The Central Valley Project:

Controversies Surrounding Reclamation's Largest Project

Abstract

Eric A. Stene

The Central Valley Project differed from many Bureau of Reclamation projects because it began as a state project in an already agriculturally developed region of California. The Central Valley Project (CVP) was a multi-purpose project intended to provide irrigation water to farmland, electrical power for large populations, and flood control protection for the Sacramento-San Joaquin Delta and low-lying areas near the Sacramento River. It was intended for the CVP to accomplish these tasks with a combination of dams, pumping and pumping-generating plants, off-stream reservoirs, and canals. The successes of the CVP came at a cost of controversy about the acreage limitations declared in the Reclamation Act of 1902, environmental concerns, and incomplete structures. This paper will look at the debates surrounding the acreage limitations and the environmental disasters which occurred as a result of CVP construction.

The history of the Central Valley Project is the story of evolution from a state water project to a Reclamation project. Politics and competition for the project stirred between the Bureau of Reclamation and the Army Corps of Engineers. Information about the battle over acreage restrictions will be gathered from interviews conducted in the late 1940s, at the request of the Bureau of Reclamation; Reclamation's project histories about the Central Valley Project; the laws enacted to confront the issue of acreage limitations; and books concerning the Central Valley Project. Proponents and opponents of acreage limitations argued for and against the policy as Reclamation attempted to resolve the controversy surrounding the issue which

continued for decades.

A more recent, but often more emotional issue surrounding the CVP, was the project's effect on the environment. Environmental advocates frequently castigated the CVP facilities' effect on the environment. The environmentalist view conflicted with those whose views tended toward the improvement of agriculture, flood control, and electrical power for the human population. As perceptions and priorities changed, so did Reclamation's policies and operations as the Bureau worked to halt damage to the environment while continuing operation of the CVP.

The Central Valley Project was hardly a qualified success. However, the CVP accomplished many of Reclamation's goals regarding flood control and agriculture. In the process, the natural environment was severely damaged, possibly irreparably so. Politics tended to dictate Reclamation's activities and responses. This had a direct impact on Reclamation's success or lack thereof in its efforts.

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by

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The Central Valley Project began as the crown jewel for the Bureau of Reclamation. It became a complex gargantuan of technology and controversy. As the project grew in size and scope, the debate expanded as perspectives and priorities changed. The Central Valley Project became a politician of water projects as Reclamation and the state of California assumed the posture of campaign managers and attempted to make the project all things to all people. The Project accomplished many of the goals set forth by Reclamation and California, but fell short of others as expectations exceeded abilities. Arguments ranging from acreage limitations to environmental damage plagued the project from its beginning. Many of those arguments still have not been resolved, and, depending on the perspective, the project is everything from a savior of the arid agricultural lands of the Central Valley and a flood control success to corporate welfare and environmental armageddon for California.

The Central Valley Project encompasses a large section of California. The Central Valley extends approximately 450 miles long and from forty to seventy miles wide. The warm climate encourages agriculture, but runoff comes in uneven quantities.[1] The Sacramento River watershed receives two-thirds to three-quarters of northern California's precipitation though it only has one-third to one-quarter of the land. The San Joaquin River watershed occupies two-thirds to three-quarter of northern California's land, but only collects one-third to one-quarter of the

precipitation. The Sacramento Valley suffers from floods, and floods and droughts alternately afflict San Joaquin.[2]

As early as the 1870s, ideas appeared planning to transfer excess water from the Sacramento River to the often parched tracts in the San Joaquin Valley. Most early efforts concentrated on flood control along the Sacramento River. After years of planning and debate about the proposed project led nowhere, California appealed to the Federal government for assistance. The Bureau of Reclamation and the Army Corps of Engineers (COE) vied for the opportunity to construct the facilities on the colossal project, which came to be called the Central Valley Project.[3]

History and Construction

California's history encompasses several hundred years of habitation by various groups of Native Americans. European settlement of the state began with the Spanish, in the seventeenth century. The Spanish established Roman Catholic missions and other settlements along the California coast, but rarely ventured to the interior of the territory. Citizens of the United States began immigrating into California in the 1840s. Increasing migratory pressure by the settlers on many north Mexican provinces and political machinations by the United States sparked the Mexican-American War in 1846. The United States defeated Mexico in 1848, and the resulting Treaty of Guadalupe-Hidalgo gave Mexico's northern states, including California, to the United States for $10 million. The acquisition of California alone brought the United States riches the country did not know existed, and more problems to go along with them.[4]

The discovery of gold at Sutter's Mill in 1849, brought a flood of Americans into the area and the following year California became a state. The first California Legislature in 1850,

immediately enacted laws to deal with the state's most precious resource, not gold, but water. The California Legislature adopted English Common Law's riparian water rights. According to that law, owners of land bordering streams or bodies of water had a right to a reasonable amount of that water. Owners, whose land did not border bodies of water, had no rights to any of the water.[5] The laws severely restricted the number of landholders who had access to California's water supply.

The 1850 California Legislature gave the State Surveyor General responsibility for water development. In 1878, the California government created the office of the State Engineer, which then became responsible for state water planning. William Hamilton Hall, the first State Engineer, conducted a broad study of California's water problems, on a $100,000 budget. Hall planned to appropriate more money and conduct a more detailed study, but for unspecified reasons the legislature abolished the State Engineer position in 1889.[6]

The California Legislature passed the Wright Act in 1887, forming irrigation districts. One Reclamation official considered the Wright Act a model for irrigation legislation in the west.[7] Others claimed it was a good idea, but badly implemented. The districts encountered problems in selling their bonds, filling their reservoirs, and allocating water in a fair manner. Wyoming State Engineer, and future Reclamation Commissioner, Elwood Mead declared the Wright Act, "a disgrace to any self-governing people."[8] California amended the Wright Act in 1897, stopping the establishment of irrigation districts until the formation of the Irrigation Districts Bond Certification Commission.[9]

The Federal government also became interested in California water during the nineteenth century. Lt. Colonel B.S. Alexander studied the Sacramento and San Joaquin Rivers in 1873. In

a report to President Ulysses S. Grant, Alexander visualized a system of canals to complete an exchange of water from the Sacramento to the San Joaquin Valley. A report on the "Sacramento Project" in 1904, first connected the U.S. Reclamation Service to water problems in the Central Valley, but that connection remained limited. California created the State Reclamation Board in 1911, and authorized it to spend $33 million on a flood control project in the Central Valley. The Reclamation Service reported on the possibility of storing Sacramento River water at Iron Canyon near Red Bluff. In 1920, Homer J. Gault, a Reclamation engineer, and W.F. McClure, the California State Engineer, wrote another report on Sacramento River storage in Iron Canyon, but Reclamation involvement remained non-existent.[10]

In a 1919 letter to California Governor William Stephens, Colonel Robert Bradford Marshal, Chief Geographer for the U.S. Geological Survey (USGS), proposed a plan to build storage reservoirs along the Sacramento River system, and transfer water from the Sacramento Valley to the San Joaquin Valley via two large canals lying on both sides of the Sacramento River. The plan earned Marshal the nickname, "The Father of the Central Valley Project."[11]

California's government became interested in a comprehensive water plan for the state in 1921. The state legislature directed the State Engineer to come up with such a plan. They wanted it to accomplish conservation, flood control, storage, distribution, and uses for all California water. The legislature directed the State Engineer to estimate total costs for the reservoirs, dams, and any other facilities needed to institute the state water plan. The legislature then appropriated $200,000 to investigate this state water plan and received the report in 1923. Further legislation and appropriations raised the bill to one million dollars. Between 1920 and 1932, approximately fourteen more reports detailed water flow, drought conditions, flood

control, and irrigation issues in California. State Engineer Edward Hyatt used the reports to create the California State Water Plan.[12]

Salinity control, especially in the Sacramento-San Joaquin River Delta, became a major concern for northern California water users, and a major component of the California State Water Project. The Delta frequently experienced salinity intrusion, which caused problems for Antioch and Pittsburg. Unless water flowed past Antioch at a minimum of 3,300 second-feet, salt water from San Francisco Bay moved into Suisun Bay and the Delta during high tide, making the water unusable for crops and industry. Between 1919 and 1924, the salt water in Suisun Bay allowed sufficient growth of teredo, a woodboring worm, to destroy $25 million of the bay's wharves and pilings. In 1924, the water reached its lowest recorded stream flow. The maximum salt water content at Pittsburg reached 65 percent. In 1926, Pittsburg and Antioch stopped using water from Suisun Bay for crops and industry. Both communities had used the bay water since the middle of the nineteenth century. In 1930, the state water plan called for construction of a 420 foot dam at Kennett to maintain a regular flow to Antioch, keeping salt water out of Suisun Bay. The California Legislature authorized the future Central Valley Project as a state project in 1933. The act authorized the sale of "revenue" bonds not to exceed $170 million.[13]

Even with the authorized revenue bonds, California found itself unable to finance the project. Further hampering revenue collection was the inability of the state to get the project approved for loans and grants under the National Recovery Act. Reporting to Reclamation on the upper San Joaquin Relief Project, Harry W. Bashore said that the State Engineer considered Kennett Reservoir the cornerstone for the entire Central Valley Project. California applied to the Federal Emergency Administration of Public Works (FEA) for grants and loans, and created the

Water Project Authority. The Committee on Rivers and Harbors of the House of Representatives recommended $12 million of Federal money for construction of Kennett (later Shasta) Dam because of the national benefits to navigation and flood control on the Sacramento River. After reviewing the investigations, the California Joint Federal-State Water Resources Commission, the United States Senate Committee on Irrigation and Reclamation, the Bureau of Reclamation, and the Army Corps of Engineers approved and recommended the plan.[14]

California amended its application to the FEA in 1934, and the Water Project Authority became effective. On September 10, 1935, President Franklin D. Roosevelt issued an executive allocation of $20 million under the Emergency Relief Appropriation Act, later reduced to $4.2 million, for construction of the Central Valley Project. Apparently officials assumed the approval was valid under the Emergency Relief Appropriation Act of 1935, but the Supreme Court case of the United States vs. Arizona (295 U.S. 174) briefly threatened that assumption. Before 1935, the government sometimes started irrigation projects using relief funds without conforming to the Reclamation Acts, but the court's decision said the Secretary of the Interior and the Federal Emergency Administrator of Public Works did not have the authority to construct Parker Dam, on the Colorado River, without the consent of Congress. The Supreme court ruled that such an approach violated reclamation laws.[15]

Technically, authorization of the Central Valley Project could not take place at the time because there were no executive branch findings and approval of feasibility. The technical problems, however, did not stop authorization of the project. Active participation by Reclamation, in matters relating to the Central Valley, started in September 1935, at meetings in Sacramento and Berkeley. Reclamation Commissioner Elwood Mead, Chief Engineer Ray

Walter, Construction Engineer Walker R. Young, and State Engineer Edward Hyatt attended the meetings. Secretary of the Interior Harold Ickes sent the feasibility report to the President on November 26, 1935. Roosevelt approved Central Valley Project, including Kennett (later Shasta), Friant, and Delta Divisions, on December 2, 1935.[16]

The Rivers and Harbors Act of 1937, re-authorized the Central Valley Project, and authorized $12 million for construction. The Rivers and Harbors act listed improvement of navigation, regulation, and flood control of the Sacramento and San Joaquin Rivers as the first priorities of the Central Valley Project. Reclamation's primary purpose, supplying water for irrigation and domestic use, followed these priorities and power generation ended up the last priority on the list.[17]

The Central Valley Project continued largely unscathed through the late 1940s and 1950s. The government authorized new divisions of the project, with economic feasibility the only necessary criteria. The project became a conglomeration of various Federal and state government agencies by the end of the 1960s. The Army Corps of Engineers built several dams in California under the Flood Control Act of 1944, several of which became integrated into CVP. Meanwhile, California continued with its State Water Project.

The Corps of Engineers completed Folsom Dam in 1956, turning over operation and maintenance to the Bureau of Reclamation after completion. Congress integrated more COE projects into CVP during the 1960s and 1970s. The Corps of Engineers continued to operate and maintain several dams in the Central Valley and the Corps often found itself holding surplus water at the dams. As a result, Reclamation drew up contracts for releasing the surplus water for irrigation because COE specialized in flood control, not irrigation water supply.

The California State Water Plan published in 1957, proposed immediate construction of a project on the Feather River. The Feather River marked the inauguration of the California State Water Project, strongly supported by California Governor Edmund G. "Pat" Brown who realized the seriousness of California's water situation. Unlike the CVP, which only compelled repayment for its irrigation projects, the State Water Project required water users to pay all project costs for the $1.75 billion in bonds. According to the Water Education Foundation, although a little more than 50 percent complete in 1994, the State Water Project then consisted of twenty-two dams and reservoirs and the North Bay, South Bay, and California Aqueducts. Approximately 30 percent of the water supplied by the State Water Project irrigated the San Joaquin Valley, while the other 70 percent supplied water for residential, municipal, and industrial use, most of it in southern California.[18]

The Acreage Limitation Battle

One major stumbling block for Reclamation Service involvement in a water project in the Central Valley was the 160 acre limitation imposed by the Reclamation Act of 1902. According to Norris Hundley, Congress intended for the Act to promote family farms, reclaim arid land, and prevent speculators and large landowners from profiting at government expense. Because of California's history, much of the land was already held in farms whose acreage greatly exceeded the 160 acre minimum. In 1920, 60% of the land in the Central Valley was held in farms of 1,000 or more acres. This increased to 70% of the land by 1935. Furthermore, much of the land was owned by absentee landlords. Early on, the large landowners in the Valley feared imposition of the acreage limitation, encouraging them to rebuff Reclamation's assistance and look for alternative solutions to their irrigation woes.[19] The acreage limitation controversy only provided

the first seeds of dissension, soon to be followed by the debate over public versus private power and environmental concerns.

Construction on the Central Valley Project started in the late 1930s, and controversy bloomed toward the end of World War II. The first blow to the large landowners came in 1943, when Reclamation ceased its policy of not enforcing the acreage limitation. Following the war, advocates of small farmers formed the Central Valley Project Conference (CVPC) to counter the influence of the Central Valley Project Association (CVPA). George Sehlmeyer, Master of the California Grange, led the CVPC, which extolled the virtues of acreage limitations and public power. The CVPA viewed the two policies as anathema. One of the CVPC's biggest victories came on September 8, 1945, as 200 delegates gathered to attend the Conference's California Water Conference.[20]

The California Water Conference of 1945, with Governor Earl Warren presiding, revealed a large amount of support for the CVP among small, working farmers; though the year's *Project History* reported,

> Paid mouthpieces of the vested interests, such as the Pacific Gas and Electric Company, the Irrigation Districts Association, the California Farm Bureau Association, the State Water Project Authority, and others, without exception, opposed the Bureau's program of wide distribution of benefits resulting from the expenditure of public funds.[21]

Several issues arose at the conference, including: state vs. federal operation and control; public vs. private distribution of power; and Army vs. Reclamation construction of multi-purpose projects; and controversy over the 160 acre limitation in the Reclamation Act of 1902. In "Water, Power, and Politics in the Central Valley Project," Charles E. Coate said, "The Army faced a decidedly hostile audience, and the bureau [sic] won the meeting's endorsement."

Apparently in spite of the “paid mouthpieces.” [22]

Not everyone felt the same fondness for the CVP. Robert Franklin Schmeiser, elected president of the Associated Farmers of California, Inc., in 1947; adamantly opposed Reclamation involvement in the Central Valley. Mainly he opposed Secretary of the Interior Harold Ickes, but aimed his wrath at Reclamation. Schmeiser railed against the 160 acre limitation expressed in the Reclamation Act of 1902. He supported COE construction of the Project, believing the Corps would supply irrigation water at a lower rate than the Bureau. Schmeiser did not like Reclamation's "propaganda organization," and argued against "the dictatorial powers they possess over the public."[23] Using the popular vernacular of the time to deal with opposition, Schmeiser called Reclamation officials "Communists" because of the acreage limitations and public power policy, always combustible topics in the CVP.[24]

Others supported the 160 acre limitation. Joseph Claude Lewis strongly supported Reclamation’s policy. Lewis, a pro-labor member of a farmers’ cooperative in the 1940s, expressed his support for the acreage limitation and low cost public power. He dismissed accusations that Secretary of the Interior Julius A. Krug and Reclamation Commissioner Michael Straus were Communists, a label often placed on himself.[25]

During the mid-1940s, several attempts were made to exempt the CVP from the acreage limitations, but these failed. Even irrigation water released from dams built by the Corps of Engineers became subject to the limitation, but the pendulum soon swung in favor of the large landholders. The death of Franklin Delano Roosevelt in 1945, was followed by the resignation of Secretary of the Interior Harold Ickes. Shortly thereafter Straus curtailed enforcement of the acreage limitation when he ran into opposition in Congress as farms came to be viewed as

businesses. One of the strongest opponents was Sheridan Downey of California, who had been Upton Sinclair's running mate for Lieutenant Governor in 1934. Straus remedied the situation politically by defending acreage limitations while creating loopholes for the large landowners, methodologies of bypassing the limitations collectively labeled "technical compliance."[26]

One method open to corporate farms aimed at circumventing the acreage limitation was for each stockholder to obtain water for 160 acres of the land. Often large growers deeded land to children and other relatives while continuing to work the acreage and profit from it. Large landowners also deeded land to employees and then leased back the acreage. In still another scheme, wealthy landowners made accelerated payments. In this process, they paid back the Bureau of Reclamation in a lump sum before the ten year deadline. This theory operated under the premise that Reclamation could not force the landowners to sell the land once the Bureau had received its allotment.[27]

The strategies devised to bypass the acreage limitations placed the issue on the back burner where it silently festered until the 1980s. The Reclamation Reform Act of 1982 recognized the large land holdings of many California farmers. Even though two-thirds of California farms consisted of less than 100 acres, 80 percent of the farmland existed in holdings of over 1,000 acres. Furthermore, 75 percent of California's agricultural production came from 10 percent of the farms. The Reform Act increased the limitation to 960 acres and eliminated the residency requirement for farmers, which Reclamation never really enforced in the Central Valley because most contracts were with water districts, not individual farmers.[28]

Even with Congress' concession on the acreage limitation, those in possession of more than 960 acres pressed to resume circumvention of the law. The pressure paid off as the

Westland Water District received a waiver from the Bureau of Reclamation to continue receiving a subsidized water rate until 2007. This meant payments of $17 per acre-foot rather than $42 per acre-foot. Reclamation went further in 1987, by declaring that farms in excess of 960 acres could continue receiving subsidized water as long as they were part of a farm management system.[29]

Environmental Crises

The 1960s marked the end of the era of large dam building, and caught the CVP in a political and economic whirlpool with no apparent end. All divisions of the Central Valley Project and the features of the State Water Project supply water to the Central Valley, and they all contribute to the environmental problems. One high profile problem which grew out of the CVP was the declining population of Chinook salmon in the Sacramento River. Most attention focused on the winter-run Chinook salmon, listed as threatened species by the Federal government and an endangered species by California. The estimated population of the winter-run Chinook in 1969, reached 117,000. In 1991, only 191 adults returned to the Sacramento River to spawn.[30]

The environmental movement entered the mainstream in the early 1970s. Soon, along with the Endangered Species Act of 1973, signed by President Richard Nixon; the movement created more controversy for the Central Valley Project. The Act set criteria for listing endangered species and protecting them from harm by federal agencies or private concerns. The Central Valley Project felt the consequences of the Endangered Species Act because of project features' impact on migratory fish species. The Shasta Division dams primarily affected chinook salmon and steelhead trout.[31] Shasta and Keswick Dams blocked a large number of streams, tributary to the Sacramento River, used for spawning by the migratory fish. Fish traps and

hatcheries combined to move the migrating fish upstream or artificially breed them, but they could not keep pace with the decreasing population of migratory aquatic wildlife. Shasta Dam not only blocked migration upstream, but it blocked the flow of cool water downstream, keeping water temperature above the maximum fifty-six degrees fahrenheit necessary for the spawning salmon. Beginning in 1992, Reclamation bypassed the turbines in Shasta Powerplant, and released water directly into the Sacramento River to improve conditions for endangered, winter-run chinook salmon.[32]

The population of winter-run chinook salmon peaked in 1969, numbering about 118,000 at Red Bluff Diversion Dam. After 1969, populations of salmon and steelhead trout at the dam steadily declined. By 1990, the salmon population dropped to less than 5 percent of their 1969 total. The situation elicited outcries against the Project from environmentalists and commercial fishermen. Reclamation instituted policies to alleviate the impact on the declining salmon population.[33]

Fish ladders and subsurface openings in the dam alleviated the migration problem, but led to another, predatory fish. Environmentalists equated salmon traveling through the subsurface openings, downstream through the dam, to putting the fish in a washing machine, disorienting the salmon when they get clear into the river. The disoriented fingerling salmon became easy prey for squawfish, which often lined up on the downstream side of Red Bluff Dam to feast on the small fish.[34]

In 1987, Reclamation began opening Red Bluff Dam's gates yearly, from December 1 until April 1, for the winter-run salmon returning to spawn at Shasta Dam. Inclusion of the winter-run chinooks on the listing of threatened species by the National Marine Fisheries Service

(NMFS), prompted Reclamation to take further action. Reclamation completed a $17 million renovation of the dam in March 1990. The improvements included a temporary fish ladder in the center of the dam for passage when the gates remained closed. Renovations did not immediately boost the chinook population. In 1991, the adult, winter-run chinook count reached a record low of only 191 at Red Bluff Diversion Dam. The population gained in 1992 and 1993, with counts of 1,180 and 341 respectively. The NMFS designated the winter-run chinook as endangered in December 1993.[35]

Red Bluff Diversion Dam diverted irrigation water into Tehama-Colusa and Corning Canals. The diversion capacity of the first sections of the two canals totalled 3,030 cubic feet per second. The drum screen structure, constructed 1969-71, prevented fish passing through the headworks from entering the canals. A bypass system returned the fish to the river. In accordance with an agreement with the U.S. Fish and Wildlife Service, Reclamation placed gravel beds along the upper 3.2 miles of the Tehama-Colusa Canal to simulate natural spawning beds. The artificial spawning beds failed to work as planned, and the canal headworks still trapped young fish.[36]

Reclamation developed several alternatives to protect salmon at Red Bluff Diversion Dam. Alternative 4A (Large Pump) would essentially end usage of the dam. The plan called for utilization of a pumping plant to make water diversions, and leave the dam's gates open, to make the river free flowing again. Alternative 4B (Small Pump) would close the gates during the peak summer months, mid-May to mid-July, keeping them open the rest of the year, and using a small pump to assist in diverting the water to the canals. Alternative 3A4 (Small Ladder) planned to increase the flow capacity of the left and right fish ladders and add a permanent fish ladder to the

center of the dam. Alternative 3C4 (Large Ladder) called for modification of the right fish ladder for greater flow capacity and addition of a permanent center fish ladder. The plan would replace the left fish ladder with a "state-of-the-art fish ladder."[37] By the end of 1994, Reclamation had not decided on which plan to use. Residents of Red Bluff became concerned that some of the proposed alternatives for protecting the salmon, would alter the recreation potential of Lake Red Bluff, behind Red Bluff Diversion Dam, and discourage travelers along I-5 from stopping at Red Bluff city, thereby effecting the community's recreational revenue.[38]

The powerful pumping plants in the Delta Division had a major, and often detrimental effect, on stream flow in the Delta and the San Joaquin River Basin. During periods of low water flow and high quantities of exports, the Delta pumps actually reversed the flow of the San Joaquin River, taking it back upstream. Through the Delta's transport system, water normally travelling to the west, toward San Pablo Bay, instead moves back toward the east and south. The "reverse flows" disorient migratory fish, often luring them to the pumps, and draw salty ocean water into the San Joaquin River and other waterways.[39]

In 1944, Reclamation officials realized the salinity problem in the Delta was more pronounced than they previously thought. Charles E. Carey, the Region Two Director in 1944, believed Shasta Dam could not entirely control the salinity problem, precluding use of the Delta as a reservoir as planned at one time. Carey announced some possible alternatives to alleviate the salinity problem: build a closed conduit through or around the Delta to carry Sacramento River water directly to the other side without letting it mix with Delta water; change the Water Exchange Contract to make the water quality requirement less extreme (Carey believed this unlikely, but others claimed it was possible); control the Sacramento River tributaries to control

salinity and assure water quality; build Folsom Dam.[40] The proposed closed conduit foreshadowed later plans for the Peripheral Canal.

In the course of Delta Division development, though not built, the Peripheral Canal became one of the most controversial elements of Division planning. Reclamation proposed the Peripheral Canal to the Interagency Delta Committee (IDC) in early 1963, as an alternative water transfer system. By early 1965, the proposed canal had almost universal acceptance in the Delta region. California wanted Reclamation to design and construct the Peripheral Canal, then the state would assume control of the feature. Reclamation did not want state control of the canal, but did not have the authority to build it. California's Department of Water Resources (DWR), on the other hand, did have the authority to construct the canal.[41]

The IDC pointed out that much of the Peripheral Canal route would parallel Interstate 5, and material excavated from the canal could be used as highway fill. In January 1968, the California Departments of Water Resources and Public Works executed an agreement under which Public Works advanced $2 million to purchase rights of way in San Joaquin County for the canal. DWR agreed to repay the money when canal construction began, or no later than January 1, 1976.[42]

Changing attitudes in the United States, toward the environment and a myriad of other issues, soon infected perceptions of the Peripheral Canal. Contra Costa County opposed the canal because residents viewed it as another way to transport fresh water, out of their locale, to southern California. About the same time, questions arose about the environmental impact of the Peripheral Canal on fish populations in the Delta and the Central Valley. Environmentalists believed the canal's outlets would draw fish to them. They also believed the nitrogen rich water

from agricultural drainage could foster algae growth, stagnating waters and suffocating the fish.[43]

In a December 4, 1969, speech to the Irrigation Districts Association, William Gianelli, Director of DWR, responded to the environmental arguments, contending, "Californians must not 'fall into the quagmire trap of Chicken Little emotionalists."[44] The draft environmental impact report of 1974 received such a negative response, DWR decided to take some extra time to prepare an acceptable final report. Early in 1975, with construction of the Peripheral Canal scheduled to commence that summer, Director of DWR John Teerink announced a one year delay.[45]

The Department of Water Resources "proposed an amalgam of joint state-federal programs and facilities," including the forty-two mile Peripheral Canal, in 1977.[46] DWR contended the canal would circumvent the Delta channels and carry water more efficiently from the Sacramento River to the pumping plants of the CVP and the State Water Project. The canal could release fresh water into the Delta at certain points along its reaches to support irrigation, to benefit fish and wildlife, and to combat salt water intrusion. Supporters, including the Metropolitan Water District of southern California and various agribusinesses, argued the canal would help end the reverse flows caused by the south Delta pumps. Opponents continued arguing against the environmental impact of the canal, and further exports to southern California. A referendum on the entire project went before California voters as Proposition 9 in 1982. Proposition 9 failed because of cost (an estimated $3.1 billion) and environmental concerns. Other alternatives surfaced after the defeat of Proposition 9, but none went forward.[47]

Studies link several factors to the decline of the Chinook population including predation by two species introduced into the Delta, Striped bass and Colorado River squawfish; lack of

water flow in the rivers because of upstream dams; and disorientation and destruction by the Delta Division pumping plants. The Striped bass population also experienced large declines. Another species facing declines and possible extinction was the three inch long Delta smelt. A fish found only in the Sacramento-San Joaquin Delta, the smelt faced destruction by the same forces as the Chinook salmon. The California Fish and Game Commission rejected the smelt for a state listing as a threatened or endangered species, but in March 1993, the U.S Fish and Wildlife Service listed the smelt as a threatened species under the Federal Endangered Species Act.[48]

Reclamation developed the Delta Division in an area ripe for controversy, before and after construction of the Central Valley Project. Special interest groups competed to use the Delta and its water for their own special interests. Some groups argued for land use zoning areas strictly for municipal purposes, recreational development, fish and wildlife enhancement, or maintaining the Delta in its "natural" state. Returning the Delta to its natural state seems the least likely, and indeed the most farfetched, idea. The Delta's true natural state began disappearing over a century ago as river diversions, hydraulic mining, industrial development, agricultural development, and the building of state and Federal water projects transformed the region.[49]

The Central Valley Project Improvement Act of 1992 (CVPIA) started the CVP in a new direction. President George Bush signed the bill as part of the Reclamation Projects Authorization and Adjustment Act of 1992, over the objections of California Governor Pete Wilson and Central Valley legislators. Environmentalists considered the act a victory, while California agricultural leaders considered it a disaster. The CVPIA reallocated 800,000 acre-feet of CVP water (600,000 in dry years) from Valley farmers toward the restoration of Central

Valley fisheries. CVPIA limited renewed agricultural water contracts to twenty-five years with no long-term renewals. The Central Valley Project Improvement Act opened a new political pandora's box in California.[50]

In another area of the Central Valley Project, Friant Dam was blamed for the extinction of a large run of Chinook Salmon on the San Joaquin River. The Bureau of Reclamation is also faulted for not exercising its responsibility to wildlife concerns. In *Overtapped Oasis*, Marc Reisner argued that several amendments were passed concerning fish and wildlife, but Reclamation supplied less than 100,000 acre-feet of fresh water for state and federal refuges.[51]

The most traumatic environmental consequence of the Central Valley Project proved to be the Kesterson Reservoir disaster. Reclamation began construction of the San Luis Drain in 1968, to transport wastewater to the west Delta. The Drain terminated at a series of twelve manmade ponds collectively called Kesterson Reservoir. Kesterson was planned as a regulating reservoir to hold drainage from San Luis Dam until the water could be flushed into the Delta during winter.[52]

Kesterson was designated a national wildlife refuge and in the early 1980s, Californians were shown the price wildlife paid for using it. Pollution entering Kesterson Reservoir in drainage from the San Luis Unit via the San Luis Drain was discovered to have caused deaths and deformities in waterfowl populating the refuge. The pollutants included salts, pesticides, and trace minerals, most notably selenium. Reclamation responded by closing the refuge. This action brought protests, forcing Reclamation to change its stance. The Bureau then announced it would end irrigation supplies to the farmers Reclamation deemed most responsible for the runoff. It was then the farmers' turn to protest. They successfully forced Reclamation to rescind its

order.[53]

In the mid-1980s, California officials warned pregnant women and children not to eat waterfowl from Kesterson. By the end of the 1980s, sirens warned the birds away and fences kept others at bay. Reclamation filled the reservoir in with dirt in 1988, and the ground was kept level to prevent the accumulation of standing water. Later studies showed that the amount of selenium present still exceeded safe levels. The pollutants effects were not limited to the wildlife at Kesterson Reservoir. Farmers affected by the runoff sued Reclamation for alleged damages to fields that the farmers claimed resulted from Kesterson leakage. After closure of the San Luis Drain, the Westlands Water District received 38 damage claims from farmers and landowners claiming the action diminished property values and resulted in lost crops.[54]

The internal battle over water in California evolved with the onset of the environmental crises. Early in the twentieth century, battle lines formed between northern California (extending north from the borders of Ventura and Los Angeles Counties) and southern California. By 1990, the opposing forces realigned into agricultural, urban, and environmental interests. Gaining the upper hand came through various alliances between the conflicting groups.[55]

Overview

The Central Valley Project is a complex operation of interrelated divisions. Shasta Dam, at one time considered the key to the Central Valley Project, acts as a flood control dam for the Sacramento River. Shasta stores water for controlled releases downstream. The Trinity River Division diverts surplus water from the Trinity River, in the Klamath River Basin, into the Sacramento River. Water from the Trinity River Division enters the Sacramento at Keswick Reservoir in the Shasta Division. Downstream from Shasta Division, the Sacramento River

Division supplies Sacramento River water to Tehama, Glenn, Colusa, and Yolo Counties for irrigation. Releases from Shasta Division help control salinity in the Delta Division

The American River Division provides flood control on the American and the Sacramento Rivers. The division supplies irrigation water along the Folsom South Canal. The American River Division's Sly Park Unit, essentially operates independently from the rest of the Division, irrigating parts of Placer County. The Friant Division impounds or diverts the entire flow of the San Joaquin River, except for flood control and irrigation releases. Friant Dam sends irrigation water south through the Friant-Kern Canal, and north through the Madera Canal. The Army Corps of Engineers built New Melones Dam and Powerplant on the Stanislaus River from 1966 to 1979. The COE turned the dam over to Reclamation in 1979. The dam primarily operates as a flood control and power facility, but Reclamation has contracts to supply water to two water districts in the area.

The Delta Division is the hub around which the Central Valley Project rotates. This Division contains the facilities for transporting water from the Sacramento River to the San Joaquin Valley and for controlling salinity in the Delta Division. The Delta Cross Channel diverts water from the Sacramento River to the Tracy Pumping Plant, the Contra Costa Pumping Plants, and the intakes of the Contra Costa and Delta-Mendota Canals, sending the much needed water south into the San Joaquin Valley.

The San Luis Unit provides storage for the Central Valley Project for dry seasons. The Unit is a joint venture between Reclamation and the California Department of Water Resources. The Gianelli Pumping-Generating Plant, one of the joint facilities, pumps surplus water from runoff and melting snow from the Delta-Mendota Canal and the California Aqueduct into San

Luis Reservoir, the largest offstream storage reservoir in the United States. When water flow through the Delta Division becomes too low, water is released from San Luis into the Delta Mendota Canal and the California Aqueduct. The San Felipe Division diverts water from San Luis Reservoir into lands west of the Coastal Mountain Range, south of the San Francisco Bay.

Congress authorized the Allen Camp Unit of the Pit River Division on September 28, 1976. The Allen Camp Unit in Lassen and Modoc Counties of northeastern California, was to consist of Allen Camp Dam on the Pit River, Hillside Canal stretching 25 miles to the east, and Pilot Canal branching off Hillside to the southeast. The Concluding Report of 1981, determined the Unit was infeasible and the project was canceled.

The Central Valley Project plans encompassed thirty-five counties in an area about 500 miles long and 60 to 100 miles wide, making it the largest Reclamation project.[56] The CVP contained some of the country's largest dams, Shasta and San Luis among them. Reclamation intended Auburn Dam, on the American River, to be the largest on the Central Valley Project, but political turmoil left the dam incomplete and in limbo.

In spite of the social, environmental, and political controversy surrounding the Central Valley Project, it remains a impressive accomplishment. The Central Valley contains three-quarters of the irrigated land in California, and one-sixth of the irrigated land in the United States. The Central Valley's annual farm production exceeds the total value of all the gold mined in California since 1848. The Central Valley Project ranks first among Reclamation projects in value of flood damage prevented between 1950 and 1991. During that time period the Central Valley Project prevented more than $5 billion dollars in flood damage.[57]

Conclusion

The Bureau of Reclamation received a large amount of criticism over the Central Valley Project and indeed the application of the Reclamation Act to the Central Valley proved inconsistent with most other Reclamation projects. The later environmental impact of the project also created a storm of controversy. So much so that in recent years the Central Valley Project became a political and environmental bombshell, and a victim of changing times. California politicians soon avoided dealing with the CVP and the State water projects, viewing both as machines of political suicide. With these thoughts in mind it is important to understand the Bureau of Reclamation's role and position in order to understand the Bureau's actions.

The Bureau of Reclamation is a Federal Government agency, subject to the whims of a parade of politicians who make their way in and out of government office. The Bureau depends on the good graces of these politicians for funding and for its very existence. The Central Valley Project placed the Bureau in a position in which, in a highly politicized environment, it struggled to balance the wants of politicians with the requirements of the Reclamation Act and the environment.

The initial controversy involved acreage limitations. The Reclamation Act required that farms receiving water could not be larger than 160 acres. The Central Valley had been settled and the acreages established long before Reclamation entered the scene, unlike most other Reclamation projects. The large landholders also held considerable political clout in northern California. Furthermore, the acreage limitation was viewed by many in the mid to late 1940s as un-American and possibly Communist, a grave label to deal with at the time. Finally changes in the country's leadership affected how the Interior Department's leadership viewed the acreage limitation, from the time of Franklin Delano Roosevelt to George H.W. Bush.

The other controversy involved the impact of the CVP on the environment. In the early decades of the project, the environment was not an overriding concern for anyone in the country, so it was not a factor in the initial design and construction of the CVP. The environmental movement gained momentum with the Endangered Species Act. From then on the politicization of the environment impacted operation of the CVP and pressed the need for modification of the Project's facilities.

Like the acreage limitation controversy, the amount of concern about the environment depended on the political concerns in Washington and among the political necessities of the Interior Department and the Bureau of Reclamation. When environmental concerns became apparent and paramount, Reclamation moved to deal with them, although not as quickly as many would have liked. Whether it was Kesterton or Chinook salmon, much of the damage had been done before most people became concerned.

The Bureau of Reclamation is run at the wishes of Congress and the President, and much of its efforts are geared toward remaining a viable entity and surviving in a political arena. These variables dictate Reclamation's activities. The Central Valley Project certainly had its drawbacks, there is no argument against that. It is also important to realize that the CVP achieved many of the goals set for it. Irrigation, electrical power, and flood control all serve mankind, as was important at the time construction began. Contemporary values aside, the Project was a success in those terms. Success of the Central Valley Project also exacted a terrible price.

Notes

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