and to solicit additional comments and concerns regarding conjunctive use.

As a logical extension of the outreach program, the Program formed a Conjunctive Use Advisory Team. The team is made up of stakeholders and representatives of member agencies. The team has been meeting regularly since September 1998 to develop a strategy to facilitate locally run conjunctive use programs that address third-party impacts and other concerns. The team has a set of four goals:

- To refine and complete the principles for carrying out conjunctive use projects to meet Program objectives.
- To identify the most significant impediment associated with conjunctive use programs.
- To develop solutions for each impediment.
- To identify potential pilot projects and facilitate their development.

10.1.20 CALFED TRIBAL OUTREACH

There have been a series of efforts to consider Native Americans and their concerns in the CALFED process; these efforts are summarized in this section. As the CALFED process evolved and the concept of a solution area developed, additional efforts were made to communicate with tribal groups. These efforts initially took the form of letters notifying tribal groups of the availability of the June 1999 Draft Programmatic EIS/EIR and of meetings in which they were invited to participate. All California tribes were contacted before the June 1999 Draft Programmatic EIS/EIR was distributed.

As early as 1996, Reclamation contacted the California Native American Heritage Commission for advice regarding which Native Americans in the Delta should be contacted. (There are no federally recognized tribes in the Delta.) In June 1996, Reclamation sent letters to the 12 individuals identified by the Commission. One person responded and asked Reclamation to provide notice to two additional Native Americans. No other responses were received from this inquiry. As the CALFED process evolved, CALFED agency representatives initiated communication with tribal groups within the solution area, in addition to the contacts in the Delta.

CALFED met with and provided briefings to tribal representatives on several occasions:

- Two briefings at regional tribal meetings in April and May 1999.
- A multi-agency and multi-tribal consultation in September 1999 attended by 10 tribal representatives.
- A presentation at the Seventh Annual Tribal Environmental Conference, sponsored by the EPA's Regional Tribal Operations Committee (RTOC) in October 1999.



- A presentation at the Bureau of Indian Affairs Regional Tribal council in December 1999.
- A presentation at a tribal governments' meeting in February 2000.

Tribal communication efforts accelerated after the EPA's RTOC discussed the CALFED Program at its April 1999 meeting. CALFED briefed RTOC members and discussed how to best encourage tribal participation. As a result of this effort, follow-up briefings were conducted at the RTOC May 1999 meeting and with the Bureau of Indian Affairs Central Agency policy committee.

In July 1999, the Department of the Interior appointed the representative for the Tribal Caucus of the RTOC to the BDAC. Tribal representatives also regularly attended various policy group and work group meetings.

CALFED staff mailed notices to more than 100 tribal representatives throughout the state, notifying them of the availability of both the March 1998 and June 1999 Draft Programmatic EIS/EIRs.

Communication with tribal groups intensified after the release of the June 1999 Draft Programmatic EIS/EIR. In June 1999, the Phase II Report was sent to all federally recognized California tribes. At least three letters were sent in spring and summer 1999, inviting tribal groups to participate in the CALFED process by commenting on the Draft Programmatic EIS/EIR and by continuing to attend meetings. Approximately 15 tribes have followed up on these invitations. Key issues are tribal representation in CALFED governance and funding for tribal participation in water management activities.

In November 1999, the CALFED Policy Group approved \$100,000 for tribal participation in the CALFED process. In January 2000, a Request for Proposals (RFP) for CALFED Tribal Participation and Outreach Grant was sent to tribal governments. An informal work group of federal agency and tribal representatives was established, and all California tribes were invited to participate. Based on those discussions, CALFED identified several areas related to increased tribal participation in the CALFED process that formed the basis of the RFP:

- Develop and compile information about, or an inventory of, specific tribal resources that may be affected by potential CALFED actions.
- Facilitate increased tribal attendance and participation in CALFED meetings and work groups.
- Facilitate enhanced outreach and coordination between CALFED agencies and participating tribes.
- Ensure that participating tribes play a key role in educating other affected tribes about the CALFED process and coordinating tribal input to the CALFED Program.

The deadline for submitting proposals was March 31, 2000.

As future projects are identified that invoke specific environmental documentation, consultation with Indian tribes will take place on a government-to-government basis if a potential effect on Indian trust assets is identified. CALFED will follow the Federal Government's policy regarding government-to-government relations as spelled out in President Clinton's Executive Order of April 29, 1994. If projects or activities are proposed for an area that contains a reservation or rancheria or any Indian trust asset, consultation will take place early in the planning process.



10.2 AGENCY INVOLVEMENT

Public and stakeholder involvement is important, but the Program also sought involvement of all interested and participating federal and state agencies. To achieve this, the Program formed several subcommittees and teams, in both formal and informal meetings, to ensure agency involvement. Interagency teams were important in bringing the technical expertise of the agencies into the planning process, and in ensuring that the appropriate agency staff reviewed and provided recommendations at each step. The agency involvement programs interacted with and complemented public outreach efforts, and in many ways paralleled the public groups that were formed:

- CALFED Policy Group
- Public Affairs Group
- Operations Coordination (Ops) Group
- CALFED Technical Teams
- CALFED Impact Analysis Teams

10.2.1 CALFED POLICY GROUP

The CALFED Policy Group is the decision-making arm of the Program. Since February 1996, the group has met monthly to review the Program's progress and deliberate on key issues identified by Program staff and the policy. Members include representatives from each of the CALFED agencies (see list in Chapter 1).

10.2.2 Public Affairs Group

Public information officers of CALFED agencies and interested stakeholder groups meet to coordinate public involvement efforts and ensure broad dissemination of Program messages. This group is responsible for ensuring that ample opportunities for public involvement from a wide and diverse cross section of interests are available. The group meets periodically to provide input to Program staff on communications and public information strategies.

10.2.3 OPERATIONS COORDINATION GROUP

The CALFED Framework Agreement, along with the Principles of Agreement, established the CALFED Ops Group and defined the group's tasks and responsibilities.

Monthly meetings of the Ops Group started in August 1994 and are open to the public. Co-chaired by Reclamation and DWR, representatives include staff from the USFWS, NMFS, EPA, DFG, and SWRCB. Deliberations are conducted in consultation with water users, environmentalists, and fishery representatives, and recommendations are made directly to the Program.

10.2.4 CALFED TECHNICAL TEAMS

Several specialized teams provide technical expertise to Program managers.

Agency Ecosystem Restoration Technical Team. This team provides analysis and recommendations on specific focused issues relating to the Ecosystem Restoration Program. The team is convened as often as needed to address specific issues. This team is made up of agency technical experts.

Levees and Channels Technical Team. This team provides technical advice to the CALFED Technical Systems Analysis Unit relating to levees and channels. This team consists of agency and technical experts.

Storage and Conveyance Technical Team. This team is an informal group consisting of the quarterly Storage and Conveyance Workshop attendees. The group is primarily made up of agency experts; however, the public has not been excluded from attending the publicly noticed meetings. The group reviews and comments on modeling issues. In addition, modeling results are posted on the DWR website for review by agencies, stakeholders, and the public.

Water Quality Technical Team. The team has approximately 200 members. Members represent agencies, stakeholders, local government, industry, and academia. The team is divided into subteams, which discuss specific water quality issues and provide scientific and technical advice to the Program. The team meets about every second month.

10.2.5 CALFED IMPACT ANALYSIS TEAMS

The Program established several multi-disciplinary teams composed of Program staff, agency personnel, and consultants. These teams prepared the affected environment and environmental consequences components of the technical reports. These teams met weekly from March through September 1997 and focused on the environment, economic analysis, flood control, water quality, hydrology and water management, and fish and wildlife.

The revised impact analyses presented in this document were completed by Program staff and consultants, who used the information supplied by these teams as the foundation for their revisions.

10.2.6 CALFED AGENCY REVIEW TEAM

The CALFED Agency Review Team (ART) was comprised of Program and agency staff charged with identifying deficiencies in the March 1998 Draft Programmatic EIS/EIR and the June 1999 Draft Programmatic EIS/EIR, and making suggestions about how to resolve those deficiencies. ART recommendations were used by consultants and Program staff when preparing the Final Programmatic EIS/EIR.

10.3 FUTURE CALFED ACTIONS

It is anticipated that future lead agencies, responsible agencies, and stakeholder local agencies, such as water districts, will rely on the Programmatic EIS/EIR as they consider subsequent actions. As appropriate, subsequent actions will be subject to alternative analysis, environmental review, and permitting decisions before they are implemented.

Where to Find Program Public Outreach Information

- Program web site: http://calfed.ca.gov
- Toll-free public information telephone line: 1-800-900-3587
- · CALFED News, EcoUpdate, and fact sheets are available from:

CALFED Bay-Delta Program 1416 Ninth Street, Suite 1155 Sacramento, CA 95814 916-657-2666

• Bay-Delta Advisory Council and other public meetings (see Section 10.3.1)

Chapter 11. List of Preparers

Danae J. Aitchison

J.D., University of California, Davis

M.A., Stanford University

B.A., George Washington University

Years of Experience: 6

Land Use and Natural Resources Law

Jeremy Arrich, P.E.

B.S., Civil Engineering, California State University, Sacramento

Years of Experience: 4

Water Management Planning

Gary Bardini

B.S., Civil Engineering, California Polytechnic State University, San Luis Obispo

Years of Experience: 13

Surface Water, Groundwater, Flood Control

Tiki Baron

M.A., Geography, University of California, Los Angeles

B.A., Urban Planning, California State University, San Francisco

Years of Experience: 7

California and Federal Endangered Species Act Compliance

Chris Beale

Staff Counsel

Department of Fish and Game

Tracie Billington

B.S., Environmental Resource Engineering, California State University, Humboldt

Years of Experience: 15

Groundwater

Loren Bottorff

M.S., Civil Engineering in Water Resources, University of Nevada, Reno

Years of Experience: 25

Phase II Report



Rick Breitenbach

M.S., Biological Conservation, California State University, Sacramento

Years of Experience: 26

Technical and Editorial Review of Programmatic EIS/EIR

Sara C. Brennan

B.A., Government-Journalism and Environmental Studies, California State University, Sacramento

Years of Experience: 11

Editor and Word Processor, Graphics Preparation

Russ T. Brown

Ph.D., Civil Engineering and Water Resources, Massachusetts Institute of Technology

M.S., Ocean Engineering, Massachusetts Institute of Technology

B.S., Civil and Environmental Engineering, University of California

Years of Experience: 20 Surface Water Resources

Stein M. Buer

M.S., Civil Engineering, University of California, Davis

B.S., Zoology, University of California, Davis

Years of Experience: 25

Surface Water, Groundwater, Flood Control, Phase II Report

Becky Buhlert

B.S., Agricultural Systems and the Environment Specializing in Range Management,

University of California, Davis

Years of Experience: 2

Growth-Inducing Impacts, Water Quality, Indian Trust Assets, Agricultural Land and

Water Use, Visual Resources

Scott Cantrell

M.S., Ecology, University of California, Davis

B.S. Biology, University of California, Riverside

Years of Experience: 13

Fish and Wildlife

Paul Cylinder

Ph.D., Botany, University of California, Berkeley

B.A., Biological Sciences, University of Chicago

Years of Experience: 11

Multi-Species Conservation Strategy

Rob Cooke

B.S., Civil Engineering, University of California, Berkeley

Years of Experience: 19

Levee System Integrity



Mark W. Cowin

B.S., Civil Engineering, Stanford University

Years of Experience: 19

Surface Water, Groundwater, Flood Control, Preparation of System Operations Studies to Support Evaluation of Program Alternatives

Ed Craddock

M.S., Natural Resources, University of Michigan, Ann Arbor

Years of Experience: 26

Water Use Efficiency; Comprehensive Monitoring, Assessment, and Research

Dick Daniel

M.A., Biology, California State University, Humboldt

B.A., Field Biology, University of California, Santa Barbara

Years of Experience: 31 Ecosystem Restoration

Cynthia C. Darling

B.S., Wildlife and Fisheries Biology, University of California, Davis

Years of Experience: 19 Ecosystem Restoration

John A. Davis

M.S., Sanitary Engineering, University of California, Berkeley

B.S., Civil Engineering, London University

Years of Experience: 32

Water Quality Impact Analysis

Michael Fainter

B.A., English, Virginia Tech

M.A., English, Virginia Tech

Years of Experience: 7

Technical Writer-Editor, Ecosystem Restoration

Trina D. Farris

Years of Experience: 27

Technical Editor, Figures and Tables

Rebecca J. Fawver

M.E.M., Resource Ecology, Duke University

B.A., Environmental Studies, University of California, Santa Barbara

Yeras of Experience: 9

Ecosystem Restoration Program



Ralph Finch

M.S., Civil Engineering, University of California, Davis B.S., Civil Engineering, California State University, Chico Years of Experience: 20

Computer Modeling Specialty

Bellory Fong

B.S., Biological Conservation, California State University, Sacramento

Years of Experience: 25

Vegetation, Wildlife, and Fisheries

Dan S. Fua

B.S., Chemical Engineering, University of San Carlos, Phillipines

Years of Experience: 19 Water Quality, Surface Water

David Fullerton

M.S., Electrical Engineering, Stanford University

M.A., Ancient History, University of California, Berkeley

B.S., Physics, Stanford University

B.A., Classical Studies, Stanford

Years of Experience: 12

Environmental Water Account

Tom Gohring

M.S., Irrigation Engineering, University of California, Davis

B.S., Agricultural Engineering, California Polytechnical Institute, San Luis Obispo

Years of Experience: 13 Water Use Efficiency

Sharon K. Gross

M.S., Marshall University, Huntington, West Virginia

Years of Experience: 15

Reviewer, Coordination and Preparation of Federal and State Endangered Species Act Compliance

Sergio Guillen

M.S., Civil Engineering, California State University, Sacramento

M.S., Civil Engineering, University of the Valley of Guatemala, Guatemala

B.S., Civil Engineering, University of the Valley of Guatemala, Guatemala

Years of Experience: 14 Surface Water Resources

Wendy S. Halverson-Martin

B.S., Environmental Studies, California State University, Sacramento

Years of Experience: 18 CALFED Project Manager

Technical and Editorial Preparation and Review of Programmatic EIS/EIR



Kate Williams Hansel

M.P.A., University of Washington

B.A., Environmental Planning and Management, University of California, Davis

Years of Experience: 20 Governance, Implementation

Lauren L. Hastings

Ph.D., Soil Science, University of California, Davis M.S., Soil Science, University of California, Davis

B.A., Biology, Luther College

Years of Experience: 5

Ecosystem Restoration Program

Stephen Hatchett

Ph.D., Agricultural Economics, University of California, Davis

Years of Experience: 18 Agricultural Economics

Judith A. Heath

M.S., Human Anatomy, University of California, Davis B.S., Biology, California State University, Sacramento

Years of Experience: 27 Watershed, Water Quality

Mike Heaton

J.D., University of California School of Law, Davis

B.A., Public Administration, University of California, Davis

Years of Experience: 17

Water Transfer

Valerie Holcomb

B.A., American Studies and English, Mount St. Mary's College, Los Angeles

Years of Experience: 11

Public Affairs

Paul H. Hutton, Ph.D., P.E.

Ph.D., Civil and Environmental Engineering, University of California, Davis

M.S., Environmental Engineering, University of Illinois, Urbana

B.S., Civil Engineering, University of Illinois, Urbana

Years of Experience: 16

Drinking Water Quality, Surface Water Supply and Management, Hydrology and Hydrodynamics

Campbell Ingram

B.S., Natural Resource Planning, California State University, Humboldt

Years of Experience: 8

Geology and Soils, Air Quality, Urban Land Use, Vegetation and Wildlife Resources



Carla Jacobson

B.A., Biology, Indiana University, Bloomington

Years of Experience: 4

Geology and Soils, Recreational

Rodney D. Johnson

B.S., Forest Science, Pennsylvania State University

Years of Experience: 24

Technical and Editorial Review of Programmatic EIS/EIR

Stephen Kellogg

M.S., Ecology, California State University, San Diego

B.S., Biology, University of California, Davis

Years of Experience: 27

Vegetation and Wildlife

Marti J. Kie

B.S., Zoology, California Polytechnic University, Pomona

Years of Experience: 19

Multi-Species Conservation Strategy

Gwen Knittweis

B.S., Civil Engineering, Columbia University, New York

Years of Experience: 9

Levee System Integrity

John Lowrie

B.S., Agriculture, California State University, Chico

Years of Experience: 23

Watershed Management

Joan Lynn

Years of Experience: 26

Editor

Dennis G. Majors

B.S., Civil Engineering, California State University, Long Beach

Years of Experience: 26

South Delta Program

Peter Mangarella

Ph.D., Civil Engineering, Stanford University

M.S., Civil Engineering, Stanford University

B.S., Civil Engineering, Carnegie-Mellon University

Years of Experience: 29

Water Quality



Roger Mann

Ph.D., Agricultural Economics and Economics, Colorado State University

Years of Experience: 16 Water Supply Economics

Barbara D. Marcotte

M.S., Hydrology and Fisheries, California State University, Humboldt

B.S., Forestry, University of Arizona

Years of Experience: 17

Ecosystem Restoration, Environmental Water Quality

Paul A. Marshall, P.E.

M.S., Civil Engineering, California State University, Sacramento

B.S., Civil Engineering, California State University, Sacramento

Years of Experience: 13

Water Quality

Paul Massera

B.S., Civil Engineering, California State University, Sacramento

Years of Experience: 5 Storage and Conveyance

Mark McCourt

B.A., Art and Design, Gonzaga University, Spokane, Washington

Years of Experience: 2

Graphics

Ray McDowell

B.A., Geography, California State University, Sacramento

Years of Experience: 11

Coordination of NEPA/CEQA Documentation

Dean McLeod

M.A., Economics, Central Michigan University, Mt. Pleasant

M.S.. Business Administration, Central Michigan University, Mt. Pleasant

Years of Experience: 1

Financial Plan

Terris McMahan-Grimes

B.A., English, California State University, Sacramento, CA

Years of Experience: 1

Transportation, Environmental Justice

Terry J. Mills

B.S., Wildlife and Fishery Biology, University of California, Davis

Years of Experience: 27 Ecosystem Restoration



Marian E. Moe

J.D., University of California, Davis

B.A., Stanford University

Years of Experience: 19

Legal Advisor

Douglas Morrison

Ph.D., Ecology, University of Georgia

M.S., Biology, University of Miami

B.S., Biology, University of Miami

Years of Experience: 16

Water Quality, Ecosystem Restoration

Michael Myatt

B.S., Economics and Environmental Studies, California State University, San Jose

Years of Experience: 2

Finance Plan

Dennis O'Bryant

M.P.A., California State University, Sacramento

B.A., Public Policy with a concentration in Resource Policy, University of California, Berkeley

Years of Experience: 24

Agricultural Land and Water Use, Agricultural Social Issues

Lynn Moquette O'Leary

M.S., Civil Engineering, University of California, Davis

B.S., Civil Engineering, University of California, Davis

Years of Experience: 14

Flood Control

Ronald F. Ott, Ph.D., P.E.

Ph.D. CE, Water Resources, Stanford University

Degree of Engineer CE, Hydrodynamics, Stanford University

MSCE, Water Quality, Stanford University

BSCE, California State University, Chico

Years of Experience: 30

Environmental Water Account and Fish Facilities

Ann Marie Parkin

B.S., Civil Engineering, Loyola Marymount University

Years of Experience: 7

Water Management Strategy



Gerrit A. J. Platenkamp

Ph.D., Ecology, University of California, Davis

M.S., Animal and Plant Ecology, University of Ultrecht, Netherlands

B.S., Biology, University of Ultrecht, Netherlands

Years of Experience: 8 Vegetation and Wildlife

Roger Putty

M.S., Civil Engineering, University of California, Los Angeles

B.S., Environmental Resources Engineering, California State University, Humboldt

Years of Experience: 11

Groundwater

Pete Rawlings

B.S., Wildlife Management, California State University, Humboldt

Years of Experience: 20

Vegetation and Wildlife, Multi-Species Conservation Strategy

Steven Ritchie

M.S., Civil Engineering, Stanford University

B.S., Civil Engineering, Stanford University

Years of Experience: 22

CALFED Acting Executive Director

Esther Sandoval

Years of Experience: 19

Word Processor

Mary Scoonover

J.D., University of California, Davis

B.A., Political Science and Public Service with concentration in Environmental Studies,

University of California, Davis

Years of Experience: 15

Legal Advisor

Steve Shaffer

B.A., Biochemistry/Molecular Biology, University of California, Santa Barbara

Years of Experience: 24

Technical Review of Agricultural Resources Assessment, Impacts, and Mitigation

Warren Shaul

M.S., Fisheries, Oregon State University

B.S., Biology, California State University, Humboldt

Years of Experience: 25

Fisheries and Aquatic Resources



Jeffrey R. Single

Ph.D., Terrestrial Vertebrate Ecology, Southern Illinois University, Carbondale

M.S., Zoology, Southern Illinois University, Carbondale

B.S., Biology, Beloit College, Beloit

Years of Experience: 16

Multi-Species Conservation Strategy

Rick Soehren

B.S., Zoology, University of California, Davis

Years of Experience: 19

Water Use Efficiency, Phase II Report

Peter M. Standish-Lee

M.S., Water Resources, California State University, Sacramento

B.S., Oceanography, California State University, Humboldt

A.B., Zoology, University of California, Berkeley

Years of Experience: 28

Alternatives Planning, Air Quality, Terrestrial Ecology, Water Quality

Craig Stevens

B.S., Renewable Natural Resources, University of California, Davis

Years of Experience: 9

NEPA/CEQA and Other Environmental Compliance

Erin Taylor

B.S., Environmental Biology and Management, University of California, Davis

Years of Experience: 2

Preparation of Supplemental Impact Analysis

Nancy D. Ullrey

B.A., Journalism, California State University, Sacramento

Years of Experience: 14

Technical and Editorial Review of Programmatic EIS/EIR

Chuck Vogelsang

B.S., Forestry, University of California, Berkeley

Years of Experience: 22

Technical and Editorial Review of Programmatic EIS/EIR

Thomas Wegge

M.S., Environmental Economics, California State University, Fullerton

Years of Experience: 20

Recreation Economics



Patrick Welch

B.A., Chemistry, California State University, San Diego

Years of Experience: 22 Cultural Resources

G. James West

Ph.D., Anthropology, University of California, Davis

Years of Experience: 29 Cultural Resources

Leo Winternitz

M.S., Environmental Management/Water Quality, University of San Francisco

B.A., Biological Sciences, Gonzaga University, Spokane, Washington

Years of Experience: 21

Comprehensive Monitoring, Assessment, and Research Program

Richard P. Woodard

B.A., Biology, San Fernando Valley State College

Years of Experience: 26

Water Quality

Greg Young

B.S., Agricultural Engineering, Cal Poly State University, San Luis Obispo

Years of Experience: 9

Water Transfers, Water Use Efficiency





Chapter 12. Bibliography

The technical supporting reports prepared during Phases I and II of the CALFED process represent the primary source material used in preparing the March 1998 Draft Programmatic EIS/EIR. Bibliographic references for the following resource areas can be found in these technical supporting documents, which contain supporting analysis for the information provided in the March 1998 Draft Programmatic EIS/EIR. Since the Program alternatives described in this report incorporate elements of the alternatives presented in the March 1998 Draft Programmatic EIS/EIR and the impacts are similar, information in the technical reports was verified and used in these analyses as well.

- Agricultural Resources
- Cultural Resources
- Fisheries and Aquatic Ecosystems
- Flood Control
- Geology and Soils
- Groundwater Resources
- Power Production and Energy
- Recreation Resources
- Regional Economics
- Surface Water Resources
- Urban Resources
- Vegetation and Wildlife Resources
- Water Quality

Bibliographic references for source material for the following resource areas utilized during the preparation of this draft can be found below.

- Agricultural Resources
- Air Quality
- Environmental Justice
- Fisheries and Aquatic Ecosystems
- Indian Trust Assets
- Noise
- Public Health and Environmental Hazards
- San Felipe Service Area
- Transportation
- Trinity EIS
- Visual Resources
- Water Quality

Agricultural Resources

Farmland Conversion Report, 1994 to 1996. 1998. California Department of Conservation. June.

Proposed North Delta Wildlife Refuge, Planning Update No. 3. 1998. U.S. Fish and Wildlife Service. October.

From http://ceres.ca.gov/planning/genplan/index.html and http://elib.cs.berkeley.edu/cgi-bin:

Yolo County General Plan - July 1983.

Solano County General Plan Land Use and Circulation Element - July 1995.

Sacramento County General Plan Agriculture Element - May 1997.

Contra Costa County General Plan - July 1996.

San Joaquin County General Plan 2010: Vol. 1, Policies and Implementation.

Air Quality

California Air Resources Board. 1997. Maps and Tables of the Area Designations for State and I	Vational
Ambient Air Quality Standards and Expected Peak Day Concentrations and Designation	Values.
Technical Support Division. January.	

1995a. Air Quality Indicators for 1983	l to 1	1993 to Rep	ort I	Progress in	Attaining	g the State 1	\mbicnt
Air Quality Standards for Ozone, Carb	on N	Monoxide,	and	Nitrogen	Dioxide.	Technical	Support
Division. September.							

1995b.	Emission	Inventory	. Tech	ınical Sı	upport I	Division.	June.

1984. California Surface	e Wind Climatology.	Aerometric Data Division.	June.
--------------------------	---------------------	---------------------------	-------

National Climatic Data Center. 1992. Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling Degree Days, 1961-1990. National Oceanic and Atmospheric Administration. January.

Environmental Justice

State of California, Department of Finance. 1998. California Demographics, Data Files. URL: http://www.dof.ca.gov/html/Demograph/druhpar.html. November.

Fisheries and Aquatic Ecosystems

Meyer, J. L., M. J. Sale, P. J. Mulholland, and N. L. Poff. 1999. Impacts of Climate Change on Aquatic Ecosystem Functioning and Health. Journal of the American Water Resources Association 35(6):1373-1386.

Waters, T. F. 1996. Sediment in Streams: Sources, Biological Effects, and Control. American Fisheries Society Monograph 7. American Fisheries Society, Bethesda, MD.

Indian Trust Assets

Department of Interior. 1995 Departmental Manual, Part 512. American Indian and Alaska Native Programs, Chapter 2, "Departmental Responsibilities for Indian Trust Resources."

Noise

- Barry, T. M. and Reagan, J. A. 1978. FHWA Highway Traffic Noise Prediction Model, Report Number FHWA-RD-77-108, by Federal Highway Administration. Washington, D.C.
- Beranek, Leo L. (ed.) 1971. Noise and Vibration Control. McGraw-Hill, Inc. New York, NY.
- Beranek, L.L. and I.L. Ver (eds.) 1992. Noise and Vibration Control Engineering. John Wiley & Sons, Inc. New York, NY.
- Bolt, Beranek, and Newman, Inc. 1973. Fundamentals and Abatement of Highway Traffic Noise. U.S. Department of Transportation Contract Number DOT-FH-11-7976, Office of Environmental Policy, Federal Highway Administration.
- _____. 1971. Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, prepared for the U.S. Environmental Protection Agency, Washington, D.C. December.
- California Department of Health Services. 1974. Guidelines for the Preparation of Noise Elements of the General Plan. Berkeley, CA.
- Carver, B. 1978. Planning in the Noise Environment. Air Force Contract F49642-74-90035. Department of Defense. U.S.G.P.O. Washington, D.C.
- Diel, George M. 1973. Machinery Acoustics. Jon Wiley & Sons, Inc. New York, NY.
- Greene, R.E. 1993. Draft Environmental Impact Report/Environmental Assessment, Central Pool Augmentation and Water Quality Project. Report No. 1059, Noise Section 4, p. 40,272. Metropolitan Water District of Southern California and U.S. Forest Service, Los Angeles, CA. July.
- Harris, Cyril M. (ed.) 1979. Handbook of Noise Control. Second Edition. McGraw-Hill, Inc., New York, NY.
- . 1991. Handbook of Acoustical Measurements and Noise Control. Third Edition. McGraw-Hill, Inc. New York, NY.
- Hassall, J.R. and K. Zaveri. 1988. Acoustic Noise Measurements. Fifth Edition. Bruel and Kjaer Instruments, Inc. Copenhagen, Denmark.
- Peterson, A.P.G. and E. Gross, Jr. 1972. Handbook of Noise Measurement. Seventh Edition. General Radio Company. Concord, MA.
- Southern California Edison Company. 1974. Transmission Environmental Guide.



- U.S. Department of Transportation, Federal Highway Administration, Office of Environmental Policy, Noise and Air Analysis Division. 1995. Highway Traffic Noise Analysis and Abatement. Washington, D.C. June.
- U.S. Environmental Protection Agency by National Academy of Sciences. 1977.

Public Health and Environmental Hazards

- Brown, David. 1998. Sacramento-Yolo Mosquito and Vector Control District. Personal Communication. Wetland Development and Management Guidelines for the Control of Mosquitoes. November.
- California Wetlands Information System. 1998. Montezuma Wetlands Project. URL: http://ceres.ca.gov/wetlands/projects/montezuma.html. November.
- -----. 1998. Yolo Basin Wetlands. URL: http://ceres.ca.gov/wetlands/projects.yolo.html. November.
- Central Valley Project Improvement Act Programmatic Environmental Impact Statement. 1997. DRAFT Technical Appendix, Public Health: Mosquitoes. March.
- Contra Costa Mosquito and Vector Control District. 1998. Mosquitofish. URL: http://www.ccmvcd.dst.ca.us/mfish.html. November.
- Ecosystem Restoration Program Plan Executive Summary and Tables Working Draft. 1997. CALFED Bay-Delta Program. April.
- Facility Descriptions and Updated Cost Estimates for Thomes-Newville Reservoir Project. 1997. Prepared by the CALFED Storage and Conveyance Refinement Team. March.
- Facility Descriptions and Updated Cost Estimates for Shasta Lake Enlargement. 1997. Prepared by the CALFED Storage and Conveyance Refinement Team. February.
- Facility Descriptions and Updated Cost Estimates for Lake Berryessa Enlargement. 1997. Prepared by the CALFED Storage and Conveyance Refinement Team. March.
- Facility Descriptions and Updated Cost Estimates for Cottonwood Creek Reservoir Complex. 1997. Prepared by the CALFED Storage and Conveyance Refinement Team. March.
- Facility Descriptions and Updated Cost Estimates for Tehama-Colusa Canal Extension. 1997. Prepared by the CALFED Storage and Conveyance Refinement Team. April.
- Impact Significance Thresholds Report DRAFT, Initial Review Draft Report. 1996. CALFED Bay-Delta Program. August.
- Mosquito and Vector Control Agencies of California. 1998. URL: http://mosquito.lanminds.com/directory/list.html. November.



- National Aeronautics and Space Administration (NASA). 1998. Live Sciences Division, Global Monitoring and Human Health. California Rice Field Mosquitoes. URL: http://geo.arc.nasa.gov/sge/health/gmhh/carice.html. November.
- Phase II Alternative Descriptions. 1997. CALFED Bay-Delta Program, DRAFT. May.
- Project Descriptions and Updated Cost Estimates for the Red Bank Project. 1997. Prepared by the CALFED Storage and Conveyance Refinement Team. April.
- Project Descriptions and Updated Cost Estimates for Sites/Colusa Reservoir Project. 1997. Prepared by the CALFED Storage and Conveyance Refinement Team. April.
- State of California, Environmental Protection Agency, Department of Toxic Substances Control (DTSC). 1998. Fact Sheets on Specific Closing Bases (Mather Air Force Base, McClellan Air Force Base, Sacramento Army Depot). URL: http://www.dtsc.ca.gov/smp/txsmfscb.html. November.
- Selected Public Health Concerns in the Delta Regions. 1996. CALFED Bay-Delta Program, DRAFT Affected Environmental Technical Report. September.
- Summary of Common Programs DRAFT. 1997. Appendix B, CALFED Bay-Delta Program. April.
- University of California, Davis. 1998. Statewide integrated Pest Management Project. UC Pest Management Guidelines, Mosquitoes Home and Landscape (updated February 1998). URL: http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7451.html. November.
- U.S. Army Corps of Engineers. 1998. Long-Term Management Strategy for Bay Area Dredged Material, Final Environmental Impact Statement/Environmental Impact Report. URL: http://www.spn.usace.army.mil/ltms/. November.
- U.S. Environmental Protection Agency. 1998. San Francisco Estuary Project (SFEP). Comprehensive Conservation and Management Plan for San Francisco Estuary. Chapter 3, Action Plan, Dredging and Waterway Modification; Action Plan, Pollution Prevention and Reduction. URL: http://www.abag.ca.gov/bayarea/sfep/reports/ccmp/index.html. November.
- _____. 1998. Comprehensive Conservation and Management Plan for San Francisco Estuary. Chapter 5, Policy-Level Mitigation Measures and Alternatives Development. URL: http://www.abag.ca.gov/bayarea/sfep/reports/ccmp/index.html. November.

San Felipe Service Area

King, Thomas and Patricia Hackman. 1973. The Southern Santa Clara Valley: A General Plan for Archeology. Archeological Impact Evaluation: San Felipe Division, Central Valley Project. Unpublished manuscript on file at the Mid-Pacific Region, Sacramento, California.

Transportation

- Donley, Michael W., Stuart Allan, Patricia Caro, and Clyde P. Patton. 1979. Atlas of California.
- California Department of Transportation. 1994. Traffic Volumes on California State Highways. State of California Business, Transportation and Housing Agency. Division of Traffic Operations. Sacramento, CA.
- CH2M Hill. 1997. Working Tables Ecosystem Restoration Program Plan; Programmatic Actions; Storage and Conveyance Alternatives. May.

Trinity EIS

- U.S. Fish and Wildlife Service. 1998. Trinity River Mainstem Fishery Restoration, Environmental Impact Statement/Report. Prepared by CH2M Hill. Unpublished document.
- Nawi, David. 1995. Memo: Certain Legal Rights and Obligations Related to the U.S. Bureau of Reclamation, Klamath Project for Use in Preparation of the Klamath Project Operation Plan. To Regional Director, Bureau of Reclamation, Mid-Pacific Region From the Regional Solicitor, Pacific Southwest Region. July.

Visual Resources

East Bay Regional Park District. 1996. Draft Master Plan. Oakland, CA.

- California Department of Transportation. 1992. California State and County Scenic Highways. Sacramento, CA.
- California State Parks Guide. 1986. Olympus Press. Santa Barbara, CA.
- Jones & Stokes Associates. Inc. 1996. Visual/Aesthetic Resources in the Delta Region. Draft Affected Environment Technical Report, CALFED Bay-Delta Program, Sacramento, CA.
- Suisun Resource Conservation District. 1980. The Suisun Marsh Management Program. December. Suisun City, CA.
- U.S. Forest Service. 1973. Visual Resource Management Guides. Visual Quality Standard Determination and Application California Region. General Printing Office. Washington, DC.
- _____. 1976. National Forest Landscape Management.



Water Quality

- Alpers, C.N., H.E. Taylor, and J.L. Domagalski. 1999. Metal Transport in the Sacramento River, California, Part I. Methods and Results, U.S. Geological Survey Open File Report (in review). Draft Report, 462 pp.
- Alpers, C.N., R.C. Anweiler, H.E. Taylor, P.D. Dileanis, and J.L. Domagalski. 1999. Metal Transport in the Sacramento River, California. Part 2. Interpretation of Metal Loads, U.S. Geological Survey, Water Resources Investigations Reports. (in review). Draft Report, 120 pp.
- Amy, G. L., J. M. Thompson, L. Tan, M. K. Davis, and S. W. Drassner. 1990. Evaluation of THM precursor contribution from agricultural drains. Research and Technology 82:57-64.
- Bouse, R.M., M.I. Hornberger and S.M. Luoma. 1996. Sr and Nd Isotopic Compositions and Trace Element Concentrations in San Francisco Bay Cores Distinguish Sediment Deposited from Hydraulic Gold Mining and Mercury Mining (abstract). EOS (Transactions, American Geophysical Union), V. 77, Fall Meeting Supplement, p. 201.

CALFED Bay-Delta Program. 1998a. Draft Programmatic EIS/EIR. March.
1998b. Revised Phase II Report. December.
1998c. Bay-Delta Drinking Water Quality: Bromide Ion and Formation of Brominated Disinfection-By-Products (DBPs), prepared by Gary Amy et al. November.
. 1998d. Revised Water Quality Program Appendix (Draft). December.
California Department of Water Resources. 1998. California State Water Project Coordinated Pathogen Monitoring Program (Draft). December.
. 1996. Water Quality Conditions in the Sacramento-San Joaquin Delta from 1970 to 1993. Report to the State Water Resources Control Board In Accordance with Water Rights Decision 1485, Order 4(f). December.
1995a. Estimation of Delta Island Diversions and Return Flows, Division of Planning. February.
1995b. Representative Delta Island Return Flow Quality for Use in DSM2 (Memorandum Report, Division of Planning). May.
California Department of Water Resources. 1994. Five-Year Report of Municipal Water Quality Investigations Program: Summary and Findings during Five Dry Years: January 1987 - December 1991. November.

California Urban Water Agencies. 1995. Annual Report of Activities for 1995.

- Central Valley Regional Water Quality Control Board (CVRWQCB). 1988. A Mass Loading Assessment of Major Point and Non-Point Sources Discharging to Surface Waters in the Central Valley, California, 1985. Standards, Policies, and Special Studies Section, Draft Staff Report authored by Barry Montoya, F. Blatt, and G. Harris. October.
- Jung, Marvin and Q. Tran. 1998. Candidate Delta Regions for Treatment to Reduce Organic Carbon Loads (Draft), Consultant's Report to DWR MWQI Program, MWQI-CR#2. September.
- Domalgalski, Joseph. 1996. Pesticides and Pesticide Degradation Products in Stormwater Runoff: Sacramento River Basin, California, Journal of American Water Resources Association, Vol 32., No. 5. October.
- Domalgalski, J.L. 1999. Occurrence and Transport of Total Mercury and Methyl Mercury in the Sacramento River Basin, California, Journal of Geochemical Exploration (in press).
- Foe, Chris. 1995. Insecticide Concentrations and Invertebrate Bioassay Mortality in Agricultural Return Water from the San Joaquin Basin, Central Valley Regional Water Quality Control Board. December.
- Fox, J. Phyllis and E. Archibald. 1996. Aquatic Toxicity and Pesticides in Surface Waters of the Central Valley, prepared for California Urban Water Agencies (CUWA). July.
- Grober, L. F. 1999. Historical Flow, Boron, and Salinity Data for San Joaquin River Basin Sites. California Regional Water Quality Control Board, Central Valley Region Report (Draft).
- Hornberger, M.I., S.N. Luoma, A. van Geen, C. Fuller, and R. Anima. 1999. Historical Trends of Metals in the Sediments of San Francisco Bay, California, Journal of Marine Chemistry (in press).
- Krasner, S. et al. 1994. Quality Degradation: Implication of DBP Formation, Journal of AWWA, 86:6:43.
- Larry Walker & Associates. 1997. Sacramento River Watershed Mercury Control Planning Project Final Report for the Sacramento Regional County Sanitation District. March.
- The Metropolitan Water District of Southern California and U.S. Bureau of Reclamation. 1997. Salinity Management Study, Phase 1 Progress Report. February.
- San Francisco Estuary Institute. 1997. Regional Monitoring Program for Trace Substances: 1996 Annual Report. December.
- San Joaquin Valley Drainage Program. 1990. A Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley, Final Report. September.
- Slotten, D.G., S.M. Ayers, J.E. Reuter and C.R. Goldman. 1997. Gold Mining Impacts on Food Chain Mercury in Northwestern Sierra Nevada Streams (1997 Revision), Unpublished Report. Sacramento River Watershed Mercury Control Planning Project, University of California, Davis, Division of Environmental Studies. Final Report for the Sacramento Regional County Sanitation District. March. 74 pp.

Standard Methods for the Examination of Water and Wastewater. 1989. American Public Health Association, 17th edition.

ADDITIONAL DOCUMENTS

Additional key documents were used during the development of the March 1998 Draft Programmatic EIS/EIR and were listed in that document's bibliography. Because this document incorporates information from the March 1998 Draft Programmatic EIS/EIR, this list is repeated here.

Programs and Plans

Anadromous Fish Restoration Program.

Comprehensive Conservation Management Plan for the Bay-Delta Estuary, U.S. Environmental Protection Agency.

Central Valley Regional Water Quality Control Board Plan. 1994. Central Valley Regional Water Quality Control Board.

Delta Plan. 1991. State Water Resources Control Board.

Ecosystem Restoration Program Plan. 1997. CALFED Bay-Delta Program. Volumes I and II.

Interagency Ecological Program.

Native Fisheries Recovery Plan.

Sacramento River 1086 Plan.

Striped Bass Recovery Plan.

Vernalis Adaptive Management Plan. U.S. Bureau of Reclamation/U.S. Fish and Wildlife Service.

Regulations

Archeological and Historical Preservation Act.

Area of Origin Law.

Bay-Delta Framework Agreement.

California Endangered Species Act.

California Environmental Quality Act.

California Surface Water Treatment Regulations, 1998. Title 22 California Code of Regulations.

California Total Coliform Regulations. Title 22, Chapter 15, California Code of Regulations.

California Water Code.

Central Valley Project Improvement Act. 1992. Reclamation Projects Authorization and Adjustment Act of 1992 (Public Law 102-575), Title XXXIV. October.

Clean Water Act.

Coastal Zone Management Act.

Council on Environmental Quality. Guidelines for Implementing NEPA and CEQA Guidelines.

Delta Protection Act.

Energy and Water Development Appropriations Bill. 1998.

Enhanced Surface Water Treatment Rule. 1995. U.S. Environmental Protection Agency. Amendment to Surface Water Treatment Rule.

Executive Order 11988, Floodplain Management.

Executive Order 11990, Protection of Wetlands.

Executive Order 12898, Environmental Justice in Minority and Low-Income Populations.

Farmland Protection Policy Act.

Federal Agriculture Improvement and Reform Act of 1996.

Federal Ecosystem Directorate and the Governor's Water Policy Council of the State of California. 1994.

Federal Endangered Species Act of 1973.

Federal Public Law 87-874.

Federal Total Coliform Rule. 1990.

Food Security Act of 1985.

Lead and Copper Rule. 1991. U.S. Environmental Protection Agency. (56 FR 26460.)

National Environmental Policy Act.

National Fish and Wildlife Coordination Act.

National Guidance on Water Quality Criteria, Clean Water Act, Section 304(a).

National Historic Preservation Act.

National Primary Drinking Water Standards.

National Secondary Drinking Water Regulations. 1979. U.S. Environmental Protection Agency.

Proposed Draft Disinfectant/Disinfection By-Products Rule. 1994. U.S. Environmental Protection Agency.

Reclamation Act of 1939.

Safe Drinking Water Act, Public Law 99-399. 1974.

Suisun Marsh Preservation and Restoration Act of 1979.

Surface Water Treatment Rule. 1989. U.S. Environmental Protection Agency. June.

Reports

CALFED Water Quality Action Team. 1997. CALFED Water Quality Loading Analysis Prepared for CALFED Bay-Delta Program. January.

CALFED. 1996a. Phase I, Final Documentation Report. September.

_____. 1996b. Draft Appendices Phase I Summary Report. June.

Council of Environmental Quality. Draft Guidance Regarding Consideration of Global Climatic Change in NEPA Documents.

Draft American River Watershed Project Supplemental EIS. 1995. August.

Draft CVPIA Programmatic EIS. 1997. November.

Draft EIR/EIS for the Supplemental Water Supply Project.

Draft EIR/EIS for the Interim South Delta Project. 1996.

Draft EIR/EIS for the Montezuma Wetlands Project.

Governor's Flood Emergency Action Team Report. 1997.

Notice of Intent to Prepare an EIS for the Contra Costa Water District Multi-Purpose Pipeline Project. 1997.



- Programmatic EIR, Phases II-V, Sacramento River Flood Control System Evaluation. 1991. Sacramento Water Forum. Draft Recommendations for a Water Forum Agreement. January.
- State Water Resources Control Board. 1995. Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta.
- U.S. Bureau of Census. URL: http://venus.census.gov/cdrom/lookup/CD=LIST/DB=C90STF3A/.
- U.S. Council on Environmental Quality. Memorandum on Farmland Preservation.
- U.S. Department of Agriculture, Forest Service. 1973. Visual Management System.
- U.S. Environmental Protection Agency/U.S. Army Corps of Engineers/U.S. Geological Survey. Long-Term Dredge Disposal Study.
- U.S. Fish and Wildlife Service. Trinity River Studies.

Program Descriptions

Phase I, Final Documentation Report. 1996. September.

Draft Appendices Phase I Summary Report. 1996. June.

California Regional Water Quality Control Board. 1995.

California Regional Water Quality Control Board. 1996.

Parameter Assessment Team Input. 1997. April.

California State Water Resources Control Board. 1989.

Affected Environment and Environmental Impacts Draft Technical Report (Table 3.2). 1997. September.

Other CEQA/NEPA Topics

CALFED. 1996a. No Action Alternative and Cumulative Impact Analysis Screening Report. September.
1996b. Phase I Final Report. September.
California Department of Water Resources and U.S. Bureau of Reclamation. 1990. South Delta Water Management Program Draft EIR/EIS. June.
. 1996. Interim South Delta Program Draft EIR/EIS. July.
1994. California Water Plan Update. October.

- California State Water Resources Control Board and U.S. Army Corps of Engineers. 1995. Delta Wetlands Project Draft EIR/EIS. September.
- Council on Environmental Quality. 1997. Considering Cumulative Effects under the National Environmental Policy Act. December.
- East Bay Municipal Utility District. 1995. Raise Pardee Dam and Associated Improvements, Request for Qualifications. December.
- _____. 1994. Folsom South Canal Connection Project, California Environmental Quality Act Initial Study. January.
- _____. 1993. Updated Water Supply and Management Program, Final EIR. September.
- Glenn-Colusa Irrigation District, California Department of Fish and Game, U.S. Army Corps of Engineers, and U.S. Bureau of Reclamation. 1997. Hamilton City Pumping Plant Fish Screen Improvement Project Draft. October.
- U.S. Army Corps of Engineers, The Reclamation Board, and the Sacramento Area Flood Control Agency. 1995. American River Watershed Project Draft Supplemental EIS/EIR. August.
- U.S. Army Corps of Engineers and Solano County Department of Environmental Management. 1994. Montezuma Wetlands Project Draft EIR/EIS. October.
- U.S. Bureau of Reclamation. 1997. Federal Register Notice of Intent to Prepare an Environmental Impact Statement/Environmental Impact Report on the East Bay Municipal District's Supplemental Water Supply Project. May.
- _____. 1995. Central Valley Improvement Act Response to Comments Report #4.
- _____. 1994. Federal Register Notice of Intent to Prepare an Environmental Impact Statement on the Red Bluff Diversion Dam Fish Passage Program. August.
- _____. 1993. Central Valley Project Improvement Act, Phase I Scoping Report. May.
- U.S. Bureau of Reclamation and Sacramento Metropolitan Water Authority. 1996. American River Water Resources Investigation Draft EIS/EIR. February.
- Vladimir and Olem, Harvey. 1994. Water Quality; Prevention, Identification, and Management of Diffuse Pollution.
- Water Forum. 1997. Draft Recommendations for the Water Forum Agreements. January.

INDEX

13. Index

Because of the length and complexity of the CALFED Bay-Delta Program Programmatic EIS/EIR, two types of indexes are provided. The first, "Section Titles," is based on the document's format. The reader can find specific information listed under section headings. The second is the more familiar "subject index"; page numbers are listed for all occurrences of a specific term in the document. Because of repetitive headings, most of the section titles are not repeated in the subject index. For example, "Ecosystem Restoration Program" is listed extensively in the first section and therefore is not included in the subject index.

13.1	SECTION TITLES	 13-1
13.2	SUBJECT INDEX	 3-41

13. Index

13.1 SECTION TITLES

Chapter 1. Program Description

PROGRAM DESCRIPTION	1-1
Background	1-1
Development of the CALFED Bay-Delta Program	1-2
Structure of the Program	1-4
PROJECT DESCRIPTION AND PROGRAM PURPOSE AND NEED	1-6
Ecosystem Quality	1-7
Water Supply Reliability	1-7
Water Quality	1-8
Levee System Integrity	1-8
Ecosystem Quality	1-8
Water Supply Reliability	1-9
Water Quality	1-9
Levee System Integrity	1-10
PROGRAM GEOGRAPHIC SCOPE	1-10
CALFED Problem and Solution Areas	1-10
Description of the Study Area	1-11
Delta Region	1-11
Bay Region	1-11
Sacramento River Region	1-12
San Joaquin River Region	1-12
Other SWP and CVP Service Areas	1-12
PROGRAM ALTERNATIVES DEVELOPMENT PROCESS	
The Development, Review, and Refinement of Alternatives	1-13
Fisheries and Diversions	1-13
Habitat and Land Use and Flood Protection	
Water Supply Availability and Beneficial Uses	1-14
Water Quality and Land Use	1-14
Identification of the Preferred Program Alternative	1-1
NEXT STEPS	1-18
Actions That Will Be Taken Based on This Document	
RELATIONSHIP WITH OTHER ONGOING PROGRAMS	
Water Rights Process for CVP and SWP	1-19
Central Valley Project Improvement Act	1-20



Place of Use EIR for CVP Water Supplies Trinity River Studies Bulletin 160-98, California Water Plan Update Sacramento and San Joaquin River Basins Comprehensive Study Long-Term Management Strategy Vernalis Adaptive Management Plan Category III Other Actions California 4.4 Plan Imperial Irrigation District and San Diego County Water Authority Water Transfer	1-20 1-20 1-21 1-21 1-22 1-23 1-23
Chapter 2. Alternative Descriptions	
PROGRAM ALTERNATIVES	2-1
Summary	2-1
Overview of the Eight Program Elements	2-2
Ecosystem Restoration Program	2-7
Water Quality Program	2-8
Drinking Water Parameters	2-8
Pesticides	2-8
Organochlorine Pesticides	
Trace Metals	
Mercury	
Selenium	
Salinity	2-9
Turbidity and Sedimentation	
Low Dissolved Oxygen	2-9
Toxicity of Unknown Origin	2-9
Levee System Integrity Program	
Delta Levee Base Level Protection Plan	2-9
Delta Levee Special Improvement Projects	2-9
Delta Levee Subsidence Control Plan	
Delta Levee Emergency Management and Response Plan	
Delta Levee Risk Assessment	
Suisun Marsh Levees	
Water Use Efficiency Program	
Water Transfer Program	
Watershed Program	2.12
Storage	2.14
Conveyance	2.14
Alternative 1 - Existing System Conveyance	
South Delta Improvements	
Operating Assumptions Alternative 2 - Modified Through-Delta Conveyance	
South Delta Improvements	
North Delta Improvements North Delta Improvements	
Operating Assumptions	
Alternative 3 - Dual-Delta Conveyance	2-16
South Delta Improvements	
Sumi Dema Limpiaveliens	



North Delta Improvements
Operating Assumptions
Preferred Program Alternative - Through-Delta Conveyance
South Delta Improvements
North Delta Improvements
Operating Assumptions
NO ACTION ALTERNATIVE
ENVIRONMENTALLY PREFERABLE ALTERNATIVE
ALTERNATIVES NOT CARRIED FORWARD FOR FURTHER EVALUATION
Elimination of Alternative Configurations prior to the March 1998 Draft
Programmatic EIS/EIR 2-22
Configuration 2C
Configuration 3C
Configuration 3D
Configuration 3F
Configuration 3G2-24
Elimination of Alternative Configurations after the March 1998 Draft
Programmatic EIS/EIR
Configuration 1A2-24
Configuration 1B
Configuration 2A
Configuration 2D
Configuration 2E2-25
Configuration 3A
Configuration 3B
Configuration 3H
Configuration 3I
Chapter 3. Summary Comparison of Environmental Consequences
ENVIRONMENTAL RESOURCE IMPACTS AND ECONOMIC AND SOCIAL EFFECTS 3-1
Summary Comparison of Environmental Impacts
Summary of Beneficial Impacts
Summary of Potentially Significant Adverse Environmental Impacts
Summary of Economic and Social Effects
SUMMARY OF GROWTH-INDUCING IMPACTS
SUMMARY OF SHORT- AND LONG-TERM RELATIONSHIPS
SUMMARY OF IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS
SUMMARY OF CUMULATIVE IMPACTS
Delta Region3-6
Bay Region
Sacramento River and San Joaquin River Regions
Other SWP and CVP Service Areas
MITIGATION STRATEGIES FOR CUMULATIVE IMPACTS
Chapter 4. Guide to Impact Analyses and Description of Land Use Assumptions
GUIDE TO IMPACT ANALYSES4-1
Summary



А	reas of Controversy)
A	Affected Environment/Existing Conditions	5
A	ssessment Methods	1
S	ignificance Criteria 4-4	1
	No Action Alternative4-4	
	rogram Alternatives	
	rogram Elements with Consequences Common to All Alternatives	
	rogram Elements with Consequences That Differ Among Alternatives 4-5	
	rogram Alternatives Compared to Existing Conditions	
	Additional Impact Analysis	
	Cumulative Impacts	
	Growth-Inducing Impacts	
	Relationship Between Short-Term Uses and Long-Term Productivity4-	
	rreversible and Irretrievable Commitments4-	
	Aitigation Strategies	
T.	Potentially Significant Unavoidable Impacts	Q
CEO 4 D	OCH MENT DECLUDENCENTES	Q
CEQAL	OCUMENT REQUIREMENTS	0
ESTIMA	TED LAND USE CHANGES DUE TO THE PROGRAM4	9
	ystem Restoration Program	
	r Quality Program	
Leve	e System Integrity Program	2
Stora	ge	2
	4.1	3
Conv	reyance	-
Conv	ortant Farmland	3
Conv Impo Chapter 5.1	Water Supply and Water Management	3
Conv Impo Chapter 5.1	Water Supply and Water Management RY	1
Conv Impo Chapter 5.1	Water Supply and Water Management RY	1 1
Conv Impo Chapter 5.1 SUMMA	Water Supply and Water Management RY	1 1 2
Conv Impo Chapter 5.1 SUMMA	Water Supply and Water Management RY 5.1- Preferred Program Alternative 5.1- Alternatives 1, 2, and 3 5.1- Impacts and Mitigation Strategies 5.1-	1 1 2 2
Conv Impo Chapter 5.1 SUMMA Summary of AREAS	Water Supply and Water Management RY	1 1 2 2 2
Conv Impo Chapter 5.1 SUMMA Summary of AREAS	Water Supply and Water Management RY	1 1 2 2 2 3
Conv Impo Chapter 5.1 SUMMA Summary of AREAS Unce Add	Water Supply and Water Management RY	1 1 2 2 3 3
Conv Impo Chapter 5.1 SUMMA Summary of AREAS of Unco Addi AFFECT	Water Supply and Water Management RY	1 1 2 2 2 3 4
Conv. Important	Water Supply and Water Management RY Preferred Program Alternative Alternatives 1, 2, and 3 Impacts and Mitigation Strategies OF CONTROVERSY 5.1- ertainties in the Assessment ressing Uncertainty 5.1- TED ENVIRONMENT/EXISTING CONDITIONS 5.1- a Region 5.1-	1 1 1 2 2 3 4 5
Conv Impo Chapter 5.1 SUMMA Summary of AREAS Unce Addi AFFECT Delta Bay	Ortant Farmland 4-1 Water Supply and Water Management 5.1- RY 5.1- Preferred Program Alternative 5.1- Alternatives 1, 2, and 3 5.1- OF CONTROVERSY 5.1- extrainties in the Assessment 5.1- extrainties in the Assessment 5.1- TED ENVIRONMENT/EXISTING CONDITIONS 5.1- a Region 5.1- Region 5.1-	1 1 1 2 2 3 3 4 5 6
Conv Impo Chapter 5.1 SUMMA Summary of AREAS Unce Adda AFFECT Delta Bay:	Water Supply and Water Management 5.1- RY 5.1- Preferred Program Alternative 5.1- Alternatives 1, 2, and 3 5.1- Impacts and Mitigation Strategies 5.1- OF CONTROVERSY 5.1- extrainties in the Assessment 5.1- ressing Uncertainty 5.1- TED ENVIRONMENT/EXISTING CONDITIONS 5.1- a Region 5.1- amento River Region 5.1-	1 1 1 2 2 2 3 3 4 5 6 6
Conv Impo	Water Supply and Water Management Supply and Water Management	1 1 1 2 2 2 3 3 4 5 6 6 7
Conv Impo	Water Supply and Water Management 5.1- RY 5.1- Preferred Program Alternative 5.1- Alternatives 1, 2, and 3 5.1- Impacts and Mitigation Strategies 5.1- OF CONTROVERSY 5.1- extrainties in the Assessment 5.1- ressing Uncertainty 5.1- TED ENVIRONMENT/EXISTING CONDITIONS 5.1- a Region 5.1- amento River Region 5.1-	1 1 1 2 2 2 3 3 4 5 6 6 7
Conv. Impo. Chapter 5.1 SUMMA Summary of AREAS (Unco. Add. AFFECT Delt. Bay (Sacra)	Water Supply and Water Management S.1- Preferred Program Alternative 5.1- Alternatives 1, 2, and 3 5.1- Impacts and Mitigation Strategies 5.1- OF CONTROVERSY 5.1- extrainties in the Assessment 5.1- tessing Uncertainty 5.1- TED ENVIRONMENT/EXISTING CONDITIONS 5.1- a Region 5.1- a Region 5.1- Sacramento River Region 5.1- Sacramento River 5.1- Feather River 5.1- American River 5.1- American River 5.1- Sacramento River 5.1	1 1 1 2 2 3 3 4 5 6 6 7 8 0
Conv. Impo. Chapter 5.1 SUMMA Summary of AREAS (Unco. Add. AFFECT Delt. Bay (Sacra)	Water Supply and Water Management S.1- Preferred Program Alternative 5.1- Alternatives 1, 2, and 3 5.1- Impacts and Mitigation Strategies 5.1- OF CONTROVERSY 5.1- extrainties in the Assessment 5.1- tessing Uncertainty 5.1- TED ENVIRONMENT/EXISTING CONDITIONS 5.1- a Region 5.1- a Region 5.1- Sacramento River Region 5.1- Sacramento River 5.1- Feather River 5.1- American River 5.1- American River 5.1- Sacramento River 5.1	1 1 1 2 2 3 3 4 5 6 6 7 8 0
Conv Impo	Water Supply and Water Management 4-1 RY 5.1- Preferred Program Alternative 5.1- Alternatives 1, 2, and 3 5.1- Impacts and Mitigation Strategies 5.1- OF CONTROVERSY 5.1- crtainties in the Assessment 5.1- cressing Uncertainty 5.1- ressing Uncertainty 5.1- Region 5.1- Region 5.1- Region 5.1- anento River Region 5.1- Sacramento River Region 5.1- Sharmento River Region 5.1- Sharmento River Region 5.1- Sharmento River 5.1- Sharmerican	1 1 1 2 2 2 3 3 4 5 6 6 7 8 0 1
Convergence Chapter 5.1 SUMMA Summary of AREAS Unce Addd AFFECT Delta Bay Sacra	Water Supply and Water Management S.1- Preferred Program Alternative 5.1- Alternatives 1, 2, and 3 5.1- Impacts and Mitigation Strategies 5.1- OF CONTROVERSY 5.1- extrainties in the Assessment 5.1- tessing Uncertainty 5.1- TED ENVIRONMENT/EXISTING CONDITIONS 5.1- a Region 5.1- a Region 5.1- Sacramento River Region 5.1- Sacramento River 5.1- Feather River 5.1- American River 5.1- American River 5.1- Sacramento River 5.1	1 1 1 2 2 2 3 3 4 5 6 6 7 8 0 1 1
Conv Impo	Water Supply and Water Management 4-1 RY 5.1- Preferred Program Alternative 5.1- Alternatives 1, 2, and 3 5.1- Impacts and Mitigation Strategies 5.1- OF CONTROVERSY 5.1- extrainties in the Assessment 5.1- ressing Uncertainty 5.1- TED ENVIRONMENT/EXISTING CONDITIONS 5.1- a Region 5.1- Sacramento River Region 5.1- Feather River 5.1- American River 5.1- Ioaquin River Region 5.1- Upper San Joaquin River 5.1-	1 1 1 2 2 2 3 3 4 5 6 6 7 8 0 1 1 1 2
Conv. Impo. Chapter 5.1 SUMMA Summary of AREAS of Unco. Add. AFFECT Delt. Bay: Sacra.	Water Supply and Water Management 4-1 RY 5.1- Preferred Program Alternative 5.1- Alternatives 1, 2, and 3 5.1- Impacts and Mitigation Strategies 5.1- OF CONTROVERSY 5.1- extrainties in the Assessment 5.1- ressing Uncertainty 5.1- TED ENVIRONMENT/EXISTING CONDITIONS 5.1- a Region 5.1- Sacramento River Region 5.1- Feather River 5.1- American River 5.1- Ioaquin River Region 5.1- Upper San Joaquin River 5.1- Stanislaus River 5.1-	1 1 1 2 2 2 3 3 4 5 6 6 7 8 0 1 1 1 2 1 2 1 3 1 1 2 3 3 1 1 2 3 3 1 1 2 3 3 3 3
Conv. Impo. Chapter 5.1 SUMMA Summary of AREAS Unco. Add. AFFECT Delt. Bay: Sacra San	Water Supply and Water Management 4-1 RY 5.1- Preferred Program Alternative 5.1- Alternatives 1, 2, and 3 5.1- Impacts and Mitigation Strategies 5.1- OF CONTROVERSY 5.1- extrainties in the Assessment 5.1- ressing Uncertainty 5.1- TED ENVIRONMENT/EXISTING CONDITIONS 5.1- a Region 5.1- Region haver 5.1- Sacramento River Region 5.1- Sacramento River Region 5.1- American River 5.1- Joaquin River Region 5.1- Upper San Joaquin River 5.1- Stanislaus River 5.1- Tuolumne River 5.1- Merced River 5.1-	1 1 1 2 2 2 3 3 4 5 6 6 6 7 8 0 1 1 1 2 1 3 1 4 1 1 2 1 3 4 1 1 1 2 1 3 1 4 1 1 2 1 3 1 4 1 1 1 2 1 3 1 4 1 1 1 1 1 2 1 3 1 3 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Conv. Important	Water Supply and Water Management Standard	1 1 2 2 2 3 3 4 5 6 6 7 8 0 1 1 1 2 1 3 1 4 1 5
Convergence Chapter 5.1 SUMMA Summary of AREAS (Uncondended AFFECT Delta Bay): Sacra San Sout ASSESS.	Water Supply and Water Management Standard	1 1 2 2 2 3 3 4 5 6 6 7 8 0 1 1 1 2 3 1 4 1 5 1 6
Convergence Chapter 5.1 SUMMA Summary of AREAS (Uncondended AFFECT Delta Bay) Sacra San South ASSESS Too	Water Supply and Water Management Standard	1 1 2 2 2 3 3 4 5 6 6 7 8 0 1 1 1 2 1 3 4 1 5 1 6 1 6



Bay-Delta Hydrodynamic and Water Quality Modeling 5.1-17	
Addressing Uncertainty 5.1-18	
Modeling Assumptions	1
Approach	1
SIGNIFICANCE CRITERIA	
NO ACTION ALTERNATIVE	
Delta Region	5
Bay Region	
Sacramento River and San Joaquin River Regions	
Water Use	
Surface Storage	
South-of-Delta SWP and CVP Service Areas	.8
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 5.1-2	.9
Delta Region	0
Ecosystem Restoration Program	
Levee System Integrity Program	1
Water Use Efficiency Program	1
Bay Region	
Sacramento River and San Joaquin River Regions 5.1-3	
South-of-Delta SWP and CVP Service Areas	
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES . 5.1-3	
Alternative 1	
Alternative 2	
Alternative 3	
Preferred Program Alternative))
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	
ADDITIONAL IMPACT ANALYSIS	
MITIGATION STRATEGIES	57
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS) [
Chapter 5.2 Bay-Delta Hydrodynamics and Riverine Hydraulics	
SUMMARY	-1
Preferred Program Alternative	
Alternatives 1, 2, and 3	
AREAS OF CONTROVERSY	
AFFECTED ENVIRONMENT/EXISTING CONDITIONS	
Delta Region	-3
Bay Region	-4
Sacramento River Region	0
San Joaquin River Region	-0
Other SWP and CVP Service Areas	
ASSESSMENT METHODS	
Tools	
Modeling Assumptions 5.2-1	10
Approach 5.2-1	11
Delta Region	12
Bay Region	12
Sacramento River and San Joaquin River Regions 5.2-1 SIGNIFICANCE CRITERIA 5.2-1	12
SICTNIFICANCE CRITERIA	14



NO ACTION ALTERNATIVE	
Delta Region	5.2-14
Channel Flows	
Sacramento River Flow at Rio Vista	5.2-14
OWEST Flow	5.2-14
Cross-Delta Flow	
Old River Flow at Bacon Island	
San Joaquin River Flow at Antioch	
Mass Fate	
Bay Region	
Sacramento River and San Joaquin River Regions	
River Flows	
Existing Reservoir Releases	
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	
Delta Region	
Ecosystem Restoration Program	5.2-17
Levee System Integrity Program	5.2-17
Water Use Efficiency Program	5 2 18
Storage	5.2-10
Bay Region	5.2-19
Ecosystem Restoration Program	
Water Use Efficiency Program	
Water Transfer Program	
Storage	
Sacramento River and San Joaquin River Regions	
Ecosystem Restoration Program	
Water Use Efficiency Program	5.2-20
Water Transfer Program	
Watershed Program	5.2-20
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	
Alternative 1	
Delta Region	
Channel Flows	
Sacramento River Flow at Rio Vista	5.2-22
QWEST Flow	5.2-23
Cross-Delta Flow	
Old River Flow at Bacon Island	5.2-23
San Joaquin River Flow at Antioch	5.2-24
Mass Fate	
Bay Region	
Sacramento River and San Joaquin River Regions	5.2-24
River Flows	5.2-24
Existing Reservoir Releases	
New Reservoir Diversions and Releases	
Alternative 2	
Delta Region	
Channel Flows	5.2-26
Sacramento River Flow at Rio Vista	
QWEST Flow	
Cross-Delta Flow	5.2-27
1.773.77.75444 1 4044	we thank the !



Old River Flow at Bacon Island	
San Joaquin River Flow at Antioch	5.2-27
Mass Fate	5.2-28
Bay Region	5.2-28
Sacramento River and San Joaquin River Regions	5.2-28
River Flows	
Existing Reservoir Releases	5.2-28
New Reservoir Diversions and Releases	
Alternative 3	5.2-30
Delta Region	5.2-30
Channel Flows	5.2-30
Sacramento River Flow at Rio Vista	5.2-30
QWEST Flow	
Cross-Delta Flow	5.2-31
Old River Flow at Bacon Island	
San Joaquin River Flow at Antioch	
Mass Fate	
Bay Region	5.2-32
Sacramento River and San Joaquin River Regions	5.2-32
River Flows	5.2-32
Existing Reservoir Releases	
New Reservoir Diversions and Releases	
Preferred Program Alternative	
Delta Region	5.2-34
Channel Flows	5.2-34
Sacramento River Flow at Rio Vista	
OWEST Flow	
Cross-Delta Flow	
Old River Flow at Bacon Island	
San Joaquin River Flow at Antioch	
Mass Fate	5.2-37
Bay Region	
Sacramento River and San Joaquin River Regions	5.2-39
Existing Reservoir Releases	
New Reservoir Diversions and Releases	
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	
ADDITIONAL IMPACT ANALYSIS	
Cumulative Impacts	
Growth-Inducing Impacts	5.2-43
Short- and Long-Term Relationships	5.2-43
Irreversible and Irretrievable Commitments	
MITIGATION STRATEGIES	
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	5.2-44
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	. 3.4-44
Chapter 5.3 Water Quality	
SUMMARY	5 3_1
Preferred Program Alternative	5 3_1
Alexandrian 1 2 and 2	522
Alternatives 1, 2, and 3	
Summary of Impacts and Mitigation Strategies	5.5-4



AREAS OF CONTROVERSY	5.3-5
Total Organic Carbon Drinking Water Concerns	
Pathogens	5.3-6
Bromide	
Good Samaritan Protection	
Drinking Water Regulations	
AFFECTED ENVIRONMENT/EXISTING CONDITIONS	5.3-7
Delta Region	
Activities and Sources That Affect Water Quality in the Delta	5.3-7
Beneficial Uses, Water Quality Objectives, and Pollutants of Concern	5.3-9
Factors That Affect Variability of Water Quality in the Delta	5.3-9
Water Quality Issues in the Delta	
Summary of Data for Key Water Quality Constituents	5.3-11
Bromide	5.3-11
Total and Dissolved Organic Carbon	
Salinity, Total Dissolved Solids, and Electrical Conductivity	
Pathogens	
Mercury	
Pesticides (Diazinon and Chlropyrifos)	
Organochlorine Pesticides	5.3-14
Selenium	
Trace Metals	
Bay Region	5.3-15
Sacramento River Region	5.3-16
San Joaquin River Region	5.3-10
ASSESSMENT METHODS	
SIGNIFICANCE CRITERIA	
NO ACTION ALTERNATIVE	
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	5.3-43
Ecosystem Restoration Program	5.3-23
Water Quality Program	5.3-23
Levee System Integrity Program	5.3-20
Water Use Efficiency Program	5.3-4/
Water Transfer Program	
Watershed Program	+
Impacts Related to Construction for Storage and Conveyance Elements	5.3-20
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	5.3-30
Preferred Program Alternative	5.5-51
Delta Region	5.3-31
Bay Region	5.3-34
Sacramento River Region	5.3-34
San Joaquin River Region	5.5-55
Other SWP and CVP Service Areas	
Alternative 1	
Delta Region	5.3-36
Bay Region	5.3-38
Sacramento River Region	5.3-38
San Joaquin River Region	5.5-39
Other SWP and CVP Service Areas	5.3-39
A Leading Administration of the Control of the Cont	2 2-411



Delta Region	5.3-40
Bay Region	5.3-42
Sacramento River Region	5.3-42
San Joaquin River Region	5.3-42
Other SWP and CVP Service Areas	5.3-42
Alternative 3	5.3-43
Delta Region	5.3-43
Bay Region	5.3-45
Sacramento River Region	5.3-45
San Joaquin River Region	
Other SWP and CVP Service Areas	5.3-46
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	5.3-47
Preferred Program Alternative	5.3-47
Alternative 1	5.3-48
Delta Region	
Bay Region	5.3-49
Sacramento River Region	5.3-50
San Joaquin River Region	5.3-50
Other SWP and CVP Service Areas	5.3-50
Alternative 2	
Delta Region	5.3-51
Bay Region	5.3-52
Sacramento River Region	5.3-52
San Joaquin River Region	5.3-52
Other SWP and CVP Service Areas	5.3-52
Alternative 3	
ADDITIONAL IMPACT ANALYSIS	
Cumulative Impacts	
Growth-Inducing Impacts	5.3-54
Short- and Long-Term Relationships	5.3-54
Irreversible and Irretrievable Commitments	5.3-54
MITIGATION STRATEGIES	
Ecosystem Restoration Program	
Levee System Integrity Program	5.3-55
Water Use Efficiency Program	5.3-56
Water Transfer Program	5.3-56
Storage	5.3-56
Sediment Dredging and In-Channel Earth Movement	5.3-56
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	
Chapter 5.4 Groundwater Resources	
•	
SUMMARY	. 5.4-1
Preferred Program Alternative	. 5.4-1
Alternatives 1, 2, and 3	. 5.4-2
Summary of Impacts and Mitigation Strategies	. 5.4-2
AREAS OF CONTROVERSY	. 5.4-3
AFFECTED ENVIRONMENT/ EXISTING CONDITIONS	
Groundwater Hydrology	
Groundwater Rights	. 5.4-5



Groundwater Management	5.4-6
Local Agencies	
Special Legislation Districts	
Assembly Bill 3030	
City and County Ordinances	
Groundwater Regulation	
Delta Region	
Bay Region	5.4-8
Sacramento River Region	
San Joaquin River Region	
Other SWP and CVP Service Areas	
ASSESSMENT METHODS	
Tools	
Addressing Uncertainty	5.4-16
Modeling Assumptions	5.4-17
CVGSM Modeling Results	5.4-17
SIGNIFICANCE CRÎTERIA	
NO ACTION ALTERNATIVE	
Delta Region	5.4-19
Bay Region	5.4-19
Sacramento River Region	
San Joaquin River Region	5.4-20
Other SWP and CVP Service Areas	5.4-21
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	5.4-22
Delta Region	5.4-22
Ecosystem Restoration Program	5.4-22
Water Quality Program	5.4-22
Levee System Integrity Program	5.4-22
Water Use Efficiency Program	
Water Transfer Program	5.4-23
Watershed Program	5.4-23
Storage	5.4-23
Bay Region	5.4-23
Ecosystem Restoration Program	5.4-23
Water Quality Program	
Water Use Efficiency Program	
Water Transfer Program	5.4-24
Watershed Program	5.4-24
Storage	5.4-24
Sacramento River Region	5.4-24
Ecosystem Restoration Program	
Water Quality Program	5.4-25
Water Use Efficiency Program	5.4-25
Water Transfer Program	5.4-26
Watershed Program	
Storage	5.4-27
San Joaquin River Region	
Ecosystem Restoration Program	5.4-29
Water Quality Program	5.4-30
Water Use Efficiency Program	
Water Transfer Program	5.4-30



Storage	-31
Other SWP and CVP Service Areas	
Ecosystem Restoration Program 5.4	
Water Quality Program	
Water Use Efficiency Program	
Water Transfer Program	
Watershed Program and Storage 5.4	-31
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES 5.4	-31
Preferred Program Alternative	
Alternative 1 5.4	
Alternative 2	
Alternative 3	
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS 5.4	-33
ADDITIONAL IMPACT ANALYSIS	-34
Cumulative Impacts	-34
Growth-Inducing Impacts	
Short- and Long-Term Relationships	
Irreversible and Irretrievable Commitments	
MITIGATION STRATEGIES	
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	
TOTEIVIII DEGI SIGINI IGIIIVI GIVIIV OIDIIDDE INII II GIG	
Chapter 5.5 Geology and Soils SUMMARY	.5-1
Preferred Program Alternative 5.	
Alternatives 1, 2, and 3	
Summary of Impacts and Mitigation Strategies	
AREAS OF CONTROVERSY	.5-3
AFFECTED ENVIRONMENT/EXISTING CONDITIONS	
Overview	.5-4
Delta Region	.5-4
Soils	
Soil Subsidence	
Delta Seismicity	
Soil Salinity	
Wind Erosion	
Sedimentation and Fluvial Erosion in the Delta	
Bay Region	
Soils and Sediment Conditions	
San Francisco Bay Seismicity	
Sedimentation and Erosion in San Francisco Bay	
Sacramento Region	
Soils	
Geologic Conditions 5.5	
Geomorphologic Conditions	
Soil Subsidence	
Seismicity 5.5	
In-Stream Gravel Mining	
Wind Erosion	
WING ETOSION J.	7-TT



San Joaquin River Region	
Soils	
Geologic Conditions	5.5-12
Geomorphologic Conditions	
Soil Subsidence	
Seismicity	5.5-13
Soil Salinity	5.5-14
Selenium Concentrations	5.5-14
Other SWP and CVP Service Areas	5.5-14
ASSESSMENT METHODS	
SIGNIFICANCE CRITERIA	
NO ACTION ALTERNATIVE	
Delta Region	
Bay Region	
Sacramento River Region	5.5-16
San Joaquin River Region	
Other SWP and CVP Service Areas	
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	
Delta Region	
Ecosystem Restoration Program	
Water Quality Program	
Levee System Integrity Program	
Water Use Efficiency Program	5.5-18
Water Transfer and Watershed Programs	
Storage	
Bay Region	
Ecosystem Restoration and Water Quality Programs	5.5-20
Leosystem Restoration and water Quanty Programs	5.5.20
Levee System Integrity Program	5.5-20
Water Use Efficiency and Water Transfer Programs	5.5.20
Watershed Program	5.5-20
Storage	5.5-21
Sacramento River and San Joaquin River Regions	5.5-21
Ecosystem Restoration Program	
Water Quality Program	5.5-22
Levee System Integrity Program	5.5-22
Water Use Efficiency Program	5.5-22
Water Transfer Program	
Watershed Program	5.5-23
Storage	5.5-23
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	5.5-24
Preferred Program Alternative	5.5-24
Alternative 1	
Alternative 2	
Alternative 3	5.5-25
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	
ADDITIONAL IMPACT ANALYSIS	
Cumulative Impacts	
Growth-Inducing Impacts	5.5-26
Short- and Long-Term Relationships	5.5-2/
Irreversible and Irretrievable Commitments	
MITICATION STRATECIES	5.5-27



Chapter 5.6 Noise

SUMMARY	5.6-1
Preferred Program Alternative	5.6-1
Alternatives 1, 2, and 3	5.6-1
Summary of Impacts and Mitigation Strategies	
AREAS OF CONTROVERSY	
All Regions	5.6-3
ASSESSMENT METHODS	
SIGNIFICANCE CRITERIA	
NO ACTION ALTERNATIVE	
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	
Delta Region	5.6-5
Ecosystem Restoration Program	
Water Quality, Water Transfer, and Watershed Programs	5.6-5
Levee System Integrity Program	5.0-5
Water Use Efficiency Program	5.0-0
Storage	5.0-0
Bay Region	5.6-6
Ecosystem Restoration Program	
Water Quality, Water Use Efficiency, and Water Transfer Programs, and Storage	5.6-6
Sacramento River and San Joaquin River Regions	5.6-7
Ecosystem Restoration and Watershed Programs	5.6-7
Water Quality Program	5.6-7
Levee System Integrity, Water Use Efficiency, and Water Transfer Programs	5.6-7
Storage	
Other SWP and CVP Service Areas	5.6-7
Ecosystem Restoration, Water Quality, Levee System Integrity, Water Use Efficiency,	
Water Transfer, and Watershed Programs, and Storage	5.6-7
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	5.6-8
Preferred Program Alternative	5.6-8
Alternative 1	5.6-8
Alternative 2	5.6-8
Alternative 3	5.6-8
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	5.6-9
ADDITIONAL IMPACT ANALYSIS	
Cumulative Impacts	5.6-9
Growth-Inducing Impacts	5.6-10
Short- and Long-Term Relationships	
Irreversible and Irretrievable Commitments	
MITIGATION STRATEGIES	5.6-10
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	5.6-11
Chapter 5.7 Transportation	
SUMMARY	. 5.7-1
Preferred Program Alternative	. 5.7-1
Alternatives 1, 2, and 3	



Summary of Impacts and Mitigation Strategies	
AREAS OF CONTROVERSY	
AFFECTED ENVIRONMENT/EXISTING CONDITIONS	
Delta Region	5.7-3
Bay Region	
Sacramento River Region	
San Joaquin River Region	
Other SWP and CVP Service Areas	
ASSESSMENT METHODS	
SIGNIFICANCE CRITERIA	
NO ACTION ALTERNATIVE	
Delta and Bay Regions	5./-0
Sacramento River and San Joaquin River Regions	5./-0
Other SWP and CVP Service Areas	3./-/
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	5.1-1
Delta Region	3./-/
Ecosystem Restoration Program	5.7-7
Water Quality, Water Use Efficiency, Water Transfer, and Watershed Programs	
Levee System Integrity Program	
Storage	
Bay Region	
Ecosystem Restoration Program	5.7-9
Water Quality, Levee System Integrity, Water Use Efficiency, and	3.1-2
Water Transfer Programs	5.7-9
Watershed Program	5.7-9
Storage	5.7-9
Other SWP and CVP Service Areas	5.7-7
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	. 5.7-10
Preferred Program Alternative	. 5.7-10
Alternative 1	. 5.7-11
Alternative 2	
Alternative 3	
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	. 5.7-11
ADDITIONAL IMPACT ANALYSIS	
Cumulative Impacts	
Growth-Inducing Impacts	. 5.7-13
Short- and Long-Term Relationships	. 5.7-13
Irreversible and Irretrievable Commitments	
MITIGATION STRATEGIES	. 5.7-13
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	. 5.7-14
Chapter 5.8 Air Quality	
SUMMARY	5.8-1
Preferred Program Alternative	5.8-1
Alternatives 1, 2, and 3	
Summary of Impacts and Mitigation Strategies	
ADEAS OF CONTROVERSY	5.8-3



AFFECTED ENVIRONMENT/EXISTING CONDITIONS	5.8-3
Delta Region	5.8-5
Bay Region	5.8-5
Sacramento River Region	5.8-5
San Joaquin River Region	
Other SWP and CVP Service Areas	
ASSESSMENT METHODS	
SIGNIFICANCE CRITERIA	
NO ACTION ALTERNATIVE	
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	
Delta Region	
Ecosystem Restoration Program	
Water Quality Program	
Levee System Integrity Program	
Water Use Efficiency Program	
Water Transfer Program	
Watershed Program	
Storage	
Bay Region	
Ecosystem Restoration and Levee System Integrity Programs	5.8-11
Water Quality, Water Transfer, and Water Use Efficiency Programs	5.8-11
Watershed Program	5.8-11
Storage	
Sacramento River and San Joaquin River Regions	
Ecosystem Restoration, Water Use Efficiency, Water Transfer, and Watershed Programs	
Water Quality Program	5.8-12
Storage	
Other SWP and CVP Service Areas	
All Programs	5 0 12
Preferred Program Alternative	
Alternative 1	
Alternative 2	
Alternative 3	
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	5.8-14
ADDITIONAL IMPACT ANALYSIS	
Cumulative Impacts	
Growth-Inducing Impacts	
Short- and Long-Term Relationships	
Irreversible and Irretrievable Commitments	
MITIGATION STRATEGIES	
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	
A C AMA I AMAMMA CACATA A CAMATA CAMAMAMAMAMAMAMAMAMAMAMAMAMAMAMAMAMAMA	
Chapter 6.1 Fisheries and Aquatic Ecosystems	
SUMMARY	6.1-1
All Alternatives	
Preferred Program Alternative	
Alternatives 1, 2, and 3	
Summary of Impacts and Mitigation Strategies	



AREAS OF CONTROVERSY Uncertainty in the Assessment Affect De Nurkon Mental States States Addressing Uncertainty Affect De Nurkon Mental States Affect De Nurkon Mental States Bay Region Affect De Nurkon Mental States Bay Region Affect De Nurkon Mental States Bay Region Affect States Assessment Merithods Assessment Merithods Assessment Merithods Assessment Merithods Assessment Merithods Assessment Merithods Affect Bay States Bay Water Temperature Bay Water Temperature Affect Bay States Bay Water Temperature Affect Bay States Bay		
Addressing Uncertainty AFFECTED ENVIRONMENT/EXISTING CONDITIONS AFFECTED ENVIRONMENT/EXISTING CONDITIONS Delta Region A.1-7 Delta Region A.1-7 Bay Region A.1-8 Sacramento River Region A.1-10 Other SWP and CVP Service Areas Assessment METHODS A.1-11 ASSESSMENT METHODS A.1-12 Ecosystem-Level Analysis Flow Atter Temperature B.1-13 Sediment and Nutrient Input and Movement A.1-14 Contaminant Input and Movement A.1-15 Productivity Assessment Bruchter Bruc	AREAS OF CONTROVERSY	. 6.1-5
AFFECTED ENVIRONMENT/EXISTING CONDITIONS 6.1-7 Delta Region 6.1-7 Delta Region 6.1-8 Sacramento River Region 6.1-9 San Joaquin River Region 6.1-9 San Joaquin River Region 6.1-11 Other SWP and CVP Service Areas 6.1-11 ASSESSMENT METHODS 6.1-12 Ecosystem-Level Analysis 6.1-13 Flow 6.1-13 Water Temperature 6.1-13 Sediment and Nutrient Input and Movement 6.1-14 Contaminant Input and Movement 6.1-15 Productivity 6.1-16 Structure 6.1-17 Species-Specific Analysis 6.1-18 Physical Habitat Relationships 6.1-18 Physical Habitat Relationships 6.1-18 Water Quality Relationships 6.1-20 Entrainment Relationships 6.1-20 Entrainment Relationships 6.1-21 Movement Relationships 6.1-21 Species Interactions 6.1-22 Artificial Production 6.1-23 SIGNIFICANCE CRITERIA 6.1-24 NO ACTION ALTERNATIVE 6.1-24 Delta Region 6.1-25 Sacramento River Region 6.1-25 Sacramento River Region 6.1-26 CONSEQUENCES: PROGRAM BLEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-25 Sacramento River Region 6.1-26 Water Surface-Level Rement of the Surface of the Surf	Uncertainty in the Assessment	. 6.1-5
Delta Region	Addressing Uncertainty	. 6.1-6
Bay Region 6.1-8 Sacramento River Region 6.1-9 San Joaquin River Region 6.1-11 Other SWP and CVP Service Areas 6.1-13 ASSESSMENT METHODS 6.1-13 Ecosystem-Level Analysis 6.1-13 Flow 6.1-13 Water Temperature 6.1-13 Sediment and Nutrient Input and Movement 6.1-14 Contaminant Input and Movement 6.1-15 Productivity 6.1-16 Structure 6.1-17 Species-Specific Analysis 6.1-17 Species-Specific Analysis 6.1-18 Physical Habitat Relationships 6.1-18 Water Quality Relationships 6.1-20 Entrainment Relationships 6.1-20 Movement Relationships 6.1-21 Movement Relationships 6.1-21 Movement Relationships 6.1-22 Artificial Production 6.1-23 Artificial Production 6.1-23 Alaryest 6.1-22 ADelta Region 6.1-23 Sacramento River Region 6.1-25 <		
Sacramento River Region 6.1-9	Delta Region	. 6.1-7
San Joaquin River Region 6.1-11 Other SWP and CVP Service Areas 6.1-21 ASSESMENT METHODS 6.1-22 Ecosystem-Level Analysis 6.1-13 Flow 6.1-13 Water Temperature 6.1-13 Sediment and Nutrient Input and Movement 6.1-15 Contaminant Input and Movement 6.1-15 Productivity 6.1-16 Structure 6.1-17 Species-Specific Analysis 6.1-18 Physical Habitat Relationships 6.1-18 Water Quality Relationships 6.1-20 Entrainment Relationships 6.1-20 Water Surface-Level Relationships 6.1-20 Movement Relationships 6.1-21 Species Interactions 6.1-22 Artificial Production 6.1-23 Harvest 6.1-23 SIGNIFICANCE CRITERIA 6.1-24 NO ACTION ALTERNATIVE 6.1-24 Delta Region 6.1-25 San Joaquin River Region 6.1-25 San Joaquin River Region 6.1-25 San Joaquin River Region <		
Other SWP and CVP Service Areas 6.1-11 ASSESSMENT METHODS 6.1-12 Ecosystem-Level Analysis 6.1-13 Flow 6.1-13 Water Temperature 6.1-13 Sediment and Nutrient Input and Movement 6.1-14 Contaminant Input and Movement 6.1-15 Productivity 6.1-16 Structure 6.1-17 Species-Specific Analysis 6.1-18 Physical Habitat Relationships 6.1-18 Water Quality Relationships 6.1-20 Water Surface-Level Relationships 6.1-20 Movement Relationships 6.1-21 Movement Relationships 6.1-21 Species Interactions 6.1-22 Artificial Production 6.1-23 Harvest 6.1-23 SIGNIFICANCE CRITERIA 6.1-24 NO ACTION ALTERNATIVE 6.1-24 Delta Region 6.1-25 Sar Joaquin River Region 6.1-25 Sar Joaquin River Region 6.1-25 Sar Joaquin River Region 6.1-27 Delta Region 6.1-26		
ASSESSMENT METHODS	San Joaquin River Region	6.1-11
Ecosystem-Level Analysis 6.1-13		
Flow		
Water Temperature 6.1-13 Sediment and Nutrient Input and Movement 6.1-14 Contaminant Input and Movement 6.1-15 Productivity 6.1-16 Structure 6.1-17 Species-Specific Analysis 6.1-18 Physical Habitat Relationships 6.1-18 Water Quality Relationships 6.1-20 Entrainment Relationships 6.1-20 Water Surface-Level Relationships 6.1-21 Movement Relationships 6.1-21 Species Interactions 6.1-22 Artificial Production 6.1-23 Harvest 6.1-23 SIGNIFICANCE CRITERIA 6.1-23 NO ACTION ALTERNATIVE 6.1-24 Delta Region 6.1-25 Sacramento River Region 6.1-25 San Joaquin River Region 6.1-27 Delta Region 6.1-27 Water Quality Program 6.1-27 Water Quality Program		
Sediment and Nutrient Input and Movement	Flow	6.1-13
Contaminant Input and Movement 6.1-15 Productivity 6.1-6 Structure 6.1-17 Species-Specific Analysis 6.1-18 Physical Habitat Relationships 6.1-20 Entrainment Relationships 6.1-20 Water Quality Relationships 6.1-20 Water Surface-Level Relationships 6.1-21 Movement Relationships 6.1-21 Species Interactions 6.1-23 Artificial Production 6.1-23 Harvest 6.1-23 SIGNIFICANCE CRITERIA 6.1-24 NO ACTION ALTERNATIVE 6.1-24 Bay Region 6.1-24 Bay Region 6.1-25 Saramento River Region 6.1-25 Sar Joaquin River Region 6.1-25 San Joaquin River Region 6.1-25 Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Water Quality Program 6.1-23 Water Use Efficiency Program 6.1-30 Water Suptem Resto	Water Temperature	6.1-13
Contaminant Input and Movement 6.1-15 Productivity 6.1-6 Structure 6.1-17 Species-Specific Analysis 6.1-18 Physical Habitat Relationships 6.1-20 Entrainment Relationships 6.1-20 Water Quality Relationships 6.1-20 Water Surface-Level Relationships 6.1-21 Movement Relationships 6.1-21 Species Interactions 6.1-23 Artificial Production 6.1-23 Harvest 6.1-23 SIGNIFICANCE CRITERIA 6.1-24 NO ACTION ALTERNATIVE 6.1-24 Bay Region 6.1-24 Bay Region 6.1-25 Saramento River Region 6.1-25 Sar Joaquin River Region 6.1-25 San Joaquin River Region 6.1-25 Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Water Quality Program 6.1-23 Water Use Efficiency Program 6.1-30 Water Suptem Resto	Sediment and Nutrient Input and Movement	6.1-14
Productivity 6.1-16 Structure 6.1-17 Species-Specific Analysis 6.1-18 Physical Habitat Relationships 6.1-18 Water Quality Relationships 6.1-20 Entrainment Relationships 6.1-20 Water Surface-Level Relationships 6.1-21 Movement Relationships 6.1-21 Species Interactions 6.1-22 Artificial Production 6.1-23 Harvest 6.1-23 SIGNIFICANCE CRITERIA 6.1-24 NO ACTION ALTERNATIVE 6.1-24 Delta Region 6.1-25 Sacramento River Region 6.1-25 Sar Joaquin River Region 6.1-25 Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Water Quality Program 6.1-23 Water Use Efficiency Program 6.1-23 Water Transfer Program 6.1-31 Water Quality Program 6.1-31 Ecosystem Restoration Program 6.1-32 Water	Contaminant Input and Movement	6.1-15
Structure 6.1-17 Species-Specific Analysis 6.1-18 Physical Habitat Relationships 6.1-18 Water Quality Relationships 6.1-20 Entrainment Relationships 6.1-20 Water Surface-Level Relationships 6.1-21 Movement Relationships 6.1-21 Species Interactions 6.1-22 Artificial Production 6.1-23 Harvest 6.1-23 SIGNIFICANCE CRITERIA 6.1-24 NO ACTION ALTERNATIVE 6.1-24 Delta Region 6.1-25 Sacramento River Region 6.1-25 Sacramento River Region 6.1-25 Other SWP and CVP Service Areas 6.1-26 Other SWP and CVP Service Areas 6.1-27 Delta Region 6.1-27 Delta Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-27 Water Use Efficiency Program 6.1-30 Water Transfer Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 <td>Productivity</td> <td>6.1-16</td>	Productivity	6.1-16
Species-Specific Analysis 61-18 Physical Habitat Relationships 61-18 Water Quality Relationships 61-20 Entrainment Relationships 61-20 Water Surface-Level Relationships 61-21 Movement Relationships 61-22 Artificial Production 61-23 Harvest 61-23 SIGNIFICANCE CRITERIA 61-24 NO ACTION ALTERNATIVE 61-24 Delta Region 61-25 Sacramento River Region 61-25 San Joaquin River Region 61-25 San Joaquin River Region 61-26 Other SWP and CVP Service Areas 61-27 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 61-27 Delta Region 61-27 Water Quality Program 61-27 Water Use Efficiency Program 61-23 Water Use Efficiency Program 61-30 Water Quality Program 61-31 Storage 61-31 Bay Region 61-33 Ecosystem Restoration Program 61-33 Water Quality Program <td>Structure</td> <td>6.1-17</td>	Structure	6.1-17
Physical Habitat Relationships 6.1-18 Water Quality Relationships 6.1-20 Entrainment Relationships 6.1-20 Water Surface-Level Relationships 6.1-21 Movement Relationships 6.1-21 Species Interactions 6.1-22 Artificial Production 6.1-23 Harvest 6.1-23 SIGNIFICANCE CRITERIA 6.1-24 NO ACTION ALTERNATIVE 6.1-24 Delta Region 6.1-25 Sacramento River Region 6.1-25 Sar Joaquin River Region 6.1-25 San Joaquin River Region 6.1-26 Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-23 Water Use Efficiency Program 6.1-30 Water Segion 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-33 <td< td=""><td>Species-Specific Analysis</td><td>6.1-18</td></td<>	Species-Specific Analysis	6.1-18
Water Quality Relationships 61-20 Entrainment Relationships 61-20 Water Surface-Level Relationships 61-21 Movement Relationships 61-21 Species Interactions 61-22 Artificial Production 61-23 Harvest 61-23 SIGNIFICANCE CRITERIA 61-24 NO ACTION ALTERNATIVE 61-24 Delta Region 61-25 Sacramento River Region 61-25 Sacramento River Region 61-25 Sar Joaquin River Region 61-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 61-27 Delta Region 61-27 Ecosystem Restoration Program 61-27 Water Quality Program 61-29 Water Use Efficiency Program 61-29 Water By Region 61-31 Bay Region 61-31 Bay Region 61-31 Ecosystem Restoration Program 61-32 Water Transfer Program 61-33 Water Quality Program 61-34 Levee System Integrity Program 61-34 Water Use Efficiency Program 61-34 <td>Physical Habitat Relationships</td> <td>6.1-18</td>	Physical Habitat Relationships	6.1-18
Entrainment Relationships 6.1-20 Water Surface-Level Relationships 6.1-21 Movement Relationships 6.1-21 Species Interactions 6.1-22 Artificial Production 6.1-23 Harvest 6.1-23 SIGNIFICANCE CRITERIA 6.1-24 NO ACTION ALTERNATIVE 6.1-24 Delta Region 6.1-25 Sacramento River Region 6.1-25 San Joaquin River Region 6.1-25 Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Ecosystem Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-27 Water Use Efficiency Program 6.1-30 Water Transfer Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-32 Ecosystem Restoration Program 6.1-34 Water Quality Program 6.1-34 Water Use		
Water Surface-Level Relationships 6.1-21 Movement Relationships 6.1-21 Species Interactions 6.1-22 Artificial Production 6.1-23 Harvest 6.1-23 SIGNIFICANCE CRITERIA 6.1-24 NO ACTION ALTERNATIVE 6.1-24 Delta Region 6.1-25 Sacramento River Region 6.1-25 San Joaquin River Region 6.1-25 Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-27 Water Use Efficiency Program 6.1-23 Water Transfer Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-32 Water Quality Program 6.1-33 Water Quality Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Pro	Entrainment Relationships	6.1-20
Movement Relationships 6.1-21 Species Interactions 6.1-22 Artificial Production 6.1-23 Harvest 6.1-23 SIGNIFICANCE CRITERIA 6.1-24 NO ACTION ALTERNATIVE 6.1-24 Delta Region 6.1-24 Bay Region (surer Region) 6.1-25 Sacramento River Region (surer Region) 6.1-25 Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-27 Water Use Efficiency Program 6.1-23 Water Transfer Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-32 Water Quality Program 6.1-33 Ecosystem Restoration Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Use Efficiency Program 6.1-34 <th< td=""><td>Water Surface-Level Relationships</td><td>6.1-21</td></th<>	Water Surface-Level Relationships	6.1-21
Species Interactions 6.1-22 Artificial Production 6.1-23 Harvest 6.1-23 SIGNIFICANCE CRITERIA 6.1-24 NO ACTION ALTERNATIVE 6.1-24 Delta Region 6.1-24 Bay Region 6.1-25 Sacramento River Region 6.1-25 San Joaquin River Region 6.1-25 Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-29 Water Use Efficiency Program 6.1-30 Water Transfer Program 6.1-30 Watershed Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-32 Water Quality Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Use Efficiency Program		
Artificial Production 6.1-23 Harvest 6.1-23 SIGNIFICANCE CRITERIA 6.1-24 NO ACTION ALTERNATIVE 6.1-24 Delta Region 6.1-24 Bay Region 6.1-25 Sacramento River Region 6.1-25 Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-27 Levee System Integrity Program 6.1-26 Water Use Efficiency Program 6.1-30 Watershed Program 6.1-30 Watershed Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Use Efficiency Program<		
Harvest 6.1-23 SIGNIFICANCE CRITERIA 6.1-24 NO ACTION ALTERNATIVE 6.1-24 Delta Region 6.1-24 Bay Region 6.1-25 Sacramento River Region 6.1-25 San Joaquin River Region 6.1-26 Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-29 Levee System Integrity Program 6.1-29 Water Use Efficiency Program 6.1-30 Watershed Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-32 Levee System Integrity Program 6.1-32 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34		
SIGNIFICANCE CRITERIA 6.1-24 NO ACTION ALTERNATIVE 6.1-24 Delta Region 6.1-24 Bay Region 6.1-25 Sacramento River Region 6.1-25 San Joaquin River Region 6.1-26 Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-29 Levee System Integrity Program 6.1-29 Water Use Efficiency Program 6.1-30 Watershed Program 6.1-30 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-32 Levee System Integrity Program 6.1-32 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34		
NO ACTION ALTERNATIVE 6.1-24 Delta Region 6.1-24 Bay Region 6.1-25 Sacramento River Region 6.1-25 San Joaquin River Region 6.1-26 Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-29 Levee System Integrity Program 6.1-29 Water Use Efficiency Program 6.1-30 Watershed Program 6.1-30 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34		
Delta Region 6.1-24 Bay Region 6.1-25 Sacramento River Region 6.1-25 San Joaquin River Region 6.1-26 Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-29 Levee System Integrity Program 6.1-29 Water Use Efficiency Program 6.1-30 Watershed Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Water Quality Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34		
Bay Region 6.1-25 Sacramento River Region 6.1-25 San Joaquin River Region 6.1-26 Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-29 Levee System Integrity Program 6.1-30 Water Use Efficiency Program 6.1-30 Watershed Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Water Quality Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34		
Sacramento River Region 6.1-25 San Joaquin River Region 6.1-26 Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-29 Levee System Integrity Program 6.1-30 Water Use Efficiency Program 6.1-30 Watershed Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34	Boy Region	6.1-25
San Joaquin River Region 6.1-26 Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-29 Levee System Integrity Program 6.1-30 Water Use Efficiency Program 6.1-30 Watershed Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-36	Sacramento River Region	6.1-25
Other SWP and CVP Service Areas 6.1-26 CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-29 Levee System Integrity Program 6.1-30 Water Use Efficiency Program 6.1-30 Watershed Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34	San Joaquin River Region	6.1-26
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 6.1-27 Delta Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-29 Levee System Integrity Program 6.1-30 Water Use Efficiency Program 6.1-30 Watershed Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34	Other SYVP and CVP Service Areas	6.1-26
Delta Region 6.1-27 Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-29 Levee System Integrity Program 6.1-30 Water Use Efficiency Program 6.1-30 Water Transfer Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34		
Ecosystem Restoration Program 6.1-27 Water Quality Program 6.1-29 Levee System Integrity Program 6.1-29 Water Use Efficiency Program 6.1-30 Water Transfer Program 6.1-30 Watershed Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34	Dalta Region	6.1-27
Water Quality Program 6.1-29 Levee System Integrity Program 6.1-29 Water Use Efficiency Program 6.1-30 Water Transfer Program 6.1-30 Watershed Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34	Facevistem Restoration Program	6.1-27
Levee System Integrity Program 6.1-29 Water Use Efficiency Program 6.1-30 Water Transfer Program 6.1-30 Watershed Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34 Water Transfer Program 6.1-34	Water Quality Program	6.1-29
Water Use Efficiency Program 6.1-30 Water Transfer Program 6.1-30 Watershed Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34	Large System Integrity Program	6.1-29
Water Transfer Program 6.1-30 Watershed Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34	Water Use Efficiency Program	6.1-30
Watershed Program 6.1-31 Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34	Water Transfer Drogram	6.1-30
Storage 6.1-31 Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34	Water had Draggem	6.1-31
Bay Region 6.1-32 Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34	Characa	6.1-31
Ecosystem Restoration Program 6.1-32 Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34	Barr Pagion	6.1-32
Water Quality Program 6.1-34 Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34	Executation Program	6.1-32
Levee System Integrity Program 6.1-34 Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34		
Water Use Efficiency Program 6.1-34 Water Transfer Program 6.1-34		
Water Transfer Program 6.1-34	Water Lie Efficiency Program	6 1_3/
Watershed Program 6.1-3-	Water Transfer Drooter	6.1-3
Waleished Fiogram 0.1-5-	Water had Droomer	61_34
61.3	Storage	/ / 01



Sacramento River and San Joaquin River Regions	6.1-35
Ecosystem Restoration Program	6.1-35
Water Quality Program	6.1-37
Levee System Integrity Program	
Water Use Efficiency Program	
Water Transfer Program	
Watershed Program	
Storage	6.1-39
Other SWP and CVP Service Areas	
All Programs	
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	6.1-40
Preferred Program Alternative	6.1-40
Delta Region	6.1-41
Delta Cross Channel	6.1-41
Delta Channel Capacity	6.1-41
South Delta Intake Facilities	6.1-41
South Delta Hitake Facilities	
Sacramento River to Mokelumne River Channel	
Bay Region	
Sacramento River and San Joaquin River Regions	6.1-45
Other SWP and CVP Service Areas	6.1-45
Alternative 1	
Alternative 2	
Alternative 3	
Delta Cross Channel	
Delta Channel Capacity	6.1-40
South Delta Flow Control Barriers	6.1-40
Isolated Facility	6.1-47
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	0.1-48
ADDITIONAL IMPACT ANALYSIS	6.1-49
Cumulative Impacts	. 0.1-49
Growth-Inducing Impacts	. 6.1-50
Short- and Long-Term Relationships	. 6.1-50
Irreversible and Irretrievable Commitments	
MITIGATION STRATEGIES	. 0.1-51
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	. 6.1-52
Chapter 6.2 Vegetation and Wildlife	
	(01
SUMMARY	6.2-1
Preferred Program Alternative	. 6.2-1
Alternatives 1, 2, and 3	6.2-2
Summary of Impacts and Mitigation Strategies	6.2-2
AREAS OF CONTROVERSY	
Success of Habitat Restoration Efforts	
Mitigation vs. Ecosystem Restoration Program Implementation	6.2-4
Conflicts with Current National and State Environmental Policies	6.2-4
Potential for Change in the Salinity Regime of the San Francisco Estuary	6.2-4



Improvements to Water Supply and Reliability Leading to Induced Growth	
or Planned Growth	6.2-4
Location of Storage Facilities	6.2-5
AFFECTED ENVIRONMENT/EXISTING CONDITIONS	
Delta Region	6.2 - 5
Natural and Agricultural Communities	6.2-6
Special-Status Species	6.2-7
Waterfowl and Shorebirds	
Bay Region	6.2-8
Natural and Agricultural Communities	6.2-9
Special-Status Species	6.2-9
Waterfowl and Shorebirds	6.2-10
Sacramento River Region	6.2-10
Natural and Agricultural Communities	6.2-11
Special-Status Species	6.2-11
Waterfowl and Shorebirds	6.2-11
San Joaquin River Region	6.2-12
Natural and Agricultural Communities	6.2-12
Special-Status Species	6.2-12
Waterfowl and Shorebirds	6.2-13
Other SWP and CVP Service Areas	
Natural and Agricultural Communities	
Special-Status Species	6.2-13
ASSESSMENT METHODS	6.2-14
SIGNIFICANCE CRITERIA	6.2-16
NO ACTION ALTERNATIVE	6.2-16
Delta Region	6.2-16
Bay Region	6.2-17
Sacramento River Region	6.2-18
San Joaquin River Region	6.2-18
Other SWP and CVP Service Areas	6.2-18
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	6.2-19
Delta Region	6.2-19
Ecosystem Restoration Program	6.2 - 19
Water Quality Program	6.2-21
Levee System Integrity Program	6.2-22
Water Use Efficiency Program	6.2-22
Water Transfer Program	
Watershed Program	6.2-24
Storage	6.2-24
Bay Region	6.2-25
Ecosystem Restoration Program	6.2-25
Water Quality Program	6.2-25
Levee System Integrity Program	6.2-25
Water Use Efficiency and Water Transfer Programs	6.2-26
Watershed Program	6.2-26
Storage	6.2-26
Sacramento River and San Joaquin River Regions	6.2-27
Ecosystem Restoration Program	
Water Quality Program	6.2-28
Water Use Efficiency and Water Transfer Programs	6.2-28



Watershed Program	6.2-28
Storage	6.2-30
Other SWP and CVP Service Areas	
All Programs	6.2-31
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	6.2-31
Preferred Program Alternative	6.2-31
Alternative 1	
Alternative 2	
Alternative 3	
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	
ADDITIONAL IMPACT ANALYSIS	
Cumulative Impacts	6.2-36
Growth-Inducing Impacts	6.2-36
Short- and Long-Term Relationships	6.2-37
Irreversible and Irretrievable Commitments	6.2-37
MITIGATION STRATEGIES	
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	б.2-40
Chapter 7.1 Agricultural Land and Water Use	
CVID O (A DXZ	711
SUMMARY	7 1 1
Preferred Program Alternative	7.1-1
Alternatives 1, 2, and 3	7.1-2
Summary of Impacts and Mitigation Strategies	. 7.1-2
AREAS OF CONTROVERSY	. 7.1-4
AFFECTED ENVIRONMENT/EXISTING CONDITIONS	
All Regions	. 7.1-4
Agricultural Land Use	
Agricultural Water Use	. 7.1-5
Central Valley Project	
State Water Project	
Local Surface Water	
Groundwater	
Agricultural Habitats	. 7.1-7
Delta Region	. 7.1-7
Agricultural Land Use	. 7.1-7
Agricultural Water Use	
Bay Region	
Agricultural Land Use	. 7.1-8
Agricultural Water Use	
Sacramento River Region	
Agricultural Land Use	. 7.1-8
Agricultural Water Use	
San Joaquin River Region	7.1-9
Agricultural Land Use	71-0
Agricultural Water Use	71.0
Other SWP and CVP Service Areas	
Agricultural Land Use	
Agricultural Water Use	7.1-10
Summary	/.1-10



ASSESSMENT METHODS	
SIGNIFICANCE CRITERIA	
NO ACTION ALTERNATIVE	
Delta Region	
Bay Region	
Sacramento River and San Joaquin River Regions	
Other SWP and CVP Service Areas	
Summary	7.1-14
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	
All Regions	
Delta Region	
Ecosystem Restoration Program	
Water Quality Program	
Levee System Integrity Program	
Water Use Efficiency Program	7.1-17
Water Transfer Program	
Watershed Program	7.1-18
Storage	7.1-18
Bay Region	7.1-18
Ecosystem Restoration Program	7.1-18
Watershed, Water Transfer, Water Quality, and Water Use Efficiency Programs	7.1-19
Storage	7.1-19
Sacramento River Region	7.1-19
Ecosystem Restoration Program	7.1-19
Water Quality Program	7.1-19
Water Transfer Program	7.1-19
Water Use Efficiency Program	7.1-20
Watershed Program	7.1-20
Storage	7.1-20
San Joaquin River Region	7.1-21
Ecosystem Restoration Program	
Water Quality Program	
Water Use Efficiency Program	7.1-22
Water Transfer Program	
Watershed Program	
Storage	7.1-22
Other SWP and CVP Service Areas	7.1-23
Ecosystem Restoration, Water Quality, and Watershed Programs	
Water Use Efficiency Program	
Water Transfer Program	
Storage	
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	7.1-24
Preferred Program Alternative	
Delta Region	7.1-24
Bay Region	
Sacramento River Region	
San Joaquin River Region	
Other CVP and SWP Service Areas	
Alternative 1	
Alternative 2	
Alternative 3	



PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS Preferred Program Alternative Alternative 1 Alternative 2 Alternative 3 ADDITIONAL IMPACT ANALYSIS Cumulative Impacts	7.1-26 7.1-26 7.1-27 7.1-27 7.1-27 7.1-27
Growth-Inducing Impacts	
Short- and Long-Term Relationships	7.1-28
MITIGATION STRATEGIES	7.1-28
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	7.1-30
Chapter 7.2 Agricultural Economics	
SUMMARY	7.2-1
Preferred Program Alternative	
Alternatives 1, 2, and 3	
AREAS OF CONTROVERSY	
Significance of Adverse Effects	
Magnitude of Crop Effects	
Projected Crop Mix	
Agricultural Multipliers	
AFFECTED ENVIRONMENT/EXISTING CONDITIONS	7.2-3
Farm Profiles	
Cropping Patterns and Production Value	
Agricultural Production Costs and Revenues	
Delta Region	
Farm Profiles	
Cropping Patterns and Production Value	
Agricultural Production Costs and Revenues	7.2-5
Bay Region	7.2-5
Farm Profiles	7.2-5
Cropping Patterns and Production Value	
Agricultural Production Costs and Revenues	
Sacramento River Region	7.2-6
Farm Profiles	
Cropping Patterns and Production Value	
Agricultural Production Costs and Revenues	7.2-6
San Joaquin River Region	
Farm Profiles	
Cropping Patterns and Production Value	
Agricultural Production Costs and Revenues	
Other SWP and CVP Service Areas	
Farm Profiles	
Cropping Patterns and Production Value	
Agricultural Production Costs and Revenues	7.2-7
ASSESSMENT METHODS	7.2-8
CRITERIA FOR DETERMINING ADVERSE EFFECTS	
NO ACTION ALTERNATIVE	7 2-9



CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	7.2-10
Delta Region	7.2-10
Ecosystem Restoration Program	7.2-10
Water Quality Program	7.2-12
Levee System Integrity Program	7.2-12
Water Use Efficiency Program	7.2-12
Water Transfer Program	7.2-12
Watershed Program	
Storage	7.2-12
Bay Region	7.2-13
Ecosystem Restoration Program	7.2-13
Water Quality and Water Use Efficiency Programs	
Levee System Integrity and Watershed Programs	7.2-14
Water Transfer Program	
Storage	7.2-14
Sacramento River Region	7.2-14
Ecosystem Restoration Program	7 2-14
Water Quality Program	7 2-15
Levee System Integrity Program	7.2-16
Water Use Efficiency Program	7.2-16
Water Transfer Program	7.2-16
Water Frankler Program	7.2-17
Storage	7.2-17
Storage	7.2-17
San Joaquin River Region	
Ecosystem Restoration Program	
Water Quality Program	
Levee System Integrity Program	
Water Use Efficiency and Watershed Programs	
Water Transfer Programs	7.2-20
Storage	7.2-20
Other SWP and CVP Service Areas	
Ecosystem Restoration Program	7.2-21
Water Quality Program	7.2-21
Levee System Integrity Program	7.2-21
Water Use Efficiency Program	7.2-22
Water Transfer Program	7.2-22
Storage	7.2-22
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	
Preferred Program Alternative	7.2-23
Alternative 1	
Alternative 2	
Internative 5	7.2-24
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	7.2-25
Preferred Program Alternative	7.2-25
Alternative 1	7.2-25
Alternative 2	
Alternative 3	
ADDITIONAL IMPACT ANALYSIS	
Cumulative Impacts	7.2-26
Growth-Inducing Impacts	7.2-26
Short- and Long-Term Relationships	7.2-26



Irreversible and Irretrievable Commitments	7.2-27
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	7.2-30
Chapter 7.3 Agricultural Social Issues	
SUMMARY	7.3-1
Preferred Program Alternative	7.3-1
Alternatives 1, 2, and 3	
AREAS OF CONTROVERSY	
Significance of Adverse Effects	. 7.3-2
AFFECTED ENVIRONMENT/EXISTING CONDITIONS	. 7.3-2
All Regions	
Social Well Being Related to Agriculture	. 7.3-2
Community Stability	. 7.3-2
Environmental Justice	. 7.3-5
Delta Region	. 7.3-6
Bay Region	. 7.3-6
Sacramento River Region	. 7.3-6
San Joaquin River Region	. 7.3-7
Other SWP and CVP Service Areas	. 7.3-7
ASSESSMENT METHODS	
CRITERIA FOR DETERMINING ADVERSE EFFECTS	
NO ACTION ALTERNATIVE	. 7.3-8
All Regions	. 7.3-8
Delta Region	. 7.3-8
Bay Region, Sacramento River Region, and Other SWP and CVP Service Areas	. 7.3-9
San Joaquin River Region	. 7.3-9
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	. 7.3-9
All Regions	. 7.3-9
Water Use Efficiency Program	. 7.3-9
Watershed Program	7.3-10
Ecosystem Restoration Program	7.3-10
Delta Region	7.3-11
Ecosystem Restoration Program	7.3-11
Water Quality Program	7.3-12
Levee System Integrity Program	7.3-12
Water Transfer Program	7.3-12
Storage	
Bay Region	7.3-13
Ecosystem Restoration, Water Quality, and Water Transfer Programs, and Storage	
Sacramento River Region	7.3-13
Ecosystem Restoration Program	7.3-13
Water Quality Program	7.3-14
Water Transfer Program	7.3-14
Storage	7.3-14
San Joaquin River Region	7.3-13
Water Quality Program	7.3-13
Water Transfer Program	7.3-13
Storage	1.3-13



Other SWP and CVP Service Areas	7.3-16
Ecosystem Restoration Program	7.3-16
Water Quality Program and Storage	7.3-16
Water Transfer Program	7.3-16
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	7.3-16
Preferred Program Alternative	7.3-16
Delta Region	7.3-16
Bay Region	7.3-17
Sacramento River Region	
San Joaquin River Region	7.3-17
Other SWP and CVP Service Areas	
Alternative 1	
Alternative 2	
Alternative 3	7.3-18
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	
Preferred Program Alternative	7.3-19
Alternative 1	7.3-19
Alternative 2	7.3-19
Alternative 3	
ADDITIONAL IMPACT ANALYSIS	7.3-19
Cumulative Effects	
Growth-Inducing Effects	7.3-20
Short- and Long-Term Relationships	7.3-20
Irreversible and Irretrievable Commitments	
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	7.3-20
POTENTIALLI SIGNIFICANI UNAVOIDABLE INFACIS	7.5-50
Chapter 7.4 Urban Land Use	
SUMMARY	
Preferred Program Alternative	. 7.4-1
110	
Alternatives 1, 2, and 3	. 7.4-1
Alternatives 1, 2, and 3	. 7.4-1 . 7.4-1
Summary of Impacts and Mitigation Strategies	7.4-1 7.4-1 7.4-2
	7.4-1 7.4-1 7.4-2 7.4-2
Summary of Impacts and Mitigation Strategies AREAS OF CONTROVERSY AFFECTED ENVIRONMENT/EXISTING CONDITIONS Delta Region	7.4-1 7.4-2 7.4-2 7.4-3 7.4-3
Summary of Impacts and Mitigation Strategies AREAS OF CONTROVERSY AFFECTED ENVIRONMENT/EXISTING CONDITIONS Delta Region Bay Region	7.4-1 7.4-2 7.4-2 7.4-3 7.4-3
Summary of Impacts and Mitigation Strategies AREAS OF CONTROVERSY AFFECTED ENVIRONMENT/EXISTING CONDITIONS Delta Region Bay Region Sacramento River Region	7.4-1 7.4-2 7.4-2 7.4-3 7.4-3 7.4-3
Summary of Impacts and Mitigation Strategies AREAS OF CONTROVERSY AFFECTED ENVIRONMENT/EXISTING CONDITIONS Delta Region Bay Region Sacramento River Region San Joaquin River Region	7.4-1 7.4-2 7.4-2 7.4-3 7.4-3 7.4-3 7.4-3
Summary of Impacts and Mitigation Strategies AREAS OF CONTROVERSY AFFECTED ENVIRONMENT/EXISTING CONDITIONS Delta Region Bay Region Sacramento River Region San Joaquin River Region Other SWP and CVP Service Areas	7.4-1 7.4-2 7.4-2 7.4-3 7.4-3 7.4-3 7.4-4 7.4-4
Summary of Impacts and Mitigation Strategies AREAS OF CONTROVERSY AFFECTED ENVIRONMENT/EXISTING CONDITIONS Delta Region Bay Region Sacramento River Region San Joaquin River Region Other SWP and CVP Service Areas ASSESSMENT METHODS	7.4-1 7.4-2 7.4-2 7.4-3 7.4-3 7.4-3 7.4-4 7.4-4
Summary of Impacts and Mitigation Strategies AREAS OF CONTROVERSY AFFECTED ENVIRONMENT/EXISTING CONDITIONS Delta Region Bay Region Sacramento River Region San Joaquin River Region Other SWP and CVP Service Areas ASSESSMENT METHODS SIGNIFICANCE CRITERIA	7.4-1 7.4-2 7.4-2 7.4-3 7.4-3 7.4-3 7.4-4 7.4-4 7.4-5
Summary of Impacts and Mitigation Strategies AREAS OF CONTROVERSY AFFECTED ENVIRONMENT/EXISTING CONDITIONS Delta Region Bay Region Sacramento River Region San Joaquin River Region Other SWP and CVP Service Areas ASSESSMENT METHODS SIGNIFICANCE CRITERIA NO ACTION ALTERNATIVE	7.4-1 7.4-2 7.4-2 7.4-3 7.4-3 7.4-4 7.4-4 7.4-5 7.4-6
Summary of Impacts and Mitigation Strategies AREAS OF CONTROVERSY AFFECTED ENVIRONMENT/EXISTING CONDITIONS Delta Region Bay Region Sacramento River Region San Joaquin River Region Other SWP and CVP Service Areas ASSESSMENT METHODS SIGNIFICANCE CRITERIA NO ACTION ALTERNATIVE CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	7.4-1 7.4-2 7.4-2 7.4-3 7.4-3 7.4-4 7.4-4 7.4-6 7.4-6 7.4-6
Summary of Impacts and Mitigation Strategies AREAS OF CONTROVERSY AFFECTED ENVIRONMENT/EXISTING CONDITIONS Delta Region Bay Region Sacramento River Region San Joaquin River Region Other SWP and CVP Service Areas ASSESSMENT METHODS SIGNIFICANCE CRITERIA NO ACTION ALTERNATIVE CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES Delta and Bay Regions	7.4-1 7.4-2 7.4-2 7.4-3 7.4-3 7.4-4 7.4-4 7.4-6 7.4-6 7.4-6 7.4-6
Summary of Impacts and Mitigation Strategies AREAS OF CONTROVERSY AFFECTED ENVIRONMENT/EXISTING CONDITIONS Delta Region Bay Region Sacramento River Region San Joaquin River Region Other SWP and CVP Service Areas ASSESSMENT METHODS SIGNIFICANCE CRITERIA NO ACTION ALTERNATIVE CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES Delta and Bay Regions Ecosystem Restoration Program	7.4-1 7.4-2 7.4-2 7.4-3 7.4-3 7.4-3 7.4-4 7.4-5 7.4-6 7.4-6 7.4-6 7.4-6 7.4-7
Summary of Impacts and Mitigation Strategies AREAS OF CONTROVERSY AFFECTED ENVIRONMENT/EXISTING CONDITIONS Delta Region Bay Region Sacramento River Region San Joaquin River Region Other SWP and CVP Service Areas ASSESSMENT METHODS SIGNIFICANCE CRITERIA NO ACTION ALTERNATIVE CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES Delta and Bay Regions Ecosystem Restoration Program Water Quality Program	7.4-1 7.4-2 7.4-2 7.4-3 7.4-3 7.4-3 7.4-4 7.4-6 7.4-6 7.4-6 7.4-7 7.4-7
Summary of Impacts and Mitigation Strategies AREAS OF CONTROVERSY AFFECTED ENVIRONMENT/EXISTING CONDITIONS Delta Region Bay Region Sacramento River Region San Joaquin River Region Other SWP and CVP Service Areas ASSESSMENT METHODS SIGNIFICANCE CRITERIA NO ACTION ALTERNATIVE CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES Delta and Bay Regions Ecosystem Restoration Program Water Quality Program Levee System Integrity Program	7.4-1 7.4-2 7.4-2 7.4-3 7.4-3 7.4-3 7.4-4 7.4-6 7.4-6 7.4-6 7.4-7 7.4-7 7.4-7
Summary of Impacts and Mitigation Strategies AREAS OF CONTROVERSY AFFECTED ENVIRONMENT/EXISTING CONDITIONS Delta Region Bay Region Sacramento River Region San Joaquin River Region Other SWP and CVP Service Areas ASSESSMENT METHODS SIGNIFICANCE CRITERIA NO ACTION ALTERNATIVE CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES Delta and Bay Regions Ecosystem Restoration Program Water Quality Program	7.4-1 7.4-2 7.4-2 7.4-3 7.4-3 7.4-3 7.4-4 7.4-6 7.4-6 7.4-6 7.4-7 7.4-7 7.4-7



	03 <u>00</u> 000 <u>00</u> 0
Storage	
Sacramento River and San Joaquin River Regions	7.4-8
Ecosystem Restoration, Water Quality, Levee System Integrity, Water Use	
Efficiency, Water Transfer, and Watershed Programs	7.4-8
Storage	
Other SWP and CVP Service Areas	
All Programs	
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	
Preferred Program Alternative	
Alternatives 1, 2, and 3	
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	
ADDITIONAL IMPACT ANALYSIS	
Cumulative Impacts	
Growth-Inducing Impacts	
Short- and Long-Term Relationships	
Irreversible and Irretrievable Commitments	
MITIGATION STRATEGIES	
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	7.4-12
C1	
Chapter 7.5 Urban Water Supply Economics	
SUMMARY	751
Preferred Program Alternative	
Alternatives 1, 2, and 3	
AREAS OF CONTROVERSY	
AFFECTED ENVIRONMENT/EXISTING CONDITIONS	
Delta Region	
Bay Region	7.5-6
Sacramento River Region	
San Joaquin River Region	7 5_11
Other SWP and CVP Service Areas	
ASSESSMENT METHODS	
Water Supply	
Water Quality	
Water Conservation	
CRITERIA FOR DETERMINING ADVERSE EFFECTS	
NO ACTION ALTERNATIVE	
Delta Region	
Bay Region	
Sacramento River Region	
San Joaquin River Region	7.5-23
Other SWP and CVP Service Areas	7.5-24



CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	7.5-24
Delta Region	7.5-25
Ecosystem Restoration Program	
Water Quality Program	7.5-25
Levee System Integrity Program	
Water Use Efficiency Program	
Water Transfer Program	
Watershed Program	
Bay Region	7.5-26
Ecosystem Restoration Program	
Water Quality Program	
Levee System Integrity Program	
Water Use Efficiency Program	7.5-26
Water Transfer Program	7.5-27
Watershed Program	
Sacramento River Region	
Ecosystem Restoration Program	
Water Quality Program	
Levee System Integrity Program	
Water Use Efficiency Program	
Water Transfer Program	
Watershed Program	
San Joaquin River Region	
Ecosystem Restoration, Water Quality, Levee System Integrity, Water Use	7.5 20
Efficiency, and Watershed Programs	7 5-28
Water Transfer Program	
Other SWP and CVP Service Areas	
All Programs	7.5-28
Preferred Program Alternative	7.5-20
Delta Region	
Storage	
Conveyance	
Bay Region	
Storage	
Conveyance	
Sacramento River Region	
San Joaquin River Region	
Alternative 1	
Alternative 2	
Alternative 3	
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	
ADDITIONAL IMPACT ANALYSIS	
Cumulative Impacts	7.5-3
Growth-Inducing Impacts	7.5-3
Short- and Long-Term Relationships	
Irreversible and Irretrievable Commitments	
ADVERSE EFFECTS	7.5-3
I COSIM LIBRAN WATER SLIPPLY ECONOMICS ASSESSMENT	



Chapter 7.6 Utilities and Public Services

SUMMARY	7.6-1
Preferred Program Alternative	7.6-1
Alternatives 1, 2, and 3	7.6-1
Summary of Impacts and Mitigation Strategies	7.6-2
AREAS OF CONTROVERSY	7.6-2
AFFECTED ENVIRONMENT/EXISTING CONDITIONS	7.6-2
Delta Region	7.6-2
Water-Related Infrastructure	. 7.6-2
Electric Utility and Communication Infrastructure	7.6-3
Natural Gas Infrastructure	. 7.6-3
Public Services	. 7.6-3
Bay Region	. 7.6-3
Water-Related Infrastructure	. 7.6-3
Electric Utility and Communication Infrastructure	. 7.6-4
Public Services	. 7.6-4
Sacramento River Region	. 7.6-4
Water-Related Infrastructure	. 7.6-4
Electric Utility and Communication Infrastructure	. 7.6-5
Natural Gas Infrastructure	
Public Services	
San Joaquin River Region	. 7.6-5
Water-Related Infrastructure	. 7.6-5
Electric Utility and Communication Infrastructure	. 7.6-6
Natural Gas Infrastructure	. 7.6-6
Public Services	
Other SWP and CVP Service Areas	
Water-Related Infrastructure	. /.0-0
Electric Utility and Communication Infrastructure	. 7.6-8
Natural Gas Infrastructure	
Public Services	
ASSESSMENT METHODS	
SIGNIFICANCE CRITERIA	
NO ACTION ALTERNATIVE	7.0-9
Delta Region	7.0-9
Bay and Sacramento River Regions	760
San Joaquin River Region	7.6-10
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	7.6-10
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	7.6-10
All Regions	7.6-10
Water Quality Program	7.6-10
Water Use Efficiency Program	7.6-11
Water Use Efficiency Program: Water Transfer and Watershed Programs	7.6-11
Delta Region	
Levee System Integrity Program	7.6-11
Storage	7.6-11
Sacramento River and San Joaquin River Regions	7.6-12
Storage	
Dioxage	



Other SWP and CVP Service Areas Storage 7.6 Storage 7.6 CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Alternatives 1, 2, and 3 7.6 PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS ADDITIONAL IMPACT ANALYSIS Cumulative Impacts Growth-Inducing Impacts Short- and Long-Term Relationships Irreversible and Irretrievable Commitments MITIGATION STRATEGIES POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS 7.6	5-12 5-13 5-13 5-13 5-14 5-15 5-15 6-15 6-15 6-15
Chapter 7.7 Recreation Resources	
SUMMARY 7 Preferred Program Alternative 7 Alternatives 1, 2, and 3 7 Summary of Impacts and Mitigation Strategies 7 AREAS OF CONTROVERSY 7 AFFECTED ENVIRONMENT/EXISTING CONDITIONS 7 Delta Region 7 Bay Region 7 Sacramento River Region 7 Other SWP and CVP Service Areas 7 ASSESSMENT METHODS 7 SIGNIFICANCE CRITERIA 7 NO ACTION ALTERNATIVE 7 Delta Region 7 Bay River Region 7 Sacramento River Region 7 Sacramento River Region 7 San Joaquin River Region 7	7.7-1 7.7-1 7.7-2 7.7-3 7.7-3 7.7-6 7-10 7-12 7-13 7-13 7-14 7-15 7-15 7-15
Other SWP and CVP Service Areas	.7-17 .7-18 .7-18 .7-19 .7-20 .7-20 .7-20 .7-21 .7-18 .7-21 .7-21



Sacramento River and San Joaquin River Regions	7.7-22
Ecosystem Restoration Program	
Water Quality Program	
Water Use Efficiency Program	
Water Transfer Program	
Watershed Program	
Storage	7.7-24
Other SWP and CVP Service Areas	
Ecosystem Restoration, Water Quality and Watershed Programs, and Storage	77-24
Water Use Efficiency Program	7.7-21
Water Transfer Program	7.7-25
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	7.7.25
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	7.7.25
Preferred Program Alternative	
Delta Region	77.26
Bay Region	7.7-20
Sacramento River and San Joaquin River Regions	/./-26
Other SWP and CVP Service Areas	
Alternative 1	
Delta Region	7.7-26
Bay Region	7.7-27
Sacramento River and San Joaquin River Regions	7.7-27
Other SWP and CVP Service Areas	
Alternative 2	
Delta Region	7.7-28
Bay Region	7.7-28
Sacramento River and San Joaquin River Regions	7.7-29
Other SWP and CVP Service Areas	7.7-29
Alternative 3	7.7-29
Delta Region	7.7-29
Bay Region	7.7-30
Sacramento River and San Joaquin River Regions	7.7-30
Other SWP and CVP Service Areas	7.7-31
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	7.7-31
ADDITIONAL IMPACT ANALYSIS	
Cumulative Impacts	
Growth-Inducing Impacts	7.7-32
Short- and Long-Term Relationships	7.7-33
Irreversible and Irretrievable Commitments	7.7-33
MITIGATION STRATEGIES	
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	7 7-35
POTENTIALLY SIGNIFICANT UNAVOIDABLE INFRICTS	7.7-55
Chapter 7.8 Flood Control	
SUMMARY	7 8_1
Preferred Program Alternative	7 Q_1
Alternatives 1, 2, and 3	7.0-1
Alternatives 1, 2, and 3	7 0 2
Summary of Impacts and Mitigation Strategies	
AKEAN DEL UNIKUVEKNY	/ .0-3



AFFECTED ENVIRONMENT/EXISTING CONDITIONS	7.8-4
Delta Region	7.8-5
Overview of Flood Control Development	
Flood Control Facilities	
Levee Stability	7.8-7
Levee Maintenance	
Bay Region	7.8-8
Sacramento River Region	7.8-9
Overview of Flood Control Development	7.8-9
Flood Control Facilities	
Upper Watershed Areas	
San Joaquin River Region	
Other SWP and CVP Service Areas	. 7.8-12
ASSESSMENT METHODS	. 7.8-13
SIGNIFICANCE CRITERIA	
NO ACTION ALTERNATIVE	
Delta Region	
Bay River Region	
Sacramento River and San Joaquin River Regions	
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	
All Regions	
Delta Region	. 7.8-19
Ecosystem Restoration Program	. 7.8-19
Water Quality Program	
Levee System Integrity Program	. 7.8-21
Water Use Efficiency Program	7.8-22
Water Transfer Program	
Watershed Program	
Storage	
Bay Region	
Ecosystem Restoration and Levee System Integrity Programs	7.8-23
Watershed Program	7.8-23
Water Quality, Water Use Efficiency, and Water Transfer Programs, and Storage	
Sacramento River Region	
Ecosystem Restoration Program	
Water Quality and Water Transfer Programs	
Water Use Efficiency Program	
Watershed Program	
Storage	
San Joaquin River Region	7.8-25
Ecosystem Restoration Program	
Water Quality Program	
Water Use Efficiency and Water Transfer Programs	
Water Ose Efficiency and Water Hansler Flograms Watershed Program	
Storage	
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	7.0-20
Preferred Program Alternative	
Delta Region	
Other Program Regions	
Alternatives 1, 2, and 3	7 2 2
DDOCD AM ATTERNATIVES COMPARED TO EVICTING CONDITIONS	7 9 29



ADDITIONAL IMPACT ANALYSIS Cumulative Impacts Growth-Inducing Impacts Short- and Long-Term Relationships Irreversible and Irretrievable Commitments MITIGATION STRATEGIES POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	7.8-29 7.8-30 7.8-30 7.8-30 7.8-30
Chapter 7.9 Power Production and Energy	
SUMMARY	7.9-1
Preferred Program Alternative	
Alternatives 1, 2, and 3	
AREAS OF CONTROVERSY	
AFFECTED ENVIRONMENT/EXISTING CONDITIONS	
All Regions	
SWP	
CVP	
Other Hydroelectric Facilities	
System-Wide SWP and CVP Capacity and Energy Generation	
System-Wide SWP and CVP Project Energy Use	
Western Energy Sales	
New SWP Energy Requirement	7.9-5
DWR and Western Power Rates	7.9-5
ASSESSMENT METHODS	7.9-6
CRITERIA FOR DETERMINING EFFECTS	7.9-9
NO ACTION ALTERNATIVE	7.9-10
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	7.9-11
Preferred Program Alternative	
All Regions/All Programs	
Western Energy Available for Sale	
SWP Net Energy Requirements	
Western and DWR Rates	
Effects on Western and DWR Power Customers	
CVP Restoration Fund Power Payments	
Utility System Impacts	
Ecosystem Restoration Program	
Water Quality Program	
Water Use Efficiency Program	
Levee System Integrity Program	
Water Transfer Program	
Watershed Program	
Storage	
Conveyance	
Effects at Other Hydroelectric Facilities	
Other Types of Effects	
All Project (All Programs	
All Regions/All Programs Western Energy Available for Sale	
SWD Not Energy Paguirements	7.9-19



Western and DWR Rates	
Effects on Western and DWR Power Customers	
Utility System Impacts	
Alternative 2	
All Regions/All Programs	
Western Energy Available for Sale	
SWP Net Energy Requirements	
Western and DWR Rates	
Effects on Western Power Customers	
Utility System Impacts	
Alternative 3	
All Regions/All Programs	
Western Energy Available for Sale	
SWP Net Energy Requirements	
Western and DWR Rates	
Effects on Western Power Customers	
CVP Restoration Fund Power Payments	
Utility System Impacts	7.9-23
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	7.9-23
ADDITIONAL IMPACT ANALYSIS	
Cumulative Effects	
Growth-Inducing Impacts	
Short- and Long-Term Relationships	
Irreversible and Irretrievable Commitments	
MITIGATION STRATEGIES	
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	
Chapter 7.10 Regional Economics	
SUMMARY	7.10-1
Preferred Program Alternative	7.10-1
Alternatives 1, 2, and 3	
AREAS OF CONTROVERSY	
AFFECTED ENVIRONMENT/EXISTING CONDITIONS	7.10-2
Delta Region	7.10-2
Bay Region	7.10-5
Sacramento River Region	
San Joaquin River Region	
Other SWP and CVP Service Areas	
ASSESSMENT METHODS	7.10-7
CRITERIA FOR DETERMINING EFFECTS	
NO ACTION ALTERNATIVE	7.10-9
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	7.10-11
Delta Region	
Ecosystem Restoration Program	
Water Quality Program	1.10-13
Levee System Integrity Program	7 40 40
	7.10-13
Water Use Efficiency Program	7.10-13 7.10-13



Watershed Program	7.10-14
Storage	7.10-14
Bay Region	7.10-14
Ecosystem Restoration Program	7.10-15
Levee System Integrity Program	
Water Transfer Program	7.10-15
Water Quality and Water Use Efficiency Programs	7.10-15
Watershed Program	7.10-15
Storage	
Sacramento River Region	
Ecosystem Restoration Program	
Water Quality Program	
Levee System Integrity Program	
Water Use Efficiency Program	
Water Transfer Program	
Watershed Program	
Storage	
San Joaquin River Region	
Ecosystem Restoration Program	
Water Quality Program	
Levee System Integrity and Watershed Programs	
Water Use Efficiency	
Water Transfer Programs	
Storage	7.10-18
Other SWP and CVP Service Areas	7.10-19
Ecosystem Restoration, Water Quality, Levee System Integrity, Water Use Efficiency,	
Water Transfer, and Watershed Programs	7.10-19
Water Transfer, and Watershed Programs Storage	7.10-19
Storage	7.10-19 7.10-19
Storage	7.10-19 7.10-19 7.10-19
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region	7.10-19 7.10-19 7.10-19 7.10-20
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region	7.10-19 7.10-19 7.10-19 7.10-20 7.10-20
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions	7.10-19 7.10-19 7.10-20 7.10-20 7.10-20 7.10-20
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions Other SWP and CVP Service Areas	7.10-19 7.10-19 7.10-20 7.10-20 7.10-20 7.10-20
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions Other SWP and CVP Service Areas Alternative 1	7.10-19 7.10-19 7.10-20 7.10-20 7.10-20 7.10-20 7.10-20 7.10-20
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions Other SWP and CVP Service Areas Alternative 1 All Regions	7.10-19 7.10-19 7.10-20 7.10-20 7.10-20 7.10-20 7.10-20 7.10-20 7.10-21
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions Other SWP and CVP Service Areas Alternative 1 All Regions Alternative 2	7.10-19 7.10-19 7.10-20 7.10-20 7.10-20 7.10-20 7.10-21 7.10-21 7.10-21
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions Other SWP and CVP Service Areas Alternative 1 All Regions Alternative 2 All Regions	7.10-19 7.10-19 7.10-20 7.10-20 7.10-20 7.10-20 7.10-21 7.10-21 7.10-21 7.10-21
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions Other SWP and CVP Service Areas Alternative 1 All Regions Alternative 2 All Regions Alternative 3	7.10-19 7.10-19 7.10-19 7.10-20 7.10-20 7.10-20 7.10-21 7.10-21 7.10-21 7.10-22 7.10-22 7.10-22
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions Other SWP and CVP Service Areas Alternative 1 All Regions Alternative 2 All Regions Alternative 3 Delta Region	7.10-19 7.10-19 7.10-19 7.10-20 7.10-20 7.10-20 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-22 7.10-22 7.10-22
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions Other SWP and CVP Service Areas Alternative 1 All Regions Alternative 2 All Regions Alternative 3 Delta Region Bay Region	7.10-19 7.10-19 7.10-19 7.10-20 7.10-20 7.10-20 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions Other SWP and CVP Service Areas Alternative 1 All Regions Alternative 2 All Regions Alternative 3 Delta Region Bay Region Sacramento River Region	7.10-19 7.10-19 7.10-19 7.10-20 7.10-20 7.10-20 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions Other SWP and CVP Service Areas Alternative 1 All Regions Alternative 2 All Regions Alternative 3 Delta Region Bay Region Sacramento River Region Sacramento River Region San Joaquin River Region	7.10-19 7.10-19 7.10-19 7.10-20 7.10-20 7.10-20 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions Other SWP and CVP Service Areas Alternative 1 All Regions Alternative 2 All Regions Alternative 3 Delta Region Bay Region Sacramento River Region Sacramento River Region San Joaquin River Region Other SWP and CVP Service Areas	7.10-19 7.10-19 7.10-19 7.10-20 7.10-20 7.10-20 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions Other SWP and CVP Service Areas Alternative 1 All Regions Alternative 2 All Regions Alternative 3 Delta Region Bay Region Sacramento River Region Sacramento River Region San Joaquin River Region Other SWP and CVP Service Areas PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	7.10-19 7.10-19 7.10-19 7.10-20 7.10-20 7.10-20 7.10-21 7.10-21 7.10-21 7.10-21 7.10-21 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions Other SWP and CVP Service Areas Alternative 1 All Regions Alternative 2 All Regions Alternative 3 Delta Region Bay Region Sacramento River Region Sacramento River Region Other SWP and CVP Service Areas PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS ADDITIONAL IMPACT ANALYSIS	7.10-19 7.10-19 7.10-19 7.10-20 7.10-20 7.10-20 7.10-21 7.10-21 7.10-21 7.10-21 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions Other SWP and CVP Service Areas Alternative 1 All Regions Alternative 2 All Regions Alternative 3 Delta Region Bay Region Sacramento River Region Sacramento River Region Other SWP and CVP Service Areas PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS ADDITIONAL IMPACT ANALYSIS Cumulative Effects	7.10-19 7.10-19 7.10-19 7.10-20
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions Other SWP and CVP Service Areas Alternative 1 All Regions Alternative 2 All Regions Alternative 3 Delta Region Bay Region Sacramento River Region Sacramento River Region Other SWP and CVP Service Areas PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS ADDITIONAL IMPACT ANALYSIS Cumulative Effects Growth-Inducing Impacts	7.10-19 7.10-19 7.10-19 7.10-20
Storage CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES Preferred Program Alternative Delta Region Bay Region Sacramento River and San Joaquin River Regions Other SWP and CVP Service Areas Alternative 1 All Regions Alternative 2 All Regions Alternative 3 Delta Region Bay Region Sacramento River Region Sacramento River Region Other SWP and CVP Service Areas PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS ADDITIONAL IMPACT ANALYSIS Cumulative Effects	7.10-19 7.10-19 7.10-19 7.10-20 7.10-20 7.10-20 7.10-21 7.10-21 7.10-21 7.10-21 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22 7.10-22



Chapter 7.11 Cultural Resources

SUMMARY	7.11-1
Preferred Program Alternative	7.11-1
Alternatives 1, 2, and 3	7.11-2
Summary of Impacts and Mitigation Strategies	7.11-2
AREAS OF CONTROVERSY	
AFFECTED ENVIRONMENT/EXISTING CONDITIONS	7.11-3
Delta Region	
Prehistoric Resources	
Historic Resources	7.11-5
Traditional Cultural Resources	7.11-5
Native American Groups	7.11-5
Bay Region	
Prehistoric Resources	7.11-6
Historic Resources	7.11-6
Traditional Cultural Resources	7.11-6
Native American Groups	
Sacramento River Region	
Prehistoric Resources	
Historic Resources	7.11-7
Traditional Cultural Resources	7.11-7
Native American Groups	7.11-7
San Joaquin River Region	7.11-7
Prehistoric Resources	
Historic Resources	
Traditional Cultural Resources	
Native American Groups	7.11-8
Other SWP and CVP Service Areas	
Prehistoric Resources	
Historic Resources	
Traditional Cultural Resources	
Native American Groups	
ASSESSMENT METHODS	
Regulatory Context	
SIGNIFICANCE CRITERIA	
NO ACTION ALTERNATIVE	
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES \dots	7.11-12
Delta Region	
Ecosystem Restoration Program	7.11-13
Water Quality, Water Use Efficiency, Water Transfer, and Watershed Programs	7.11-1
Levee System Integrity Program	
Storage	
Bay Region	
Ecosystem Restoration and Levee System Integrity Programs	/.11-1
Water Quality, Water Use Efficiency, Water Transfer, and Watershed Programs	
and Storage	
Sacramento River Region	
Ecosystem Restoration Program	/.11-1



Watershed Program	7.11-14
Storage	
Other SWP and CVP Service Areas	7.11-15
All Programs	7.11-15
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	
All Alternatives	7.11-15
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	
ADDITIONAL IMPACT ANALYSIS	
Cumulative Effects	
Growth-Inducing Impacts	
Short- and Long-Term Relationships	
Irreversible and Irretrievable Commitments	
MITIGATION STRATEGIES	
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	7.11-19
Chapter 7.12 Public Health and Environmental Hazards	
SUMMARY	. 7.12-1
Preferred Program Alternative	. 7.12-1
Alternatives 1, 2, and 3	. 7.12-2
Summary of Impacts and Mitigation Strategies	. 7.12-2
Summary of Impacts and Mitigation Strategies	. 7.12-3
AFFECTED ENVIRONMENT/EXISTING CONDITIONS	. 7.12-3
Delta and Bay Regions	
Disease Transmission	
Mosquito Breeding Conditions and Habitat	
Other Vectors and Host Populations	
Fire Hazard	
Hazardous Materials and Waste	. 7.12-5
Methyl Mercury	
Sacramento River and San Joaquin River Regions	
Disease Transmission	
Fire Hazard	. 7.12-7
Hazardous Materials and Waste	. 7.12-7
Other SWP and CVP Service Areas	
Disease Transmission	
Fire Hazard	. 7.12-8
Hazardous Materials and Waste	
ASSESSMENT METHODS	. 7.12-8
SIGNIFICANCE CRITERIA	
NO ACTION ALTERNATIVE	. 7.12-9
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	
Delta and Bay Regions	
Ecosystem Restoration Program	
Water Quality and Watershed Programs	
Water Use Efficiency Program	
Levee System Integrity Program	
Water Transfer Program	
Storage	
Sacramento River and San Joaquin River Regions	7.12-12



Ecosystem Restoration Program	7.12-12
Water Quality Programs	
Water Use Efficiency and Water Transfer Programs, and Storage	
Watershed Program	
Other SWP and CVP Service Areas	
Ecosystem Restoration and Watershed Programs, and Storage	7.12-13
Water Quality and Water Use Efficiency Programs	
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	
Preferred Program Alternative	7.12-13
Alternative 1	
Alternative 2	
Alternative 3	
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	
ADDITIONAL IMPACT ANALYSIS	
Cumulative Effects	
Growth-Inducing Impacts	
Short- and Long-Term Relationships	
Irreversible and Irretrievable Commitments	
MITIGATION STRATEGIES	
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	
FOTENTIALLI SIGNITALINI CIVILVOIDIADLE IMPREIS	7.12-17
Chapter 7.13 Visual Resources	
	7.40.4
SUMMARY	
All Alternatives	
Summary of Impacts and Mitigation Strategies	. 7.13-2
AREAS OF CONTROVERSY	
AFFECTED ENVIRONMENT/EXISTING CONDITIONS	
Delta Region	. 7.13-3
Bay Region	
Sacramento River Region	. 7.13-4
San Joaquin River Region	. 7.13 - 5
Other SWP and CVP Service Areas	
ASSESSMENT METHODS	. 7.13-7
SIGNIFICANCE CRITERIA	. 7.13-7
NO ACTION ALTERNATIVE	. 7.13-8
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	
Delta Region	
Ecosystem Restoration Program	
Water Quality and Watershed Programs	
Levee System Integrity Program	
Water Use Efficiency Program	
Water Transfer Program	
Storage	
Bay Region Ecosystem Restoration and Levee System Integrity Programs	7.13-10
Watershed Program	7.12.10
Water Quality, Water Use Efficiency, and Water Transfer Programs, and Storage	
Sacramento River and San Joaquin River Regions	
ECOSVSIEM RESTORATION Program	1.13-11



Water Quality, Water Use Efficiency, and Water Transfer Programs	7.13-11
Levee System Integrity Program	7.13-11
Watershed Program	7.13-11
Storage	7.13-11
Sites/Colusa Reservoir	
Thomes-Newville Reservoir	
Montgomery Reservoir	7.13-12
Other SWP and CVP Service Areas	
All Programs	7.13-13
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES .	7.13-13
All Alternatives	7 12 12
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	
ADDITIONAL IMPACT ANALYSIS	
Growth-Inducing Impacts	7 12 15
Short- and Long-Term Relationships	7 12 15
Irreversible and Irretrievable Commitments	7 12 16
MITIGATION STRATEGIES	7 13-17
POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS	/.13-1/
Chapter 7.14 Environmental Justice	
egrafan ≰ ladens in Jastus (1). Sertakat keruseas juur 1960 . ♥ nisut rakite	
SUMMARY	7.14-1
AREAS OF CONTROVERSY	
AFFECTED ENVIRONMENT/EXISTING CONDITIONS	7.14-2
Delta Region	7.14-2
Bay Region	7.14-3
Sacramento River Region	7.14-3
San Joaquin River Region	7.14-4
Other SWP and CVP Service Areas	
ASSESSMENT METHODS	7.14-5
CRITERIA FOR DETERMINING EFFECTS	
NO ACTION ALTERNATIVE	7.14-0
CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES	7.14-
All Regions	7.14-
Ecosystem Restoration Program	7.14
Water Quality Program	7 1 4 9
Levee System Integrity Program	714
Water Use Efficiency Program	7 14 9
Water Transfer Program	714
Watershed Program	714
Storage	7 14 (
CONSEQUENCES: PROGRAM ELEMENTS THAT DIFFER AMONG ALTERNATIVES	7 14
Preferred Program Alternative	7 1 / 1
Alternative 2	
PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS	7 14 1
ADDITIONAL IMPACT ANALYSIS	
Cumulative Effects	
Cullulative Effects	/



Growth-Inducing Impacts	1 1
Chapter 7.15 Indian Trust Assets	
SUMMARY 7.15- AREAS OF CONTROVERSY 7.15- AFFECTED ENVIRONMENT/EXISTING CONDITIONS 7.15- Delta and Bay Regions 7.15- Sacramento River and San Joaquin River Regions 7.15- Other SWP and CVP Service Areas 7.15- ASSESSMENT METHODS 7.15- SIGNIFICANCE CRITERIA 7.15- NO ACTION ALITERNATIVE 7.15- CONSEQUENCES: PROGRAM ELEMENTS COMMON TO ALL ALTERNATIVES 7.15- Delta and Bay Regions 7.15- All Programs 7.15- Sacramento River and San Joaquin River Regions 7.15- All Programs 7.15- All Other SWP and CVP Service Areas 7.15- All Programs 7.15- All Programs 7.15- PROGRAM ALTERNATIVES COMPARED TO EXISTING CONDITIONS 7.15- ADDITIONAL IMPACT ANALYSIS 7.15- Cumulative Effects 7.15- Growth-Inducing Impacts 7.15- Short- and Long-Term Relationships 7.15- Irreversible and Irretrievable Commitments 7.15- MITIGATION STRATEGIES 7.15- ADVERSE EFFECTS	1 2 2 2 2 4 4 4 4 4 5 5 5 5 5 5 5 6 6 6 6
Classes Compliance with Applicable Lawre Balinian and Diamound Documents Frameworks	
Chapter 8. Compliance with Applicable Laws, Policies, and Plans and Regulatory Framework	
ENVIRONMENTAL COMPLIANCE AT THE PROGRAMMATIC LEVEL NEPA/CEQA Federal/State Endangered Species Acts Fish and Wildlife Coordination Act Compliance with Section 404(b)(1) Guidelines and Section 401 The Coastal Zone Management Act The National Historic Preservation Act The Farmland Protection Policy Act and Memoranda on Farmland Preservation The Federal Agriculture Improvement and Reform Act of 1996 Executive Order 11988 (Floodplain Management) Executive Order 11990 (Protection of Wetlands) Executive Order 12898 (Environmental Justice) Executive Order 13007 (Indian Sacred Sites) and April 29, 1994 Executive Memorandum Federal Clean Air Act Climate Change	-1 -3 -4 -5 -6 -7 -7 -8 -8 -9 10



Federal Water Project Recreation Act	
Davis-Dolwig Act	
State, Regional, and Local Plan Consistency	
REGULATORY FRAMEWORK 8-12	
Delta Protection Commission	
The Delta Protection Act of 1959	
Porter-Cologne Act	
Decision-1485 and the 1978 Water Quality Control Plan	
1995 Water Quality Control Plan	
Clean Water Act—Section 303(d)	
Federal Guidance on Water Quality for Toxic Pollutants	
Suisun Marsh Preservation Agreement	
Water Rights	
DRINKING WATER REQUIREMENTS 8-17	
Safe Drinking Water Act	
National Primary Drinking Water Standards	
National Secondary Drinking Water Regulations	
Trihalomethane Regulations	
Federal Lead and Copper Rule8-19	
Federal Surface Water Treatment Rule	
Disinfectants/Disinfection By-Products Rule	
Federal Total Coliform Rule8-19	
California Surface Water Treatment Regulations	
California Total Coliform Regulations	
California Nonpoint Source Program	
FEDERAL AND STATE COORDINATION FOR A DELTA SOLUTION	
Bay-Delta Framework Agreement and Bay-Delta Accord/Restoration Coordination 8-21	
Central Valley Project Improvement Act 8-22	
California-Federal Operations Group	
PUBLIC TRUST 8-23	
WATER USE EFFICIENCY 8-23	
AREA OF ORIGIN 8-24	
Chapter 9. NEPA/CEQA Monitoring	
INTRODUCTION9-1	
NEPA/CEQA MONITORING PROCESS9-2	
CEQA MONITORING AND REPORTING9-2	
Chapter 10. Public and Agency Involvement	
50	
PUBLIC INVOLVEMENT	
Public Workshops	
Public Meetings	-
Programmatic EIS/EIR Scoping and Comment Meetings	
Phase II Report Workshops	,
Multi-Cultural Public Outreach	
Speakers Bureau/Community Presentations	,
Educational Materials / Direct Mail	1



Media Contacts	10-5
Legislative Briefings	
Project Public Information Line/Project Website	
NEPA/CEOA Notices	10-6
Multi-Species Conservation Strategy Plan Scoping Meetings	10-6
Public Comment Letters	10-6
Scientific Review Panel	10-7
Bromide Panel	10-7
Diversion Effects on Fisheries Team	10-7
Bay-Delta Advisory Council	10-8
BDAC Work Groups	10-9
Water Use Efficiency Work Group	
Ecosystem Restoration Work Group	10-9
Finance Work Group	10-9
Governance Work Group	10-9
Water Transfers Work Group	10-10
Watershed Work Group	10-10
Ecosystem Roundtable	10-10
Delta Drinking Water Council	10-10
Groundwater Outreach Program	10-10
CALFED Tribal Outreach	10-11
AGENCY INVOLVEMENT	10-13
CALFED Policy Group	10-13
Public Affairs Group	10-13
Operations Coordination Group	10-13
CALFED Technical Teams	
Agency Ecosystem Restoration Technical Team	
Levees and Channels Technical Team	
Storage and Conveyance Technical Team	10-14
Water Quality Technical Team	10-14
CALFED Impact Analysis Teams	10-14
CALFED Agency Review Team	10-14
FUTURE CALFED ACTIONS	10-15



13.2 SUBJECT INDEX

	1024 DOMEST
1978 Delta Plan	
1991 Delta Plan	8-14
1995 Water Quality Control Plan	23, 8-14
1996 Farm Bill	
(Section) 3406	
(D-) 893	
AB 3030	
AB 3180	9-3
(Bay-Delta) Accord 1-3, 1-20, 1-22, 5.1-20, 5.3-21, 7.1-7, 7.2-9, 7.2-21, 7.3-8, 8-2, 8-14, 8-2, 8-2, 8-2, 8-2, 8-2, 8-2, 8-2, 8-2	21, 9-1,
	10-5
(Anadromous Fish Restoration Program) AFRP	
Agricultural Water Conservation and Management Act	8-24
alkalinity	, 6.1-36
American shad 6.1-20-6.1-22, 6.1-27, 6.1-28, 6.1-32, 6.1-35, 6.1-41-6.1-44, 6.1-47, 7.7-4, 7.7-4	6, 7.7-9,
	7.7-12
ammonia	6.1-36
· · ·	
appropriative water rights 7.1	7 1 1 1 1
Archeological Resources Protection Act	
area of origin 5.4-4, 7.1-	
arsenic 5.4-5, 5.4-11, 5.4-14	1, 5.5-14
bacteria	
Banks Pumping Plant	
(fish) barriers	
5.3-31, 5.4-19, 5.4-29, 5.6-2, 5.6-11, 5.7-2, 5.7-5, 5.7-8, 5.7-11, 5.7-12, 5.8-5, 6.1-2-6.1-4, 6.1-	
6.1-15, 6.1-16, 6.1-18, 6.1-19, 6.1-22, 6.1-40, 6.1-42, 6.1-43, 6.1-45-6.1-47, 6.1-51, 6.2-32, 6.2-38	
7.7-18, 7.7-25, 7.7-27, 7.7-28, 7.7-30, 7.7-34, 7.7-35, 7.9-17, 7.12-14, 7.13-5, 7.13-13, 7.14	-9, 8-21
Bay-Delta water rights hearing	
(Bay-Delta Advisory Council) BDAC 1-4, 1-13, 1-15, 1-16, 1-23, 8-10, 8-21, 10-1, 10-2, 10-5, 10-	-6. 10-8-
10-1	0, 10-12
	,
beneficial use	
boat(s) 3-17, 3-22, 3-23, 5.5-3, 5.5-28, 5.6-2, 5.6-9, 5.7-2, 5.7-8, 5.7-11, 5.7-12 5.7-14, 7.7-2, 7.7-	
7.7-7, 7.7-8, 7.7-11, 7.7-13, 7.7-14, 7.7-18, 7.7-19, 7.7-21, 7.7-22, 7.7-24, 7.7-25, 7.7-27	, 7.7-28,
7.7-30, 7.7-31, 7.7-34	4, 7.8-16
boating 3-24-3-26, 4-3, 5.3-8, 5.6-4, 5.8-8, 5.8-11, 6.1-27, 6.1-32, 6.1-35, 7.7-1-7.7-5, 7.7-12	7.7-15.
7.7-18-7.7-21, 7.7-24-7.7-35, 7.8-20	
("bookend" assumptions) bookend 2-19, 5.1-19, 5.1-20, 5.1-24, 5.1-27, 5.1-36, 5.1-43, 5.1-49	5 1 55
5.1-64, 5.2-11, 5.2-13, 5.2-21, 5.2-42	,
boron	
bromide	3-5.3-20,
5.3-22, 5.3-34, 5.3-36, 5.3-38-5.3-43, 5.3-45, 5.3-47-5.3-49, 5.3-51, 5.3-53, 5.3-58, 7.5-2, 7.5-17	. 7.5-18.
7.5-30-7.5-	
Bulletin 118	,
Bulletin 160-98 1-21, 5.1-16, 5.2-13, 7.2-2, 7.5-13, 7.5-15, 7.5-16, 7.5-18, 7.5-20, 7.5-21, 7.5-37	
	0, 7.5-41
cadmium 2-8, 5.3-7, 5.3-8, 5.3-10, 5.3-11, 5.3-15, 5.3-16, 6.1-15, 7.12-	5, 7.12-7
California Aqueduct	6, 7.7-13
California Farmland Conservancy Program	
Camorina Laminatic Conscivancy Logiani	_, /.1-50



California Nonpoint Source Management Plan
California Toxics Rule
carbofuran
Category III
category 111
(combined cycle combustion turbines) CCCTs
Central Valley Habitat Joint Venture
(California Environmental Quality Act) CEQA 1-6, 1-19, 1-20, 2-13, 2-21, 3-2, 4-2, 4-3, 4-5-4-9, 5.1-2,
5.1-3, 5.1-66, 5.2-2, 5.3-5, 5.3-6, 5.4-3, 5.5-3, 5.6-2, 5.7-2, 5.8-3, 6.1-5, 6.2-3, 6.2-14, 7.1-1, 7.1-4, 7.2-2,
7.3-2, $7.4-2$, $7.4-3$, $7.5-3$, $7.5-15$, $7.6-2$, $7.7-3$, $7.7-33$, $7.8-3$, $7.9-2$, $7.9-9$, $7.10-1$, $7.10-2$, $7.10-9$, $7.11-1$,
7.11-3, 7.11-97.11-12, 7.11-17-7.11-19, 7.12-3, 7.13-3, 7.13-15, 7.14-1, 7.14-6, 7.14-12, 7.15-1,
8-1-8-4, 8-7, 8-12, 8-17, 9-2, 9-1, 9-1-9-3, 10-6
channel modifications 2-24, 2-25, 5.2-10, 5.3-4, 5.3-32, 5.3-37, 5.3-40, 5.3-43, 5.3-48, 5.3-58, 6.1-40,
6.1-45, 6.1-47, 6.2-33, 7.7-25, 7.7-26, 7.7-28, 7.7-30, 7.12-13, 7.12-14
channel widening
53.14
chlordane
chloride 5.1-5, 5.3-3, 5.3-12, 5.4-9, 5.4-11, 5.8-4, 6.1-29, 6.1-36
chlorine
chlorpyrifos
Clean Air Act
(water transfer) clearinghouse
climate 5.5-5, 5.5-14, 5.8-7, 6.2-12, 7.1-1, 7.1-10, 7.4-5, 7.5-6, 7.5-9, 7.5-11, 7.6-5, 7.8-8, 7.10-7, 8-10
(Comprehensive Monitoring, Assessment, and Research Program) CMARP 2-7, 6.1-2, 6.1-6, 6.1-40,
6.2-4, 9-2
(carbon monoxide) CO 1-19, 5.8-3-5.8-8, 5.8-10, 5.8-12, 5.8-13, 7.5-6, 7.9-7, 7.9-16, 7.9-20, 7.9-21,
7.9-23, 10-4, 10-9, 10-13
Coastal Aqueduct
Coastal Aqueduct
Coastal Branch Aqueduct
Coastal Zone Act Reauthorization Amendments (CZARA)
coliform
commercial fishing
conjunctive use 1-15, 1-24, 3-21, 5.3-46, 5.3-47, 5.4-3, 5.4-4, 5.4-25, 5.4-27, 5.4-28, 5.4-32, 5.5-22,
7.1-13, 7.2-19, 7.5-15, 7.10-18, 10-10, 10-11
constituents 1-8, 3-21, 5.3-1, 5.3-4, 5.3-5, 5.3-8-5.3-12, 5.3-18-5.3-20, 5.3-22, 5.3-31, 5.3-34-5.3-36,
5.3-38, 5.3-41, 5.3-45, 5.3-46, 5.3-48, 5.3-57, 5.4-14, 6.2-1, 6.2-21, 7.5-1, 7.5-17
contaminants
5.3-22, 5.3-24-5.3-28, 5.3-30, 5.3-31, 5.3-46, 5.3-55, 5.3-56, 5.3-58, 5.4-5, 5.4-9, 5.4-11, 5.4-20, 5.4-22,
5.4-24, 5.4-29, 5.5-18, 5.8-12, 6.1-1, 6.1-2, 6.1-4, 6.1-8, 6.1-9, 6.1-15-6.1-17, 6.1-20, 6.1-25-6.1-39,
6.1-41-6.1-44, 6.1-48, 6.1-49, 6.2-2, 6.2-17, 6.2-18, 6.2-21, 6.2-24, 6.2-26, 6.2-32, 7.1-1, 7.1-25, 7.12-1,
7.12-5, 7.12-11, 7.12-13, 8-17-8-20
conversion
5.1-33, 5.1-67, 5.2-19, 5.2-20, 5.3-1, 5.3-4, 5.3-13, 5.3-24, 5.3-55, 5.4-1, 5.4-20, 5.4-22, 5.4-24, 5.5-1,
5.5-2, 5.5-4, 5.5-14, 5.5-20, 5.5-25, 5.5-27, 5.6-1, 5.6-5, 5.6-7, 5.6-9, 5.7-13, 5.8-1, 5.8-12, 6.1-28,
6.1-33, 6.2-11, 6.2-15, 6.2-16, 6.2-20, 6.2-25, 6.2-28, 7.1-2, 7.1-5, 7.1-7, 7.1-10-7.1-16, 7.1-18,
7.1-19, 7.1-21-7.1-23, 7.1-25-7.1-30, 7.2-1, 7.2-6, 7.2-8-7.2-11, 7.2-14, 7.2-15, 7.2-17, 7.2-18,
7.2-20-7.2-23, 7.2-25, 7.2-26, 7.3-1, 7.3-8, 7.3-9, 7.3-11-7.3-16, 7.3-19, 7.3-20, 7.5-1,
7.6-9, 7.6-11, 7.6-14, 7.7-14, 7.7-16, 7.8-5, 7.8-20, 7.8-30, 7.10-1, 7.10-2, 7.10-12,
7.10-13, 7.10-23, 7.10-24, 7.12-3, 7.12-8, 7.12-10, 7.14-7, 7.14-9, 7.14-12
copper 2-8, 5.2-5, 5.3-7, 5.3-8, 5.3-10, 5.3-11, 5.3-15, 5.3-16, 6.1-10, 6.1-15, 7.12-7, 8-19
crappie
crappie



crop yields
7.14-8
Cryptosporidium parvum
(combustion turbines) CTs
(Central Valley Groundwater and Surface Water model) CVGSM 5.4-16, 5.4-17, 5.4-21, 5.4-32
CVP Restoration Fund
(Central Valley Project Improvement Act) CVPIA 1-20, 4-12, 5.1-5, 5.1-19, 5.1-20, 5.1-23, 5.1-65,
5.2-6, 5.2-14, 5.2-15, 5.2-43, 5.3-21, 5.4-21, 5.4-35, 5.5-26, 5.6-10, 5.8-15, 6.1-49, 6.2-36, 7.1-7, 7.1-13,
7.1-14, 7.1-29, 7.2-9, 7.2-10, 7.2-14, 7.2-17, 7.2-21, 7.2-26, 7.3-8, 7.4-10, 7.5-4, 7.5-5, 7.5-9, 7.5-16,
7.5-22, 7.5-23, 7.6-15, 7.7-15-7.7-17, 7.7-32, 7.8-30, 7.9-24, 7.10-23, 7.10-24, 7.12-15, 7.13-15, 8-22
(Clean Water Act) CWA
(Coastal Zone Management Act) CZMA
(Stage 1 Disinfectant/Disinfection By-Products Rule) D/DBPR
Davis-Dolwig Act
Davis-Grunsky contract
(dibromochloropropane) DBCP
(disinfection by-product precursors) DBPs 5.3-1, 5.3-2, 5.3-4, 5.3-5, 5.3-9, 5.3-10, 5.3-12, 5.3-13,
5.3-18, 5.3-29, 5.3-38, 5.3-49, 5.3-55, 5.3-58, 7.5-2, 7.5-17, 7.10-20, 8-19, 8-20
(Delta Cross Channel) DCC 2-17, 5.1-5, 5.1-23, 5.2-3, 5.2-14, 5.3-2, 5.5-7, 6.1-3, 6.1-4, 6.1-22, 6.1-41,
DDT
DDT 5.3-10, 5.3-14, 5.3-15
(Diversion Effects on Fisheries Team) DEFT 5.3-19, 10-7
Delta Drinking Water Council
Delta exports
5.1-42, 5.1-43, 5.1-48-5.1-50, 5.1-55, 5.1-56, 5.1-63, 5.2-4, 5.2-13, 5.2-18, 5.2-23, 5.2-27, 5.2-31, 5.2-35,
5.2-42, 5.3-20, 5.4-17, 6.1-30, 6.1-51, 7.10-1, 7.10-22, 8-15, 8-22
Delta Protection Act of 1959
delta smelt
6.1-44, 6.1-47, 6.1-48, 7.8-10, 8-14
Diamond Valley Reservoir
diazinon
disinfection
diversion facility
5.1-57, 5.2-1, 5.2-34, 5.3-2, 5.3-31, 5.3-32, 5.3-36, 5.3-48, 5.3-59, 5.4-1, 5.4-32, 5.5-24, 5.5-25, 5.6-8,
5.7-10, 5.7-11, 5.8-13, 6.1-2-6.1-4, 6.1-20, 6.1-40, 6.1-43-6.1-46, 6.1-51, 6.2-31, 6.2-33, 6.2-34, 7.1-25-
7.1-27, 7.2-22, 7.2-24, 7.2-25, 7.3-16-7.3-19, 7.4-9, 7.5-17, 7.5-29, 7.5-30, 7.5-32, 7.5-33, 7.6-13, 7.7-25,
7.7-28, 7.8-26, 7.10-19, 7.11-15, 7.11-16, 7.12-13, 7.12-14, 7.13-13, 7.14-9, 7.14-10
(Delta-Mendota Canal) DMC
5.3-30, 5.3-34, 5.3-39, 5.3-46, 5.3-50, 5.3-52
(dissolved oxygen) DO
5.2-19, 5.3-10, 5.3-13, 5.3-14, 5.3-27, 5.3-33, 5.3-37, 5.3-41, 5.3-45, 5.4-5, 5.4-26,
5.4-28, 5.4-36, 5.5-6, 5.5-22, 6.1-10, 6.1-19, 6.2-6, 6.2-12, 6.2-28, 7.1-7, 7.1-23, 7.4-2,
7.4-3, 7.4-11, 7.5-29, 7.5-36, 7.5-40, 7.7-3, 7.7-7, 7.7-20, 7.8-9, 7.8-10, 7.8-19, 7.9-9,
7.9-15, 7.9-23, 7.12-3, 8-3, 8-8, 8-19
(dissolved organic carbon) DOC 5.1-29, 5.3-3, 5.3-5, 5.3-6, 5.3-12, 5.3-22, 5.4-7, 7.1-4, 7.1-5, 7.1-9,
7.1-10, 7.1-15, 7.3-20
(Delta Protection Commission) DPC
dredging
5.3-5, 5.3-9, 5.3-14, 5.3-26, 5.3-55-5.3-58, 5.5-16, 5.6-5, 5.7-2, 5.7-8, 5.7-12, 5.8-9, 6.1-2-6.1-4, 6.1-15,
6.1-18, 6.1-27, 6.1-30, 6.1-34, 6.1-41, 6.1-42, 6.1-44, 6.1-52, 6.2-2, 6.2-9, 6.2-32-6.2-34, 7.1-17, 7.1-25,



7.2-23, 7.4-9, 7.7-2, 7.7-25, 7.7-27, 7.7-28, 7.7-30, 7.8-4, 7.8-9, 7.8-16, 7.8-24, 7.8-25, 7.8-27, 7.11-1, 7.11-14, 7.11-16, 7.12-2, 7.12-3, 7.12-6, 7.12-11, 7.12-13, 7.12-15, 7.12-17, 7.14-9
drinking water standards
DSM1
DSM2 5.1-17, 5.1-21, 5.2-10, 5.2-11, 5.2-13-5.2-15, 5.2-21, 5.2-22, 5.2-24, 5.2-26, 5.2-28, 5.2-30, 5.2-32,
5.2-34, 5.2-37, 5.3-18-5.3-20, 5.3-30
DWRDSM2
DWRSIM 5.1-16, 5.1-17, 5.1-21, 5.1-22, 5.1-25-5.1-29, 5.1-36-5.1-38, 5.1-40, 5.1-43-5.1-45, 5.1-47,
5.1-49-5.1-51, 5.1-53, 5.1-55, 5.1-57, 5.1-59, 5.1-61, 5.2-6, 5.2-8, 5.2-10, 5.2-12, 5.2-15, 5.2-21, 5.2-22,
5.2-24, 5.2-26, 5.2-28, 5.2-30, 5.2-32, 5.2-34, 5.2-37, 5.2-39, 5.3-19, 5.4-17, 7.5-15, 7.5-16, 7.5-29, 7.9-5,
707701871011
D-1275
D-1379
D-1400
D-1485
D-1630
(electrical conductivity) EC 3-23, 5.2-6, 5.2-43, 5.3-2-5.3-4, 5.3-10, 5.3-13, 5.3-19, 5.3-20, 5.3-31-5.3-33, 5.3-36, 5.3-37, 5.3-39-5.3-48, 5.3-51-5.3-54, 5.3-59
Ecosystem Roundtable
(ethylene dibromide) EDB
Eight River Index
emissions
7.9-23, 7.12-6, 8-10, 8-11
employment
7.2-22, 7.2-23, 7.3-1-7.3-5, 7.3-7-7.3-11, 7.3-15, 7.3-16, 7.7-33, 7.8-14, 7.10-1, 7.10-2, 7.10-4-7.10-9
7.10-12, 7.10-15-7.10-18, 7.10-21, 7.10-23, 7.10-24, 7.13-15, 7.14-1, 7.14-2, 7.14-6-7.14-9, 7.14-11
Enclosed Bays and Estuary Plan8-13
entrainment
6.1-35, 6.1-37, 6.1-39-6.1-45, 6.1-47, 6.1-48, 7.6-4, 10-7
environmental justice (other than Section 7.14) 3-3, 3-20, 3-22, 3-25, 3-26, 4-3, 4-7, 4-8, 7.3-2
7.3-5, 7.14-1, 7.14-2, 7.14-5-7.14-7, 7.14-9, 7.14-11, 7.14-12, 8-8, 10-8
environmental water 2-7, 5.1-1, 5.1-3, 5.1-18-5.1-20, 5.1-31, 5.1-66, 5.3-9, 6.1-1, 6.1-31, 6.1-35, 6.1-39
7.7-21, 7.7-24, 8-15, 10-4
erosion
5.3-28, 5.3-29, 5.3-57, 5.5-1-5.5-12, 5.5-15-5.5-28, 5.7-9, 5.8-11, 6.1-10, 6.1-15, 6.1-28, 6.1-35, 6.2-14
6.2-27, 6.2-29, 7.1-3, 7.1-17, 7.1-18, 7.1-31, 7.8-2, 7.8-3, 7.8-5-7.8-7, 7.8-9, 7.8-11, 7.8-14, 7.8-16, 7.8-18
7.8-20, 7.8-21, 7.8-27, 7.8-29, 7.8-31, 7.11-14, 7.13-10, 7.13-11, 7.14-8
(Endangered Species Act) ESA(s) 2-15, 2-18, 6.1-7, 6.1-1, 6.1-3, 6.1-5, 6.1-18, 6.1-24, 6.1-26
6.1-27, 6.1-40, 6.2-5, 6.2-16, 8-3, 8-4, 8-23
(Enhanced Surface Water Treatment Rule) ESWTR
(evapotranspiration) ET 5.2-21, 5.3-14-5.3-17, 7.5-14, 7.6-7, 8-10, 8-12, 8-23, 8-24
(Environmental Water Account) EWA 5.1-1, 5.1-3, 5.1-18, 5.1-19, 5.1-31, 5.1-32, 5.1-34, 5.1-35
5.1-66, 5.2-18-5.2-20
Executive Order 11988
Executive Order 11990
Executive Order 12372
Executive Order 12898
Executive Order 13007
Farmland Mapping and Monitoring Program
(Federal Clean Air Act) FCAA
Federal Agriculture Improvement and Reform Act of 1996



Federal Swamp Land Act 7.1-7, 7.8-5
Federal Water Project Recreation Act
(Federal Emergency Management Act) FEMA
filtration
fish ladder(s) 1-23, 2-8, 2-15, 6.1-43, 6.1-46, 8-22
fish screen(s) 1-23, 2-8, 2-17, 2-19, 2-23, 2-25, 3-23, 3-24, 5.1-23, 5.6-5, 5.8-9, 6.1-1-6.1-4, 6.1-17, 6.1-20,
6.1-35, 6.1-40, 6.1-41, 6.1-43, 6.1-45-6.1-47, 7.13-2, 7.13-11, 7.13-13, 7.13-14, 7.14-9, 8-22
flow control barriers 2.1-15, 2.1-16, 5.7-5, 6.1-43, 6.1-45, 6.1-46, 7.7-25, 7.7-27, 7.7-28, 7.7-30, 7.7-34,
7.13-13
Folsom (Lake) 5.1-7, 5.1-10, 5.1-11, 5.1-26, 5.1-38, 5.1-45, 5.1-51, 5.1-59, 5.2-12, 5.3-21, 6.1-25, 6.1-49,
7.5-10, 7.5-23, 7.6-4, 7.7-10, 7.7-16, 7.8-10, 7.8-16, 7.13-4
Food Security Act of 1985
food web
fossil fuel
fossil fuels 3-12, 3-21, 3-23, 5.8-1, 5.8-2, 5.8-10, 5.8-12, 5.8-15, 7.9-25
Four River Index
(Farmland Protection Policy Act) FPPA8-7
fragmentation
6.2-36, 6.2-38, 7.4-2, 7.4-12
Framework Agreement
Friant Dam 5.1-12, 5.1-15, 5.5-11, 5.5-12, 7.8-11
Friant-Kern (Canal)
(Fish and Wildlife Coordination Act) FWCA
Georgiana Slough 5.2-3, 5.2-14, 6.1-4, 6.1-22, 6.1-43, 6.1-45, 6.1-47, 6.1-51
Giardia lamblia
Glenn-Colusa Canal 5.1-8
"Good Samaritan" (protections) 5.3-6
Government Code Section 51920
Grant Line Canal
grazing 3-21, 5.2-21, 5.3-15, 5.5-4, 5.5-8-5.5-10, 5.5-12, 5.5-23, 6.1-15, 6.1-16, 6.1-35, 6.2-9, 6.2-39,
7.1-1, 7.1-4, 7.1-5, 7.1-9, 7.1-15, 7.1-18, 7.1-21, 7.1-23, 7.2-14, 7.2-17, 7.2-20, 7.3-9, 7.3-14, 7.5-8,
7.8-11, 7.9-18, 7.12-5, 7.12-7, 7.13-11, 8-7, 8-21
ground disturbance
7.13-2, 7.13-16, 7.15-4
health effects
HEC-RAS (model)
Hodge Decision 5.1-10
hunting
7.7-2, 7.7-4-7.7-7, 7.7-10-7.7-13, 7.7-15, 7.7-16, 7.7-18-7.7-20, 7.7-23, 7.7-25, 7.7-27, 7.7-28, 7.7-30,
7.7-31, 7.14-7, 7.14-11, 7.15-1
(Interagency Ecological Program) IEP8-23
income
7.2-27, 7.3-1-7.3-8, 7.3-10, 7.3-11, 7.3-15, 7.7-9, 7.7-10, 7.7-15, 7.7-16, 7.8-13, 7.10-1-7.10-12, 7.10-14, 7.10-12, 7.10-12,
7.10-15, 7.10-17, 7.10-20, 7.10-21, 7.10-24, 7.14-1, 7.14-2, 7.14-5-7.14-11, 8-8, 8-9
Inland Surface Waters Plan 8-13 Integrated Storage Investigation 2-13, 2-21, 5.1-4, 6.2-5, 6.2-25, 6.2-30, 6.2-40, 8-5
Integrated Storage Investigation
introduced (species) 1-1, 1-9, 5.1-3, 5.3-19, 5.4-11, 5.4-29, 6.1-8, 6.1-9, 6.1-12, 6.1-16, 6.1-17, 6.1-19,
6.1-23, 6.1-26, 6.1-34, 6.1-48, 6.2-14
inundation
6.2-2, 6.2-24, 6.2-40, 7.2-12, 7.2-14, 7.2-17, 7.2-20, 7.2-26, 7.7-21, 7.7-24, 7.7-33, 7.8-6, 7.8-9, 7.10-17,
7.10-23, 7.11-2, 7.11-16, 7.13-12, 7.14-12



in-lieu taxes
(inorganic chemicals) IOCs
irrigation water 1-1, 1-9, 3-14, 3-21, 3-25, 5.1-13, 5.3-7, 5.3-8, 5.3-13, 5.4-1, 5.4-4, 5.4-9, 5.4-12,
5.5-2, 5.5-6, 5.5-14, 5.5-16, 5.5-22, 5.5-28, 6.1-11, 6.2-23, 7.1-1, 7.1-5, 7.1-8-7.1-10, 7.1-13, 7.1-14,
7.1-18, 7.1-19, 7.1-23, 7.1-27, 7.1-29, 7.2-9, 7.2-10, 7.2-15, 7.2-16, 7.2-19-7.2-21, 7.3-1, 7.3-8, 7.3-15,
7.3-20, 7.8-24, 7.10-8, 7.10-24, 7.12-10
job training
(joint point of diversion) JPD
Keswick (Reservoir)
land retirement
largemouth bass
(Least-Cost Planning Simulation model) LCPSIM
Lead and Copper Rule8-19
levee setback
linkage(s)
logging
longfin smelt
Los Vaqueros (Reservoir)
Madera (Canal)
marinas
Memoranda on Formland Preservation 8-7
Memoranda on Farmland Preservation8-7Mendota Pool5.1-12, 5.4-12
mercury
5.3-24, 5.3-29, 5.3-55-5.3-58, 6.1-4, 6.1-10, 6.1-15, 6.1-52, 6.2-3, 6.2-21, 6.2-38, 7.1-19, 7.12-1-7.12-3,
7.12-5-7.12-11, 7.12-13-7.12-17, 10-5
Middle River 2-15, 2-16, 3-10, 5.1-23, 5.2-4, 5.3-3, 5.3-37, 5.3-38, 5.3-41, 5.3-43-5.3-45,
5.3-53, 5.7-3, 6.1-42, 6.1-47, 7.8-6, 7.13-13
Millerton Lake
mining 1-8, 2-8, 5.1-6, 5.1-11, 5.3-7, 5.3-14-5.3-16, 5.4-7, 5.5-9, 5.5-11, 5.5-12, 5.6-3, 6.1-15, 6.1-21,
6.1-22, 6.1-35, 6.2-8, 6.2-9, 7.4-4, 7.5-8, 7.7-10, 7.8-9, 7.10-3, 7.10-4, 7.10-9-7.10-11, 7.11-6-7.11-9,
7.12-6, 7.12-7, 7.14-6
Mokelumne River
5.2-4, 5.2-34, 5.3-2, 5.3-31, 5.3-43, 5.3-48, 5.3-53, 5.4-32, 5.5-7, 5.5-11, 5.7-11, 5.8-13, 6.1-2-6.1-4,
6.1-31, 6.1-40, 6.1-43-6.1-47, 6.2-18, 6.2-33, 6.2-34, 7.1-25, 7.1-26, 7.7-29, 7.8-6, 7.8-7, 7.11-16, 7.13-3, 7.13-
13 Nontron Assessment
Monterey Agreement 7.5-23, 7.5-24 Montgomery Reservoir 4-13, 7.13-12
movement corridors
6.2-4, 6.2-8, 6.2-10, 6.2-11, 6.2-13, 6.2-14, 6.2-19, 6.2-24, 6.2-30, 6.2-38, 6.2-40, 7.1-16, 8-3, 8-4, 10-6
multipliers
National Primary Drinking Water Standards
Native American Graves Protection and Repatriation Act
Natural Disaster Assistance Act
(Natural Community Conservation Plan) NCCP
(Natural Community Conservation Planning Act) NCCPA
(National Environmental Policy Act) NEPA
7.3-2, 7.5-3, 7.5-15, 7.9-9, 7.10-1, 7.10-9, 7.14-5, 7.14-12, 8-1-8-4, 8-7-8-10, 8-12, 7.15-1, 9-1, 9-2, 10-6
New Don Pedro (Reservoir
7.7-12, 7.8-12, 7.9-4, 7.13-6
New Exchequer (Dam)



New Melones (Reservoir) 5.1-13, 5.1-15, 5.1	1-26, 5.1-39, 5.1-45, 5.1-52, 5.1-59, 5.2-12, 7.5-23, 7.7-12,
	7.8-12, 7.13-6
	7.11-9, 7.11-10, 7.11-12, 7.11-17, 7.11-19, 8-6
	5.3-10, 5.3-29, 5.3-56, 5.8-3, 5.8-4, 7.9-7, 7.9-14
non-native species 6.1-2, 6.1-4, 6.1-7, 6.1-12, 6.1	-23, 6.1-26, 6.1-27, 6.1-32, 6.1-33, 6.1-35, 6.1-39, 6.1-49-
	6.1-52
North Delta NWR	
	5.8-10, 5.8-12, 5.8-13, 7.9-7, 7.9-16, 7.9-20, 7.9-21, 7.9-23
	IPDES
	5-20 SDWR 8-18
	3-10, 5.3-11, 5.3-17, 5.3-18, 5.3-23-5.3-25, 5.3-28, 5.3-29,
	1-10, 6.1-11, 6.1-14, 6.1-15, 6.1-17, 6.1-25, 6.1-27, 6.1-29,
3.4-27, 3.3-11, 3.3-12, 3.3-17, 0.1-7, 0.1-0, 0	6.1-32, 6.1-36, 6.2-11, 6.2-17, 7.8-11, 7.12-7
(ozone) O.	5.8-3-5.8-8, 5.8-10-5.8-12
Old River 1-22, 2-14-2-17, 2-2	23, 2-24, 3-10, 5.1-5, 5.1-23, 5.2-11, 5.2-15, 5.2-22, 5.2-23,
	7, 5.3-2, 5.3-3, 5.3-33, 5.3-37, 5.3-41, 5.3-44, 5.7-3, 5.7-11,
	-46, 6.1-47, 6.2-32, 6.2-33, 7.5-19, 7.5-30, 7.8-11, 7.10-21,
	7.11-16, 7.13-13
organic carbon 2-8, 2-19, 2-24, 3	3-21, 3-23, 5.1-29, 5.3-1, 5.3-3, 5.3-5, 5.3-8, 5.3-10-5.3-12,
	5.3-41, 5.3-48, 5.3-49, 5.3-51, 6.1-33, 6.2-17, 7.5-1, 7.5-17,
	7.5-25, 7.12-10
organic matter 5.1-30, 5.3-3, 5.3-18, 5.3-2	23, 5.3-29, 5.5-5, 5.5-6, 5.5-8, 5.5-11, 6.1-7-6.1-10, 7.8-11,
	7.12-7
organic soils	5.5-4-5.5-6, 7.11-4
(Lake) Oroville 5.1-7-5.1-9, 5.1-26, 5	5.1-27, 5.1-38, 5.1-45, 5.1-51, 5.1-59, 5.2-12, 5.5-11, 5.7-4,
	7.6-4, 7.7-10, 7.7-11, 7.7-16, 7.8-10, 7.9-3, 7.13-4
	2, 5.4-5, 5.4-6, 5.4-8, 5.4-19, 5.4-30, 5.4-34, 5.4-36, 5.5-10,
	2, 5.5-27, 7.1-8, 7.1-12, 7.2-16, 7.2-21, 7.2-23, 7.5-24, 8-17
	1-8, 3-22, 5.3-22, 7.8-6, 7.8-7, 7.8-16, 7.8-18, 7.8-21, 8-11
	3-18, 5.4-8, 5.5-4, 5.5-5, 5.5-15, 5.5-16, 7.8-6, 7.8-7, 7.8-20
	5.3-11, 5.3-17, 5.3-25, 5.3-29, 5.3-56, 5.4-8, 5.4-29, 5.4-36,
	6.1-15, 6.1-20, 6.1-22, 6.1-29, 6.1-36, 6.1-42, 6.1-47, 8-14
pathogenic (organisms)	-21, 5.1-29, 5.3-1, 5.3-6, 5.3-8-5.3-10, 5.3-13, 5.3-18, 8-19
pathogens 1-9, 2-0, 2-19, 3	5.3-15, 7.12-6, 7.12-7, 7.12-12, 7.12-13
peat (soils) 1-8 1-9 2-23 3-18 5 2-3 5 3	-2, 5.3-4, 5.3-5, 5.3-12, 5.3-24, 5.3-29, 5.3-58, 5.4-7, 5.4-8,
	-16, 7.1-7, 7.8-2, 7.8-5-7.8-7, 7.8-16, 7.8-20, 7.11-4, 7.12-5
	5.3-7, 5.3-8, 5.3-10, 5.3-14, 5.3-25, 5.3-28, 5.4-11, 5.4-14,
	1-15, 6.1-16, 6.1-29, 6.1-36, 6.2-12, 6.2-13, 7.9-16, 7.12-1,
······································	7.12-4, 7.12-5, 7.12-7, 7.12-12, 7.12-13, 8-21
pH	5.3-8, 5.3-10, 5.3-18, 5.4-29, 5.4-36
	5.3-30, 7.8-6, 7.8-7, 7.8-16, 7.8-22
PL 84-99	6.2-3, 6.2-38, 7.5-25, 7.8-15, 7.8-19, 7.8-21
(inhalable particulate matter) PM ₁₀ 5.8-	3-5.8-8, 5.8-10-5.8-13, 7.9-7, 7.9-16, 7.9-20, 7.9-21, 7.9-23
	5.8-4, 5.8-8
Porter-Cologne Act	8-13, 8-20
poverty	7.3-2-7.3-4, 7.3-6-7.3-8, 7.10-5, 7.10-9, 7.14-1-7.14-6
predation 1-9, 2-25, 3-23, 6.1-2-6.1-4, 6	5.1-19-6.1-23, 6.1-26, 6.1-27, 6.1-31-6.1-33, 6.1-35, 6.1-43,
	6.1-44, 6.1-47
public land	4-11, 7.11-18, 9-3



public trust (doctrine)
Pyramid Lake
QWEST 3-9, 5.2-4, 5.2-11, 5.2-14, 5.2-15, 5.2-22, 5.2-23, 5.2-26, 5.2-27, 5.2-30, 5.2-31, 5.2-34-5.2-36,
5.3-31, 6.1-26
rainbow trout
Rancanelli decision
rare natural communities 3-24, 6.2-2, 6.2-3, 6.2-5, 6.2-14-6.2-16, 6.2-19, 6.2-20, 6.2-24, 6.2-25, 6.2-29,
6.2-30, 6.2-35, 6.2-36, 6.2-39, 6.2-40
(Red Bluff Diversion Dam) RBDD
(Red Bluff Diversion Dam) RBDD
recreation facilities 3-24, 7.6-1, 7.7-2, 7.7-6, 7.7-10, 7.7-14, 7.7-16, 7.7-18-7.7-20, 7.7-22, 7.7-31, 7.7-32,
7.14-8, 7.14-9, 8-11
recycling 2-9, 2-11, 2-13, 2-20, 5.1-1, 5.1-3, 5.1-4, 5.1-18, 5.1-19, 5.1-32, 5.1-66, 5.2-20, 5.3-17,
5.3-27, 5.3-46, 5.3-47, 5.4-2, 5.4-25, 5.4-31, 5.4-36, 6.1-30, 6.1-37, 7.5-2, 7.5-14, 7.5-16, 7.5-18, 7.5-19,
7.5-21, 7.5-29, 7.5-30, 7.5-32, 7.5-40, 7.5-41, 7.9-17, 8-24, 10-9
red-ear sunfish
"Reg-Neg" process
reservoir water levels
Restoration Coordination Program
reverse flow 5.2-4, 5.2-23, 5.2-24, 5.2-27, 5.2-28, 5.2-31, 5.2-32, 5.2-35-5.2-37, 6.1-31, 6.1-32, 6.1-41,
6.1-46
riparian water rights
riparian water rights
risk assessment
(reverse osmosis) RO
(Regional Tribal Operations Committee) RTOC
Sacramento blackfish 6.1-25, 6.1-28
Sacramento pikeminnow 6.1-28
salinity
5.1-29, 5.1-40, 5.2-4-5.2-6, 5.2-10, 5.2-43, 5.3-2-5.3-4, 5.3-7, 5.3-8, 5.3-10, 5.3-11, 5.3-13, 5.3-17, 5.3-19, 5.3-
21, 5.3-22, 5.3-24-5.3-26, 5.3-29-5.3-52, 5.3-54, 5.3-55, 5.3-59, 5.5-1, 5.5-2, 5.5-4, 5.5-6-5.5-8, 5.5-14-5.5-20, 5.5-
22, 5.5-25, 5.5-27, 5.5-28, 6.1-1, 6.1-4, 6.1-13, 6.1-15, 6.1-19, 6.1-20, 6.1-22, 6.1-24, 6.1-28-6.1-31, 6.1-34-6.1-38,
6.1-41, 6.1-43, 6.1-47, 6.1-48, 6.2-4, 6.2-6, 6.2-8, 6.2-17, 7.1-7, 7.1-23, 7.1-28, 7.2-8, 7.2-9, 7.2-11, 7.2-12, 7.2-15,
7.2-18-7.2-21, 7.2-25, 7.2-26, 7.3-19, 7.5-2, 7.5-5, 7.5-6, 7.5-17, 7.5-18, 7.5-29-7.5-34, 7.7-8, 7.8-9, 7.10-20-7.10-22,
7.12-11, 8-11, 8-14-8-16, 8-24
salmon
6.1-9, 6.1-10, 6.1-14, 6.1-15, 6.1-18-6.1-23, 6.1-25-6.1-29, 6.1-31-6.1-33, 6.1-35-6.1-37, 6.1-39, 6.1-41-
6.1-49, 6.2-18, 7.7-6-7.7-12, 7.7-16, 7.7-21, 7.7-22, 8-14
San Joaquin Valley Drainage Program
San Luis (Reservoir) 1-13, 5.1-5, 5.1-15, 5.1-29, 5.1-41, 5.1-42, 5.1-47, 5.1-48, 5.1-54, 5.1-62, 5.1-63,
5.3-6, 5.3-17, 5.4-14, 5.4-15, 5.5-14, 5.7-1, 5.7-5, 5.7-7, 5.8-7, 6.1-11, 6.1-12, 6.2-13, 6.2-31,
7.3-3, 7.4-5, 7.5-11, 7.5-12, 7.5-14, 7.5-24, 7.6-5-7.6-7, 7.7-12, 7.7-13, 7.7-26, 7.7-27, 7.7-29,
7.8-12, 7.10-7, 7.11-8, 7.13-6, 7.13-7, 7.14-4
San Pablo (Bay) 1-11, 5.1-6, 5.1-31, 5.2-4, 5.2-5, 5.2-19, 5.3-34, 5.3-38, 5.3-42, 5.3-45, 5.3-49, 5.3-52,
5.5-4, 5.5-7, 5.5-8, 5.7-1, 5.7-3, 5.7-4, 6.1-8, 6.1-9, 6.2-8, 6.2-9, 7.7-4, 7.7-7, 7.7-8, 7.13-4
sanitary survey
SB 1065
scour
(Safe Drinking Water Act) SDWA
Section 303(d)
Section 404
sedimentation 2-9, 5.5-3, 5.5-4, 5.5-6, 5.5-8, 5.5-15, 5.5-19, 5.5-22, 5.5-23, 6.1-15, 6.1-28, 6.2-8, 6.2-9,
6.2-14, 7.1-17, 7.1-18, 7.8-1, 7.8-5, 7.8-11, 7.8-14, 7.8-20, 7.11-8, 7.12-5, 7.12-7



	2-11, 7.2-15, 7.2-16, 7.2-18, 7.8-1-7.8-3, 7.8-6, 7.8-7,
7.8-9 selenium	, 7.8-11, 7.8-12, 7.8-14, 7.8-17-7.8-23, 7.8-29, 7.8-31 8-4, 5.3-7, 5.3-8, 5.3-10-5.3-12, 5.3-15-5.3-17, 5.3-25,
5.3-33, 5.3-40, 5.3-43, 5.4-14, 5.5-1, 5.5-3, 5.5-14,	5.5-16-5.5-18, 5.5-20, 5.5-22, 6.1-11, 6.1-15, 6.2-18, 6.2-22, 6.2-28, 7.1-3, 7.1-22, 7.1-31
Semitropic Water Storage District	
sensitive receptors	5.6-2, 5.6-4, 5.6-6, 5.6-8, 5.6-11
shallow-water habitat 5.3-4, 5.3-5, 5.3-24, 5.3-5	55, 5.3-57, 5.3-58, 6.1-4, 6.1-9, 6.1-28, 6.1-52, 6.2-19,
6	.2-32, 7.7-29, 7.8-20, 7.8-23, 7.11-13, 7.12-3, 7.12-17
Shasta Dam	
Shasta Lake	
Shasta Temperature Control Device	
Sites/Colusa (Reservoir)	
(Suisun Marsh Preservation Agreement) SMPA	
(Significant Natural Areas) SNAs	
(sulfur dioxide) SO ₂	
social services 7.3-5, 7.3-8, 7.3-11	
social well being	
(synthetic organic chemicals) SOCs	
source reduction	
special-status (plants and animals) 3-13, 3-21, 3-2	
	7-6.2-30, 6.2-32, 6.2-33, 6.2-35, 6.2-38-6.2-40, 7.5-25
splittail 6.1-1, 6.1-7, 6.1-18, 6.1-21, 6.1-22	
sport fishing 1-4, 7.7-4, 7.7-6-7.7-8, 7.7-10, 7.7-12	
	10-8
spotted bass	6.1-10, 6.1-39
(Sacramento River Flood Control Project) SRFCP	$\dots 6.1\text{-}25, 6.1\text{-}26, 6.1\text{-}49, 6.2\text{-}17, 6.2\text{-}18, 7.8\text{-}4, 7.8\text{-}7, 6.2\text{-}18, 7.8\text{-}7, 6.2\text{-}18, 7.8\text{-}4, 7.8\text{-}7, 6.2\text{-}18, 7.8\text{-}4, 7.8\text{-}7, 6.2\text{-}18, 7.8\text{-}4, 7.8\text{-}7, 7.8\text{-}18, 7.$
	7.8-9, 7.8-16
State Revolving Loan Fund	
State Water Policy Council	
steelhead 5.1-14, 5.1-15, 6.1-1, 6.1-7, 6.1-10	
	-41-6.1-43, 6.1-47-6.1-49, 7.7-4, 7.7-9, 7.7-11, 7.7-12
Stone Lakes (NWR) 5.3-21, 6.1-25, 6.1-49, 6.2-	
striped bass 1-1, 2-25, 6.1-9, 6.1-20-6.1-23	, 0.1-25, 0.1-27-0.1-29, 0.1-52, 0.1-55, 0.1-55, 0.1-41- .1-46-6.1-48, 7.7-4, 7.7-6-7.7-9, 7.7-11, 7.7-12, 7.12-6
(white and green) sturgeon 6.1-1, 6.1-20, 6.1-2	, , , , , , ,
(white and green) sturgeon 0.1-1, 0.1-20, 0.1-2	2, 0.1-27-0.1-29, 0.1-32, 0.1-33, 0.1-33, 0.1-43, 7.7-4, 7.7-6-7.7-9, 7.7-12
subsidence 1-8, 1-10, 2-9	,
	5.4-30, 5.4-32, 5.4-34-5.4-36, 5.5-1, 5.5-2, 5.5-4-5.5-6
	5-25, 5.5-27, 5.8-5, 5.8-6, 5.8-12, 7.1-3, 7.1-7, 7.1-31
	3, 7.8-14, 7.8-16, 7.8-19, 7.8-21, 7.8-25, 7.8-29, 7.8-31
Suisun Bay 1-10, 1-11, 5.1-6, 5.1-31, 5.2-5, 5.2-1	
	.1-20, 6.1-22, 6.2-8-6.2-10, 7.6-4, 7.7-7, 7.7-8, 7.7-15
	7.7-19, 7.11-5, 7.11-6
Suisun Marsh	
	-11, 6.1-8, 6.1-25, 6.1-28, 6.1-33, 6.1-34, 6.2-4, 6.2-8
	20, 7.7-21, 7.8-5, 7.8-8, 7.8-9, 7.8-23, 7.11-5, 7.11-13
	14, 7.12-4, 7.12-11, 7.13-4, 7.13-10, 7.14-8, 8-14-8-16
(Surface Water Treatment Rule) SWTR	



Tehama-Colusa (Canal)
temperature
5.3-17, 5.3-25, 5.3-27, 5.3-35, 5.3-56, 5.4-29, 5.4-36, 5.8-5-5.8-7, 6.1-1, 6.1-2, 6.1-4, 6.1-8, 6.1-10, 6.1-13,
6.1-14, 6.1-18, 6.1-19, 6.1-21-6.1-23, 6.1-25, 6.1-26, 6.1-29, 6.1-36-6.1-39, 6.1-42, 6.1-43, 6.1-47, 6.1-49,
6.1-52, 7.7-11, 7.7-12, 7.7-14, 7.7-23, 8-11, 8-14
thermal generation
third parties
third-party impacts
(trihalomethane) THM
tiered document9-2
Title 22
Title III
(total organic carbon) TOC 2-8, 2-18, 2-23, 5.3-1, 5.3-2, 5.3-4, 5.3-5, 5.3-9, 5.3-10, 5.3-12, 5.3-13,
5.3-18, 5.3-22, 5.3-24, 5.3-26, 5.3-29, 5.3-34, 5.3-38, 5.3-41, 5.3-48, 5.3-49, 5.3-51, 5.3-55, 5.3-58, 8-19
Total Coliform Rule
toxaphene
toxicity (of unknown origin)
trace metals
Tracy Pumping Plant
traffic
5.8-11, 5.8-16, 7.7-2, 7.7-18, 7.7-31, 7.9-19
trains
7.9-24, 7.11-7, 8-22
(total suspended solids) TSS
(total trihalomethanes) TTHMs
tule perch
turbidity
5.3-58, 5.5-8, 5.5-20, 5.5-23, 6.1-10, 6.1-15, 6.1-19, 6.1-28, 6.1-29, 6.1-36, 7.5-17, 8-19
unreasonable use
Urban Water Management Planning Act
(Vernalis Adaptive Management Plan) VAMP
viruses
(volatile organic carbons) VOCs
Water Code
Water Management Strategy
water rights 1-19, 1-20, 1-22, 5.1-13, 5.1-30, 5.3-21, 5.4-2, 5.4-4, 5.4-6, 5.4-36, 7.1-5, 7.1-6, 7.1-8,
7.1-9, 7.1-13, 7.5-4-7.5-7, 7.5-9, 7.5-10, 7.5-12, 7.5-14, 7.6-3, 7.6-5, 7.6-7, 7.15-1, 7.15-4, 8-13,
8-14, 8-16, 8-17, 8-23, 8-24
water transfer market(s) 2-13, 5.1-1, 5.1-4, 7.2-9, 7.3-8
water treatment 1-9, 3-3, 5.3-1, 5.3-4, 5.3-9, 5.3-18, 5.3-21, 5.3-22, 5.3-58, 7.5-2, 7.5-4, 7.5-17, 7.9-18,
7.10-19, 7.10-21, 8-19, 8-20, 10-7
Whiskeytown (Lake)
white catfish 6.1-28, 7.7-12
Williamson Act
(Water Quality Control Plan) WQCP
8-14-8-16, 8-23
X2 (position) 3-9, 3-10, 5.1-18, 5.2-1, 5.2-5, 5.2-6, 5.2-12, 5.2-15, 5.2-19, 5.2-22, 5.2-24, 5.2-26, 5.2-28,
5.2-30, 5.2-32, 5.2-34, 5.2-37-5.2-39, 5.3-3, 8-14
Yolo Basin Wildlife Area 7.1-13, 7.1-29 Yolo Bypass 5.2-4, 5.2-6, 5.3-19, 7.7-6, 7.8-6, 7.8-10
1010 Dypass 5.2-4, 5.2-0, 5.5-19, 7.7-0, 7.8-10



