

## **Fish vs. People**

Midway in the Modesto and Turlock Irrigation District's long and frustrating struggle to win a Federal Power Commission license for the construction of New Don Pedro Dam and Reservoir, and exasperated *Modesto Bee* managing editor Ray Nish protested in a front-page editorial that "fish vs. people" had become the basic issue, "though camouflaged in figures of water releases demanded against those proposed and the number of fish estimated as against those counted."

It all had started out quietly enough.

The three entities on the Tuolumne River, the Modesto and Turlock Irrigation Districts and the City of San Francisco, long had known additional storage capacity was needed to make full beneficial use of the river's flow. This had to be done or they stood to lose the rights to water needed in the future.

When the river partners began to implement the idea, however, their timing proved to be wrong.

Serious planning for the massive water and power project began about the same time that state and federal agencies initiated major efforts to revitalize salmon fisheries. In Congress a modest proposal to aid California's salmon runs was taken over by the House of Representatives Merchant Marine and Fisheries Committee and blown into a nationwide program to enhance conditions for anadromous fish, such as salmon which migrate from the sea to fresh water to spawn.

The clash of the two objectives – capturing and putting to work all of the water resources of the Tuolumne on the hand and rebuilding the river's dying salmon fishery on the other – created cliff-hanger situations in which delays of a few hours would have killed entirely the \$115 million project. Yet, the New Don Pedro Project seemed to have almost as many lives as a cat.

Although there undoubtedly had been talk of building a New Don Pedro earlier, the first official report came in 1931 when the California Division of Water Resources discussed its feasibility. Certainly by that time farmers and officials of the Modesto Irrigation District were aware of the need for additional storage. Normal rainfall had been recorded in only one year since completion of "old" Don Pedro Dam.

New Don Pedro remained on the “back burner” for another decade, however, until the U. S. Army Corps of Engineers looked to the Tuolumne for additional flood control and the City of San Francisco was being pressed to develop resources authorized under the Raker Act.

Formal agreement to proceed with the project was reached by the three local agencies in November 1943. Three months later the Corps of Engineers recommended to Congress that a flood control contribution be made to the districts’ multipurpose water and power project in lieu of building the proposed 300,000 acre-foot, single-purpose federal flood control dam at Jacksonville. Congress concurred with this recommendation in December 1944.

In 1945 the California Legislature authorized construction of the project. Everything seemed “Go” for a 1,200,000 acre-foot reservoir.

Preliminary steps were under way in 1947 as mapping the Tuolumne River canyon to select the best site began. For a decade Modesto and Turlock district staffs proceeded with project planning, slowly but without interruption.

In 1951 when application for project water rights was made, the California Division of Fish and Game was notified routinely. No objections were raised.

Two years later, aerial mapping proved the maximum storage potential was 2,030,000 acre feet. With this amount of water, normal irrigation could be maintained through dry cycles such as experienced between 1922 and 1935 even if 340,000 acre feet of storage capacity were reserved for flood control. The state Department of Water Resources issued the water rights in 1953.

“We, of course, felt this was the go-ahead sign and proceeded with engineering and design studies, exploratory work to determine the best site for the dam,” MID Engineer Clifford Plummer later commented. “There were several possible locations and we spent hundreds of thousands of dollars in engineering and exploratory work.”

In June 1955 geologist Roger Rhoades identified five potential dam sites downstream from Don Pedro Dam. After two more years of mapping, he recommended the use of a site where he had bored a 767-foot exploratory shaft. This was the location ultimately selected.

The project’s survival was not without threats during this decade.

Local sportsmen mounted opposition to the project because they feared that construction of a dam could have an adverse effect on salmon fishing. Since the California Department of Fish and Game had not expressed concern or any other reaction when the state approved the project's water rights in 1951, the districts continued preliminary planning of the dam.

San Francisco was pushing ahead on a \$200 million expansion of the Hetch Hetchy system and New Don Pedro was crucial to that effort. In the Valley Plummer began to advocate increasing the reservoir storage capacity to the maximum 2,030,000 acre feet. As Modesto and other cities grew, Plummer argued prophetically, the day could come when they might have to draw upon the reservoir for domestic water supplies.

Stanislaus County Supervisor Robert Adams told a state Senate interim committee that by the year 2050 the county's water needs would be half again as much as that available even after New Don Pedro and other planned projects were built.

Army Engineers offered an additional \$5 million contribution to the project if 600,000 acre feet could be set aside for flood-control storage in the larger dam. The extra financial assistance was tempting, but studies revealed that annual losses in power revenues would exceed \$200,000 if the corps' allocation was increased. The districts declined the offer.

The pace was stepped up dramatically in November 1958 with the hiring of the Bechtel Corporation to make preliminary engineering studies and determine the most economical size and type of construction: rock fill, arch or gravity concrete.

Bechtel made hydrologic and geologic studies at five sites between Don Pedro and La Grange and in July 1959 recommended construction of an earth-and-rock fill structure storing 2,030,000 acre feet at the site on which the dam ultimately was built. The price tag then was estimated at \$90 million. This project phase was approved and final design work began.

It was then agreed that San Francisco would pay approximately half the project cost and the Valley irrigation districts the balance. As New Don Pedro Project Coordinator Charles Crawford explains:

San Francisco's contribution was based primarily on the right of the city to release water to the districts when it can be stored in New Don Pedro in advance of the time when releases from San Francisco's upper works normally would be required under the Raker Act. San Francisco, in turn, would be permitted to intercept or divert equivalent

quantities of natural stream flow later in the year when it otherwise would have to be passed on to the districts. Once received from the Hetch Hetchy system, the water became the property of the districts.

This arrangement was one of the hurdles which the districts had to overcome in subsequent Federal Power Commission and federal court entanglements.

Indications of possible trouble ahead again surfaced in March 1960. Sportsmen's groups protested San Francisco's proposed pipeline from O'Shaughnessy Dam downstream 12 miles to a powerhouse at Early Intake, the head of the Hetch Hetchy aqueduct to the bay area. This, sportsmen claimed, would dry up a prized trout-fishing section of the upper Tuolumne River.

At the same time, San Francisco was fighting the State of California, claiming the State Water Plan reneged on a promise not to infringe upon the city's domestic water market in bay area counties.

These early skirmishes, however, failed to reveal the full scope and intensity of the battle that lay ahead.

At year's end the San Francisco Public Utilities Commission, which has jurisdiction over the Hetch Hetchy system, funded preliminary studies and called for a \$100 million bond issue to finance the dam and other Hetch Hetchy improvements.

The roof was to fall in later in 1961 as these and other plans advanced.

Aerial mapping in January confirmed that the selected site would provide storage capacity of 2,030,000 acre feet. By May 1961 core drilling at the chosen site was about one-third completed. Bechtel was proceeding with design work under a \$3.7 million contract for the design and supervision of New Don Pedro's construction.

It was proposed that most of the 16 million cubic yards of material to be placed in the dam would come from 750 acres of river bottomland piled high with gold dredge tailings. These had been an eyesore on the landscape since the 19<sup>th</sup> Century. Their removal from the Tuolumne River flood plain, the districts felt, would be an environmental plus, both from scenic and fishery considerations.

Anticipating Fish and Game Department interest in spite of the lack of reaction in 1951 when water rights were issued, and to insure that the use of the tailings would have no adverse impact on the fishery, the districts submitted a preliminary report to the state agency.

At that point, the state made its first demands for water releases to enhance salmon spawning runs.

Noting that initial requests were for the release of 200,000 acre feet of water annually, MID Director Milton Kidd commented that state fish and game people “haven’t been timid” in asking fish releases equal to half of the 1961 irrigation supply. Kidd maintained it should be the obligation of the federal government to supply enough water to keep the rivers such as the Tuolumne, Stanislaus and San Joaquin from going dry. He suggested the use of water from the U. S. Bureau Reclamation’s proposed East Side Canal for this purpose.

Negotiations were undertaken in an attempt to avoid additional delays which would result from formal state fish and game intervention in forthcoming Federal Power Commission proceedings.

With the water rights issued by the state Department of Water Resources and with State Districts Securities Commission approval in hand, the districts on May 1<sup>st</sup> applied for a Federal Power Commission power project license. The application was an inch-and-a-half thick document containing nearly 50 pages of maps, drawings and tabulations.

Although negotiations were continuing on the fish releases, the state agency did intervene. Formal FPC hearings on the license were postponed in the hope that the districts and state would reach a mutually satisfactory agreement.

Subsequently, U. S. Secretary of Interior Stewart Udall also filed notice of intervention and asked the power commission to wait until federal and state fish and wildlife agencies had completed their investigations of salmon resources. Charging that the districts’ plan “do not reflect any provisions for the maintenance and protection of the king salmon run,” California Attorney General Stanley Mosk joined in the request for a year’s delay to allow the State Fish and Game Department to prepare its evidence about the adverse effects of the project. This in spite of the fact the Fish and Game Department had known about the project for 10 years.

Speaking for both districts, TID Engineer Roy V. Meikle told FPC that a delay in the issuance of the license until 1962 would be “catastrophic” because “ever-working inflation” would force new cost estimates and bond issues. Inflation, he contended, could possibly kill the project by making it not feasible economically. This threat was to be raised over and over as the battle waged for the next four years.

For MID officials the bottom line was that when the irrigation districts, including Waterford, and the City of San Francisco take their allotted water from the river, “There just isn’t any left.”

While sympathizing with the attempt to improve the salmon run, MID Engineer Plummer further questioned whether a local area should have to pay the whole bill since the fishing industry had state and national dimensions. Anyway, Plummer argued, the project would enhance the fishery automatically: With more water stored, more water would be released downstream, even during dry years.

Meanwhile, opposition mounted from sportsmen's groups throughout the state, including the Associated Sportsmen of California, California Wildlife Federation and the Aquatic Resources Committee.

At the request of the Hunting and Fishing Club of Central California, Congressman John J. McFall urged the House of Representatives Special Subcommittee on Assigned Power and Land, chaired by Sacramento Congressman John Moss, to hold hearings on the New Don Pedro Project. Senator Clair Engle, who earlier had tangled with the City of San Francisco over the enforcement of Raker Act provisions, also took up the matter with the FPC.

The districts had set November 7, 1961, as the date for their bond elections to finance New Don Pedro. Less than a month before the balloting, Stanley Simidian, representing the Hunting and Fishing Improvement Club of Central California and the Associated Sportsmen, told the Modesto City Council those groups would oppose the bonds unless guaranteed water releases demanded by state and federal agencies were accepted by the irrigation districts within the next few days.

As a last-minute suggestion, Congressman McFall urged that the FPC license be issued with the fishery question to be resolved during construction. His proposal caused a violent reaction from sportsmen. The FPC responded that in all probability Udall's request for a delay and a mid-1962 hearing would be approved.

The November 7, 1961, bond elections resulted in record-breaking affirmative votes. In Modesto 97.2 percent of the voters favored the project and the bonds, 11,231 to 328. Turlock's percentage was slightly higher, 97.8 percent or 5,754 to 126. Three years of drought had made the need for additional storage all too obvious. In San Francisco the vote was 11-to-1 in favor of the Hetch Hetchy bonds.

The fish and game cloud still hung over the project, however.

The day after the election, U. S. Senator Thomas Kuchel of California warned the districts to seek agreement with the state Fish and Game Department if they wished to avoid a hearing and more long delays in construction. MID Engineer Plummer told the senator, "It's been the state fish and game strategy

to wait until the last minute before they object. Then, the department feels the districts are so involved that they cannot back out. If fish and game requests were granted, we would have to stop irrigating in July.”

Bechtel reported that if the state’s demands were met, the project would not be feasible economically because electrical energy revenue losses would reduce the capital value of the project by more than \$15 million.

Furthermore, Bechtel noted: “Overshadowing this financial loss is the loss of water yield of 139,000 to 157,000 acre feet of irrigation supply...to an amount less than that historically diverted and used.”

In substance, the question was asked, “Why build a dam and end up with less water?”

The conference with Senator Kuchel signaled the renewal of full-scale efforts by the irrigation districts to overcome fish and game opposition. Construction already was at least a year behind schedule. Bechtel was cutting back on design work because it could proceed no further until the fishery issue was resolved.

Although the MID had a long history of surviving controversy, the next four years were to be the most frustrating of battles as delay after delay steadily forced project costs up against its fiscal limits.

In addition to the issue of whether there was enough water to enhance spawning salmon, the districts challenged the authority of state and federal agencies to force the districts to “give away” to fish their basic water rights.

Plummer charged the state was “trying to create a perfect set of conditions for the salmon in the Tuolumne River which they’ve never had.”

Local irrigators had vested interests in the water through many years of use.

Furthermore, there weren’t that many salmon running up the Tuolumne.

While state fish and game spokesmen were demanding flows below New Don Pedro sufficient to support a run of 65,000 salmon, historically the average run was 28,000. That excluded the two years in which the San Joaquin River above its confluence with the Tuolumne had been dried up during construction of the federal Friant Dam. Salmon counts in recent years had declined to a low of 500 or less.

In the meantime, Harlan Trott of the *Christian Science Monitor* commented on February 13, 1962, that there was “as much politics as fish” in the fight as far as the state was concerned. Trott speculated that

water released from New Don Pedro for salmon spawning would reach the intake pumps of the new South Bay Aqueduct of the state's Feather River Project, adding:

Custodians of San Francisco's water system are concerned about spending \$45 million for its share of New Don Pedro if it means releasing a substantial volume of fish water that will flow into the state's South Bay spigots after the fish are through playing with it.

In June 1962 the Stockton City Council endorsed the releases demanded by the state as a means of reducing river pollution caused by Stockton cannery wastes in the summer and to help clean up the San Joaquin-Sacramento Delta by flushing out the San Joaquin River.

When Governor Edmund G. Brown endorsed an interim solution proposed by Resources Director William Warne, the hopes of MID directors, soared, although they agreed it would be a "calculated risk." The proposal became the basis for a detailed, 12-page agreement between the districts and Warne's Department of Fish and Game that was approved on June 5, 1962.

The agreement provided that in normal years releases would total 105,000 acre feet and in dry years they would drop to only 54,500 acre feet. The situation would be reviewed after 20 years.

During the interim it was agreed the districts would support the Bureau of Reclamation's proposed East Side Canal Project, which would carry water from still-unbuilt Auburn Dam down the east side of the San Joaquin Valley. It was anticipated that East Side Canal water could be used to enhance the fishery if the districts could not meet the demands.

The agreement, Plummer told the Stanislaus County Board of Supervisors, would provide fishery conditions far superior to those which existed before or after any dams were built on the Tuolumne. This would be especially true, he said, since use of the dredge tailings between La Grange and Waterford would leave better gravel beds for spawning fish.

While certain that they could win an FPC fight, the districts wanted to compromise in order to build New Don Pedro as quickly as possible.

The agreement won the approval of most Stanislaus County groups, but was condemned as a "giveaway" by the California Wildlife Federation, Associated Sportsmen of California, Aquatic Resources Committee, Salmon Unlimited and Golden Gate Sportsfishers. They were unhappy about the lack of summer releases when the river frequently went dry and because releases were guaranteed only for 20 years.



When the proposal was submitted to the California Fish and Game Commission for ratification, it was rejected on a 3-2 vote as the direct result of considerable pressure from commercial and sports fishing organizations. While a majority of commission members thought there should be further negotiations, Plummer said, “We don’t have anything left to negotiate. We’ve given everything we could give.”

This decision forced the issue into a full-scale Federal Power Commission hearing procedure and meant another delay of at least a year. It was estimated that delays were costing the project sponsors \$3 million a year in increased construction costs.

A bitter Abner Crowell, president of the Turlock Irrigation District board, declared, “They tell me the love life of a salmon is accomplished best in about 12 inches of water. They won’t spawn if it is too deep or too shallow, too hot or too cold. This agreement – which the state commission turned down, mind you – would guarantee an even amount of water during spawning season and at ideal temperatures during normal years of runoff. This is something Mother Nature herself doesn’t do!”

Under the headline “Are Federal Dams Built for Recreation or Reclamation?” a California Farmer magazine article subsequently reported a new trend of several dam projects being delayed by recreation and fish and wildlife mitigation disputes.

The partners on the Tuolumne River watershed were caught in a new era.

New state fish and game proposals were rejected by the districts, with Crowell declaring that they would put negotiations back to their starting point. He asked, “Where were they (Fish and Game Department) from 1951 until now?”

The Federal Power Commission scheduled hearings for October 16, 1962, in San Francisco. MID critic Frank Andrews had tried vainly to have them postponed until after the November election.

The opponents lined up against the MID, TID and San Francisco.

First, the Banta-Carbona and West Stanislaus Irrigation Districts and the El Solyo Water District intervened, contending that, unless operated with due regard to quality and quantity of their downstream water supplies, the project could “seriously jeopardize” their rights.

Tuolumne County demanded that road relocation and recreation development and operation guarantees be placed in the license. The California Wildlife Federation announced the alliance of 123 sportsmen’s groups to insure the protection of fish and wildlife resources.

Finally, the California attorney general, representing the state Department of Fish and Game, and the U. S. Department of Interior demanded that stringent fish and wildlife provisions be included in a license.

The October hearing was presided over by Examiner Francis I. Hall, who was described as looking and talking like a “young Sam Rayburn,” the speaker who ruled the U. S. House of Representatives for years. In opening the sessions which were to last two weeks, Hall said it was the FPC’s responsibility to dovetail power, irrigation, flood control, recreation and fish conservation interests for the benefit of each.

The testimony of 24 witnesses filled 2,100 pages of transcript. Two hundred twenty-three exhibits were presented.

All the arguments which had dominated the previous couple of years were heard again. Reporter Martin Smith, who covered the hearings for *The Modesto Bee*, observed, however, that the role of the U. S. Department of Interior at first was a little vague. It wasn’t until the third day that the federal agency made its objectives known: The release of 148,000 acre feet of water annually, 2,500 more than the state agencies were asking at the time.

Hearing Examiner Hall criticized the federal agency for its eleventh-hour involvement, although adequate notice had been give.

Challenging the federal and state figures as to the numbers of salmon migrating and spawning in the river, the districts’ expert witnesses indicated a third of the requested water releases would suffice. University of Washington Professor Milo Bell, consultant to the International Pacific Fisheries Commission and other Pacific Coast organizations, was the MID’s lead witness.

The Department of the Interior injected a new element into the debate: San Francisco’s involvement in the project. The department contended the city should be a party to the license even though the dam would be owned and operated jointly by the Modesto and Turlock Irrigation Districts.

The state and federal efforts to obtain financial data from San Francisco and to force the city to become a party to the license were rejected. Hall did insist, however, that before any license was issued, a firm agreement had to be reached between the city and the irrigation districts on the joint financing of the project. In subsequent years, negotiations attempting to reach this agreement almost proved fatal to the project.

Although the hearings were over, the debates went on.

Assemblyman John G. Veneman of Modesto accused sportsmen of “trying to improve on Mother Nature,” estimating that at the rate of \$3 million a year in increased construction costs the 500 salmon counted in the river in 1961 were worth \$550 a pound.

As the year 1963 opened, Interior Secretary Udall still was demanding “more tangible information” about the involvement of the districts’ “silent partner,” San Francisco. He contended that the project would have “a substantial effect” on the entire federal Central Valleys Project and the state’s Feather River Project.

The districts countered that the fish and game agencies were, in effect, requesting modification of a state-granted water right. If the FPC could do this, they contended, “there will not be a water right. If the FPC could do this, they contended, “there will not be a water right anywhere in the country, let alone California, which will be secure.”

At this point, Bechtel put all of its design work “on the shelf,” where it was to stay for three years. Bechtel engineers had gone as far as they could without knowing what releases would be required or, for that matter, whether or not the project ever would be built. Releases demanded by fishing interests could make New Don Pedro economically impractical.

Early in 1963 FPC Attorney Daniel Goldstein, who had represented the power commission in the hearings, suggested the release of 123,000 acre feet of water during fall, winter and early spring, a figure which would be renegotiated after 20 years of operation. This amount was about half way between the 146,000 acre feet wanted by the state and federal agencies and the districts’ earlier-proposed offering of 105,000 acre feet.

On June 4, 1963, FPC Examiner Hall submitted a 74-page opinion recommending issuance of the license, but again insisting upon prior agreement between San Francisco and the irrigation districts as to the allocation of project costs. Hall also called for adequate plans for road relocation and recreation development and operation.

Hall did not recommend any firm figures for water releases to enhance the fishery, declaring:

Not only may the commission not reduce (the districts’) irrigation supply available in the critically dry years below that available from the existing Don Pedro project, but in the examiner’s view it ought not to unduly interfere

with the central purpose of the project to provide the districts with a more dependable supply during the critical dry years.

Hall noted that, “issues relating to San Francisco’s rights, obligations, etc., under the Raker Act lurk in the record.” He accused the city of seeking to divert all the water it stores in the Tuolumne River headwaters, a right which it did not possess. The city, however, immediately indicated it could live with the examiner’s recommendations.

The Modesto and Turlock districts were not so sure. Their hesitation was labeled as “Yankee trading” by San Francisco Examiner columnist Russ Cone. And once the license was issued, there were to be three more years of “Yankee trading.” Only this time, it was between San Francisco and the districts as they battled out the division of costs.

State and federal agencies formally protested Examiner Hall’s recommendations as providing too little water for too little time. They demanded firm water-release requirements be established for the full 50-year life of the license, forcing the issue to a full hearing by the Federal Power Commission. This hearing was not held until December 5, 1963.

And thus another year of delay passed. Under the original construction timetables, the dam would have been nearly completed by this time.

At the hearings before the full FPC, Robert McCarty, the districts’ Washington, D. C., attorney, argued that the water releases sought by state and federal agencies were sufficient to supply a city of 800,000 population or to irrigate 31,000 acres of productive farm land. Otherwise, the arguments on both sides were about the same as those advanced at the 1962 hearing.

The Federal Power Commission license which finally was issued on March 10, 1964, stipulated that:

- The districts must release 123,000 acre feet of water in normal years and 64,000 acre feet in dry years for the fishery during the first 20 years of the 50-year life of the license, and
- Construction could not start until the districts and San Francisco submit to the commission a firm agreement fixing the amount each would contribute to the cost of the project.

The project’s cost now was estimated to be \$96 million. Bonds totaling \$98 million had been approved by the voters two-and-a-half years earlier when cost estimates were considerably lower. The margin of cost and funds available was narrowing.

Again, no one was happy with the decision.

A rehearing was requested by all three parties, the districts, state and federal agencies. The state argued that the fish releases were inadequate and joined Interior Secretary Udall in urging that San Francisco should be a participant. The Interior Department added a new contention that there was no conclusive evidence that New Don Pedro was the most economical place for San Francisco to obtain additional storage capacity.

The districts charged that the FPC had said it could not interfere with irrigation water rights but then set up a schedule of fishery releases which did just that.

The rehearing requests were denied.

The Modesto and Turlock Irrigation Districts resigned themselves to living with the license, especially since the FPC had declared that in critically-dry years the commission would consider emergency modifications of the license.

Acceptance was not in the minds of state and federal fish and game agencies, however.

They took the matter into the federal court of appeals on July 6, 1964. With the time for filing Court Appeals about to expire, the irrigation districts did not want to be left out of the debate. They were forced to file counter-actions later the same day.

Four days later, Assemblyman Veneman asked Governor Brown and Hugo Fisher, California Resources Agency administrator, to review the fish and game agency's decision to appeal the license.

Noting that the 1963 salmon count in the river was only 100, Veneman told the state officials, "If we don't build the dam pretty soon and get some water down the river there won't be any salmon anyway in a few years." The Democratic governor did not accede to the Republican assemblyman's request.

Nearly a year later the federal court heard the case. Once again the state and federal fishery agencies made San Francisco the target of their primary attack. They asked the courts to force the FPC to require the city to join the districts as applicants for the license. This would mean that the proceedings would have to start all over again, resulting in delays of another three or four years.

Meanwhile, as the state fish and game people fought the project, Governor Brown on May 11, 1965, signed into law an allocation of \$7 million for recreation and enhancement of fish and wildlife at New Don Pedro. (The grant subsequently was increased to \$8.6 million.) State Fish and Game

Department Director Walter T. Shannon had opposed the grant, claiming that, since the districts “steadfastly refused to agree to maintain flows it is doubtful that any enhancement downstream of the reservoir can be justified.” The California Legislature had approved the Davis-Grunsky Act appropriation without a dissenting vote, however.

A week later a three-judge Court of Appeals panel upheld the FPC ruling, but the end still was not near.

State and federal agencies appealed to the full 9<sup>th</sup> Circuit Court and subsequently to the U. S. Supreme Court.

When these appeals were filed, the MID and TID renewed their assertions that the FPC ruling would give that commission authority to take away irrigation and municipal water rights issued under state law and reallocate the water for salmon fisheries. Since state law always had prevailed on water rights, the districts contended that by upholding the FPC decision, the federal courts had written new water rights law.

The Court of Appeals said that since the districts wished to use public lands for reservoir purposes, the FPC was well within its rights to impose conditions on the flows to be released from that reservoir.

The U. S. Supreme Court ended the long legal struggle over the FPC decision on December 6, 1965, when it refused to review the decision of the lower courts. Thus, the Federal Power Commission license became the final word.

Quick action by the districts to reach project cost-allocation agreements with San Francisco was imperative. The FPC license gave them only 60 days following the final court decision in which to come to terms and accept the license. That deadline subsequently was extended to June 1, 1966.

The Modesto Irrigation District accepted the restrictions but, whether it was “Yankee trading” or not, the Turlock Irrigation District immediately raised serious doubts. A *Turlock Daily Journal* headline on December 18<sup>th</sup> said “TID Coy Over Acceptance Of Pedro License.” President Crowell said, “we have to analyze this very, very carefully.”

Holding firmly to the position that the FPC license impaired state-granted water rights, the Turlock district had taken a second look at the project’s economic feasibility and began to explore gas turbine generators as an alternative energy source. The Turlock directors set at \$28.2 million the maximum contribution they would make to New Don Pedro and dug in their heels.

The MID feared federal construction on the river, which MID Director Kidd declared would result in the districts being forced to change their irrigation practices. Turlock disagreed and maintained it had to protect its basic water right by not giving in to Uncle Sam.

The *Turlock Daily Journal* attacked the MID and Plummer for “throwing up a smoke screen” when he said the federal government would charge irrigators \$3.50 per acre foot for water. This was the basic rate for Central Valleys Project irrigation water.

On January 19, 1966, the Turlock paper called upon TID directors not to proceed with the dam. A month later, the *Journal* asked in an editorial headline, “Are We Being Euchred?” If the federal government can order water released for fisheries, the editorial reasoned, it could order water released for any other political purpose. These could be determined by politics, which were “run by the whims of the moment and they are not very stable.”

As things stood, San Francisco, desperate for additional storage, was most anxious to proceed and Turlock most reluctant. Modesto, in the middle, tried to bring the two sides together to resolve the matter. San Francisco and Modesto shared strong feelings about not having the federal government build on the watershed. As MID Engineer Plummer put it:

We would rather the districts build the dam because we have a lot of problems with federal government acreage limitations, the setting of power rates and all these things. It's better to operate your own business and have control over it. Otherwise, we might be told what to do from Washington.

TID Engineer Meikle, on the other hand, said losing control of water rights by giving in to FPC fish release demands was “unthinkable.” He also indicated the TID had all the water it needed and buying Pacific Gas & Electric Company power would be cheaper than paying too much for New Don Pedro.

When it looked as if the TID might back away from New Don Pedro, the question of who would pay the more than \$1 million already invested in the project became another sore point among the three partners. The TID insisted that, if one partner vetoed the project, all three would share the responsibility and costs. San Francisco insisted that the agency that pulled out should carry the entire burden. With time running out, this was resolved at Modesto's suggestion that the issue be left to litigation if the project died.

In the end San Francisco's hunger for additional storage forced it to give in to the districts. The city accepted a larger share of the costs and agreed to supply some of the water needed for fishery releases.

With new estimates boosting the project's total cost to \$105,486,100, San Francisco agreed to put up \$48,423,538. Modesto's share was placed at \$15,881,658 and Turlock's contribution was fixed at \$28,216,904. The state had allocated \$7.5 million for recreation and the Army Engineers \$5.4 million for flood control.

Acceptance of the Federal Power Commission license was filed in Washington, D. C. at 11:25 AM on May 31, 1966, just one day before passage of the FPC's deadline.

Although the immediate fishery problems had been resolved, they were to return again and again to haunt the Modesto and Turlock Irrigation Districts. Fifteen years later as they reached the end of their 100<sup>th</sup> year of operation, the districts found themselves still involved in discussions and negotiations concerning the ongoing salmon fishery studies.

Bechtel took the project design "off the shelf" and immediately returned to work. Although five years of study and design had been invested in the project before work had been halted, a great deal was left to be done before final plans and specifications could be completed.

Design of an earth-fill dam is more complicated than that of a concrete structure because it uses materials which have not been made by man; thus their properties are unknown factors at the outset. One of the first steps was to explore the dredge tailings which would be the basic material for the dam. This Bechtel did in 1958, making further studies in 1961, 1963 and 1967.

Placement of the rock was a critical factor in design.

"You don't just dump it in and run over it a couple of times," explains Carl Taylor, who was Bechtel's resident engineer on the job. "Sixteen million yards of dirt and rock you just don't shove down the hole."

Each layer had to be no more than six inches high and then compacted thoroughly.

The dam was to be founded on base rock with three zones within the structure itself. A centrally-located core of silty clay was to be its heart. This would be bordered both upstream and downstream with transition zones of carefully-washed gravel. These in turn would be covered with shells of coarse gravel and cobbles from the gold dredge tailings. More than 12 million cubic yards of material would go into the shells.



A tremendous amount of study was made to assure the dam's safety. An earthen dam is not waterproof; rather, water flows through it. It is crucial to the dam's strength that the flow occurs in a completely-controlled manner. Testing done some years after the completion of New Don Pedro revealed that design estimates were most accurate.

The final design required detailed engineering consideration of such diverse things as mining shafts and wind-driven waves, stability of the rock, and potential floods.

In reviewing the project design, Bechtel engineers cited only two unique aspects of the project. First, the dredge tailings providing the basic supply of material were situated only nine miles from the dam, which was rated as a very short haul. Second, the outlet-works slide gates had to operate with the pressure of 580 feet of water on them. The highest previous recorded pressure on slide gates was 360 feet of head.

New Don Pedro was designed so that a flood which might occur once in 1,000 or 10,000 years could be controlled. Although the water might reach within five feet of the top of the dam, the flood flows would be channeled into spillways capable of handling 472,500 cubic feet per second, several times more than the greatest Tuolumne River flood on record, 1955. In that year 175,000 second feet of floodwaters would have raged down the river were it not for irrigation district and San Francisco dams on the river.

Every conceivable problem was analyzed during design. Taylor explained:

We don't want unpleasant surprises during construction.

The New Don Pedro design was subjected to the most intensive and the most sophisticated analysis of earthquake effects of any dam ever built at that time or had been planned for the immediate future. We ran a complete dynamic analysis on this structure using the latest techniques. Then it was reviewed by people in the field and the University of California. Both came back and said that to their knowledge nothing like this had ever been done before.

New Don Pedro will survive the greatest credible earthquake that can occur in this region.

Earthen dams are more sensitive to the site and thus more tolerant to seismic movement. Consequently, they can be built where a concrete dam cannot be constructed safely. Self-sealing action is built into the dam design through the installation of various zones or layers of material from the clay core, which is compacted by the weight of the 585-foot high dam, to the transition zone filters and drains of carefully-washed gravels, and on to the shell of rocks and boulders. If seismic movement causes a crack, the dam will tend to seal itself, whereas, Taylor notes, "If a concrete dam cracks, it's cracked and that's all there is to it."

More than 200 instrumentation devices located throughout the dam monitor any movement or other activity. In 15 years there have been no surprises in the monitoring.

The final design called for a dam 585 feet high creating a lake 26 miles long, with a surface area of 12,960 acres and 159 miles of shoreline. The structure would be 1,900 feet across the 40-foot wide crest and 2,800 feet thick at the base, covering in square yards the equivalent of 14 football fields.

More than 16 million cubic yards of material would have to be hauled to the site and placed before the job were done. Visualize a city block which is 300 by 400 feet in size. It would take a box covering a full city block and 3,600 feet high to hold 16 million yards.

The outdoor powerhouse with three generators, each operated by a 77,700-horsepower turbine and together capable of producing more than 600 million kilowatt hours per year of non-polluting, hydroelectric energy, was to be located at the downstream toe of the dam.

With preparation of final plans and specifications, design work was completed and the districts advertised for bids on the general contract May 3, 1967. The bids would determine once and for all whether the project would proceed. The contract price had to come within the limits of the funds available and the economic feasibility.

The successful bid of Guy F. Atkinson Company was most favorable and on June 30, 1967, an irreversible commitment to proceed was made. On that day, firm assurances were given to the California Districts Securities Commission that the project would be built. With this required commitment, the commission approved the sale of the MID, TID and San Francisco bonds.

After a quarter century of planning, sparring, fighting and dreaming, New Don Pedro Dam and Reservoir would become a reality.