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Federal Perspective: Central Valley Project and Water Management in California

Introduction

The Central Valley Project (CVP) is one of the largest water projects in the world and is also one of the most complex and challenging to operate. Together with the State Water Project (SWP), the projects serve as the framework for the movement of water throughout much of California. The CVP functions under a patchwork array of Congressional authorizations, interagency agreements, regulatory requirements, and contractual obligations that govern the daily operations and seasonal performance of. The operation of the CVP is further complicated by the ever changing landscape we experience today. The current combination of drought conditions, declining fishery populations, financial crises, and the economic downturn contribute to the uncertainty about water supplies into the future, but also emphasize the need for effective and immediate action.

Background

The CVP was originally conceived as a State project to protect the Central Valley from crippling water shortages and devastating floods. Many of the major facilities of today's project were included in the State Water Project formulated in the 1930's. In the depression era, however, the State was unable to finance the project. Most of the water development envisioned by the State was accomplished by the Federal CVP, beginning with its initial authorization in 1935.

Work began in 1937 with the Contra Costa Canal which started delivering water in 1940. The next facility built was Shasta Dam, the keystone of the project. Work on the dam began in 1938, and water storage started even before its completion in 1945. Congress subsequently passed 13 separate measures to authorize the development of the other major project facilities over the next 3 decades. The final dam, New Melones, was completed in 1979.

The CVP serves agriculture, municipal, and industry needs in the Central Valley as well as major urban centers in parts of the San Francisco Bay Area; it is also the primary source of water for many of the Central Valley's wildlife refuges.

In addition to delivering water for farms, homes, factories, and the environment, the CVP is a major producer electric energy for municipalities and is a chief component of the flood management system in the Central Valley protecting agricultural areas and major urban centers. The project also affords flow stability, recreation opportunities, and water quality benefits. While the facilities are spread out over hundreds of miles, the CVP is financially and operationally integrated as a single large water project.

In summary, the CVP:

- Reaches from the Cascade Mountains near Redding in the north some 500 miles to the Tehachapi Mountains near Bakersfield in the south.
- Is comprised of 18 dams and reservoirs, 11 powerplants, and 500 miles of major canal as well as conduits, tunnels, and related facilities.
- Annually delivers about 7 million acre-feet on average for agriculture, urban, and wildlife use.
- Provides water to irrigate about 3 million acres or approximately one-third of the agricultural land in California.
- Furnishes water for municipal and industrial use to supply close to 1 million households with their water needs each year.
- Dedicates in most years 800,000 acre-feet of water to fish and wildlife and their habitat and 410,000 acre-feet to Federal, State, and private wildlife areas and wetlands pursuant to the Central Valley Project Improvement Act (CVPIA).
- During an average water year, generates over 5 billion kilowatt hours of electricity to meet the needs of some 2 million people.

What “Governs” CVP Operations?

The operations of the CVP are carried out consistent with Congressional authorizations, applicable law, and contractual obligations. These include the various authorizing legislations, the terms and conditions of the Biological Opinions from the US Fish and Wildlife Service and the National Marine Fishery Service, the water right permits issued by the State Water Resources Control Board (SWRCB), various interagency agreements, and numerous contracts for the delivery of water supplies. A summary of many of the different laws, directives, and orders the govern CVP operations is provided as attachment 1.

The CVP was originally authorized by the Rivers and Harbors Act of 1935 and was reauthorized by the Rivers and Harbors Act of 1937. The 1937 Act provided that the dams and reservoirs of the CVP “shall be used, first, for river regulation, improvement of navigation and flood control; second, for irrigation and domestic uses; and, third, for

power.” The CVP was reauthorized in 1992 through the Central Valley Project Improvement Act (CVPIA). The CVPIA modified the 1937 Act and added mitigation, protection, and restoration of fish and wildlife as a project purpose. Further, the CVPIA specified that the dams and reservoirs of the CVP should now be used “first, for river regulation, improvement of navigation, and flood control; second, for irrigation and domestic uses and fish and wildlife mitigation, protection and restoration purposes; and, third, for power and fish and wildlife enhancement.”

Beyond the set of authorizing legislation, the CVP is permitted by the SWRCB to store water during wet periods use. Both the CVP and SWP operate pursuant to water right permits and licenses issued by the SWRCB to appropriate water by diverting water into storage, by directly diverting water for immediate use, and by re-diverting releases from storage later in the year. As conditions of these water right permits, the SWRCB requires the CVP and SWP to jointly meet specific water quality, quantity, and operational criteria for the rivers below the reservoirs and within the Delta.

Contractual obligations also guide CVP operations. Over the years as the various divisions of the CVP became operational, Reclamation entered into long-term contracts with water districts, irrigation districts, and others for delivery of CVP water. In total approximately 250 CVP contracts provide for varying amounts of water delivery – some of these contracts specify minimum deliveries, while for others the quantities range depending on the availability of water. The nature of the contracts also varies. Some of the contracts are with entities claiming water rights senior to the CVP such as the Sacramento River Settlement contractors, the San Joaquin Exchange Contractors, and the City of Sacramento. These contracts make it possible to operate the project in a manner to develop water supplies and enter into contracts are for water service.

State and Federal Coordination

In order to make the most efficient use to the common water supply available to the CVP and SWP, Reclamation and DWR must work as closely as possible to coordinate their respective reservoir releases and Delta pumping operations. The operations staffs for the two projects work in very close proximity at the Joint Operations Center (JOC) in Sacramento. The control rooms for the two projects are housed side by side to allow for maximum communication during daily operations. These control rooms are staffed 24 hours a day, and the close working relationship allows the two projects to be operated remotely using the same information and knowledge about the others project’s actions. During flood emergencies, Reclamation and DWR join with the National Weather Service and the U.S. Army Corps of Engineers at the JOC for joint action during flood emergencies.

The close CVP/SWP operations are made possible by a number of agreements between Reclamation and DWR, but the most significant is the Coordinated Operation Agreement (COA). Signed in 1986, the COA outlines the shared responsibilities of each project to meet Delta water quality and flow objectives. For over twenty years, the COA, and the commitment to work together, has helped the two projects make the best use of their

respective facilities. As new Delta infrastructure is contemplated and water quality parameters are developed, the COA will also need to be examined so that the projects continue to make equitable use of the common water supply.

In addition to these coordinated operations, the CVP and SWP share several important facilities in the San Joaquin Valley. The major CVP elements within the San Luis Unit were developed in coordination with DWR. The CVP and the SWP jointly use San Luis Reservoir, O'Neill Forebay, more than 100 miles of the California Aqueduct (San Luis Canal), and the related pumping and generating facilities. While Reclamation holds title to these features, DWR operates and maintains them.

Power Generation

Although water operations take precedence over power generation, hydroelectric power is a key product of the CVP. The first priority of the electricity generated is for project uses such as pumping project water through the network of CVP canals. This includes power to the Jones, Dos Amigos, Gianelli, and O'Neill Pumping Plants as well as many smaller canal-side pumps. In most years, the power generated by the CVP exceeds the direct needs of the project and the additional generation is made available to a group of northern California municipalities through "preference power" contracts.

Since the creation of the Department of Energy, the Western Area Power Administration (Western) administers these contracts and provides for the transmission of CVP generation. Consistent with scheduled water releases, Western works with Reclamation and the preference power customers to help "shape" each day's generation to best meet the needs of this customer group. The CVP power customers are critical to the financial integrity of the project given these municipalities pay a significant share of the annual costs to operate the CVP.

Summary

From its conception, the Central Valley Project was one of Reclamation's most ambitious projects. The engineering and financial challenges were daunting, but the outcome was an enormous release of economic productivity. The project has served the State well over the last sixty years helping to make the Central Valley the richest agricultural region in the country. The CVP has prevented billions of dollars in flood damages and untold loss of life and property. The hydroelectric energy generated by the project has been a vital asset to an ever growing State.

Water has always been the key issue in the West, and water issues in California are especially complex. The operators of the CVP and SWP manage these projects to meet a wide range of project purposes while at the same time trying to minimize the effects to multiple species and satisfy a wide array of other requirements. All of this is carried out within the swirling uncertainty of declining fish populations, budget instability, and the prospect of climate change.

All living things need water – it is our obligation to use it wisely in the most effect ways possible. The test for our policy makers and those managing our water resources is to meet our challenges while preserving the existing cooperative framework that now exists among the resource managers at all levels. To this end, Reclamation fully supports the Governor’s efforts to develop a durable Delta solution. To be successful this effort will require some of the same creativity and innovation displayed in developing the CVP and SWP in the last century.

Although the Delta is clearly the hub of our water supply system and the leading edge of many of our current issues, this is not just about the Delta. The operations in the Delta are inherently linked to the reservoir releases made upstream. Hopefully our work in the Delta can serve as a foundation to create a comprehensive water management strategy for the future.

I have tried here to touch upon the many factors that govern the operation of the CVP. I hope my testimony has been helpful to you and I look forward to any questions you may have.

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**Attachment 1 - Laws, Directives, and Orders
Affecting Central Valley Project (CVP) Operations**

Law or Directive	YEAR	Effect on CVP
Reclamation Act	1902	Formed legal basis for subsequent authorization of the CVP.
Rivers and Harbor Act	1935 1937 1940	First authorization of CVP for construction and provision that dams and reservoirs used first for rivers' regulation, improvement of navigation, and flood control. Second for irrigation and domestic use; third for power.
Reclamation Project Act	1939	Provide for the repayment of the construction charges and authorized the sale of CVP water to municipalities and other public corporations and agencies, plant investment, for certain irrigation water deliveries to leased lands.
Water service Contracts	1944	Provides for the delivery of specific quantities of irrigation and municipal and industrial water to contractors.
Flood Control Act	1944	Authorized flood control operations for Shasta, Folsom, and New Melones Dams.
Water Rights Settlement Contracts	1950	Provided diverters holding riparian and senior appropriative rights on the Sacramento and American Rives with CVP water to supplement water which historically would have been diverted from natural flows.
Grassland Development Act	1954	Added authority for use of CVP water for fish and wildlife purposes. Also authorized development of works in cooperation with the State for furnishing water to Grasslands for waterfowl conservation.
Trinity River Act	1955	Provided that the operation of the Trinity River Division be integrated and coordinated with operation of to other CVP features to allow for the preservation and propagation of fish and wildlife.
Reclamation Project Act	1956	Provide a right of renewal of long-term contracts for agricultural contractors for a term not to exceed 40 years.
Fish and Wildlife Coordination Act	1958	Provided for integration of Fish and Wildlife Conservation programs with Federal water resources developments; authorized Secretary of the Interior to include facilities to mitigate CVP-induced damages to fish and wildlife resources. Required consultation with the U.S. Fish and Wildlife Service.
San Luis Authorization Act	1960	Authorized San Luis Unit and provided for financial participation of Reclamation in development of recreation.
Reclamation Project Act	1963	Provided a right of renewal of long-term contracts for municipal and industrial contractors.

**Laws, Directives, and Orders
Affecting Central Valley Project (CVP) Operations**

Law or Directive	YEAR	Effect on CVP
Auburn-Folsom South Unit Authorization Act	1965	Authorized Auburn-Folsom South Unit. Provided for financial participation of Reclamation in development of recreation.
Power Contract 2948A	1967	Provided banking agreements with the Pacific Gas and Electric Company of California (PG&E), under which excess CVP energy and capacity is sold to the PG&E. The PG&E in return delivers power to CVP customers. Contract now administered by the Western Area Power Administration.
National Environmental Policy Act (NEPA)	1969	Established policy, set goals, and provided means for ensuring scientific analysis; expert agency participation and public scrutiny and input are incorporated into the decision-making process regarding the actions of the Federal agencies.
Council on Environmental Quality Regulations	1970	Provided direction for compliance with NEPA.
State Water Resources Control Board Decision 1379	1971	Established Delta water quality standards to be met by both the CVP and the State Water Resources Project (SWP).
Endangered Species Act	1973	Provided protection for animal and plant species that are currently in danger of extinction (endangered) and those that may come so in the foreseeable future (threatened).
State Water Resources Control Board Decision 1485	1978	Ordered the CVP (and the SWP) to guarantee certain conditions for water quality protection and agricultural, municipal and industrial, and fish and wildlife use.
Secretarial Decision on Trinity River Release	1981 Amended 1991	Allocated CVP yield so that releases can be maintained at 340,000 acre-feet in normal water years, 220,000 acre-feet in dry years, and 140,000 acre-feet in critically dry years. Released a minimum of 340,000 acre-feet annually for each dry or wetter water year. During each critically dry water year, 340,000 acre-feet will be released if at all possible.
Corps of Engineers Flood Control Manuals for: Shasta, Folsom New Melones	1977 1959 1980	Prescribed regulations for flood control.

**Laws, Directives, and Orders
Affecting Central Valley Project (CVP) Operations**

Law or Directive	YEAR	Effect on CVP
Corps of Engineers Flood Control Manuals for: Shasta, Folsom New Melones	1977 1986 1982	Outlined descriptions and data on flood potential and flood ratings.
Reclamation Reform Act	1982	Introduced the concept of full-cost pricing, including interest on the unpaid pumping plant investment, for certain irrigation water deliveries to leased lands.
Coordinated Operating Agreement (COA)	1986	Agreement between the U.S. government and the State of California. Determined the respective water supplies of the CVP and the SWP while allowing for a negotiated sharing of Sacramento-San Joaquin Delta excess outflows and the satisfaction of in-basin obligations between the two projects.
Public Law 99-546	1986	Ensures repayment of plant-in-service costs at the end of FY 1980, by end of FY 2030.
Public Law 99-546	1986	DIO and Reclamation directed to include total costs of water and distributing and servicing it in CVP contracts (both capital and O&M costs).
WR 90-5 91-1	1990 1991	Water Rights Orders that modified Reclamation water rights to incorporate temperature control objectives in Upper Sacramento River.
State Water Resources Control Board Decision 1641		Adopted in December 1999 (and then revised in March 2000), D-1641, amending certain terms and conditions of the water rights of the SWP and CVP. D-1641 substituted certain objectives adopted in the 1995 Bay-Delta Plan for water quality and flow objectives required to be met as terms and conditions of the water rights of the DWR and Reclamation.