

CASE STUDY REPORT #49
BRIDGEPORT DAM
EAST WALKER RIVER

I. Project Description

Bridgeport Dam was constructed on the East Walker River in 1923 by the Walker River Irrigation District to form Bridgeport Reservoir. The dam is located approximately 5 miles east of the City of Bridgeport in Mono County (see Figure 1). The reservoir contains 42,455 acre-feet of storage and has a maximum of 3,000 surface acres. There are 360 square miles in the drainage area above Bridgeport dam. The storage is used for irrigation mostly in the State of Nevada.

In April 1957 the Walker River Irrigation District proposed a project to increase the storage capacity of Bridgeport Reservoir by 6,000 acre-feet. However, this enlarged project has never been undertaken but the District has applied for several extensions to the most recent water rights application.

II. Pre-Project Condition

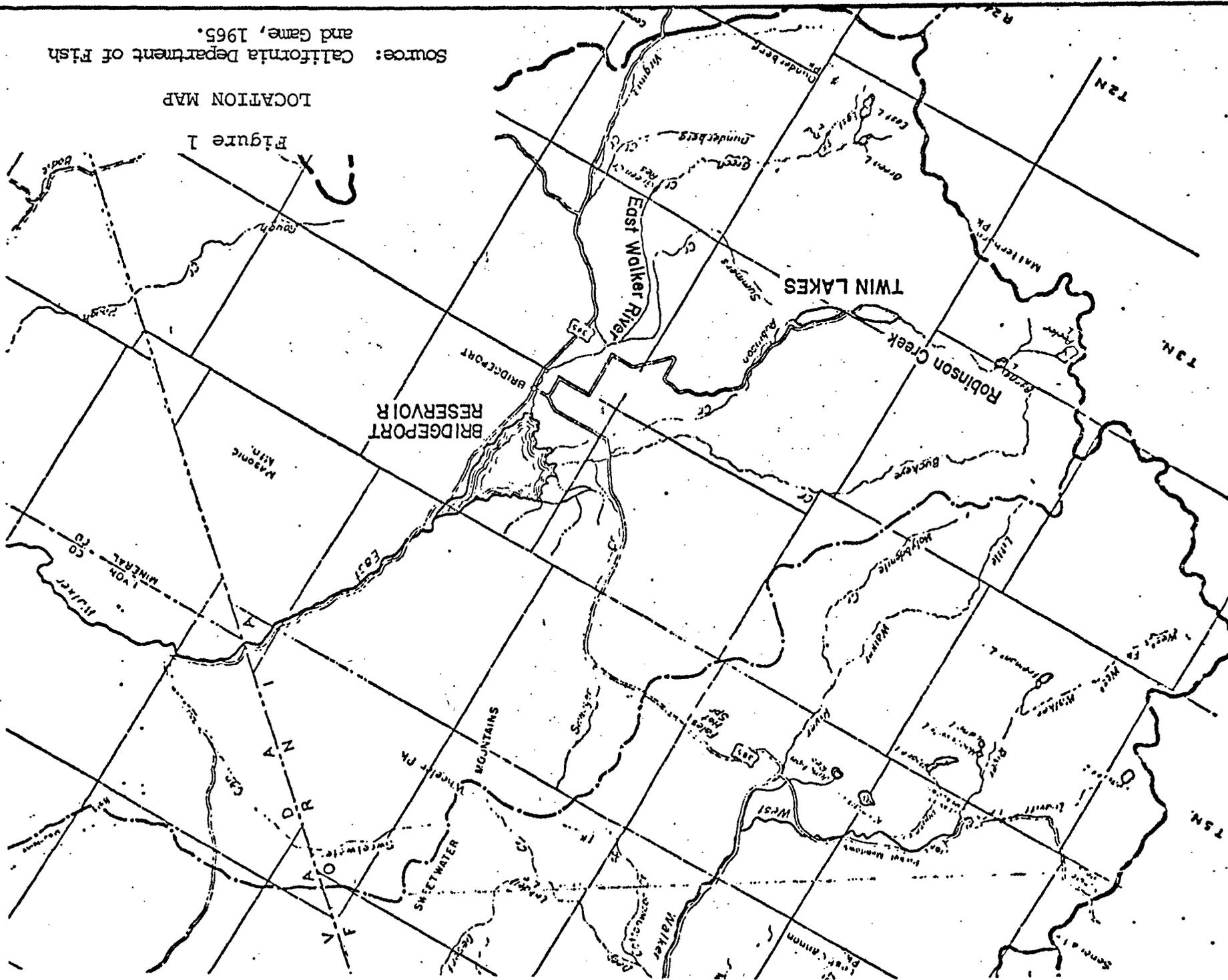
Instream flows in the East Walker River prior to the construction of Bridgeport Dam in 1923 were characterized by high spring and early summer flows which coincided with the spring snowmelt and runoff (U.S. GSWSP 1315-B, 1960).

Examination of California Department of Fish and Game records revealed only minimal descriptions of the pre-project East Walker River. Descriptions that were found indicated that the East

Source: California Department of Fish and Game, 1965.

LOCATION MAP

Figure 1

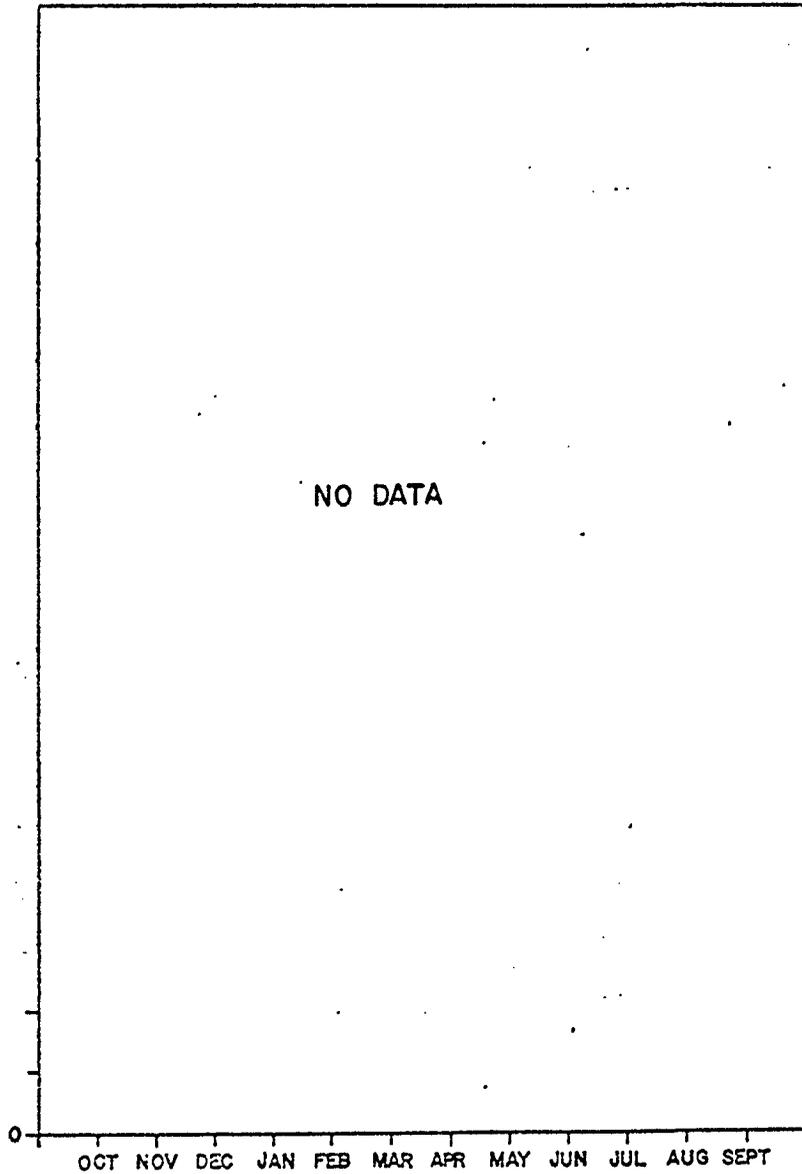


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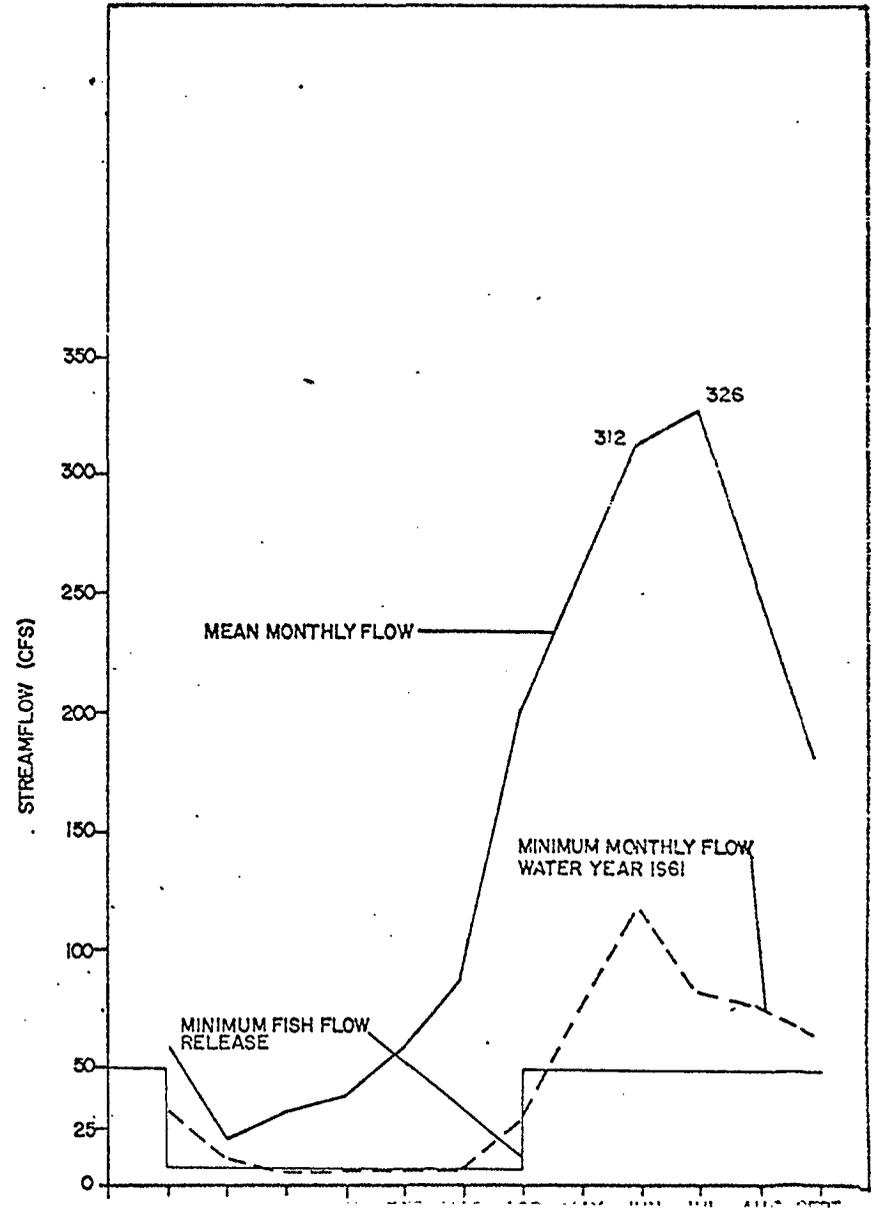
153 STREAMFLOW (CFS)



PRE-PROJECT:
GAUGE STATION NO.
SOURCE:

FIGURE 2
STREAMFLOW CONDITIONS, EAST WALKER RIVER
BRIDGEPORT RESERVOIR

POST-PROJECT: OCTOBER 1950-SEPTEMBER 1973
GAUGE STATION NO. USGS 10293000
SOURCE: SURFACE WATER RECORDS VOL. 2



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Walker River supported a substantial rainbow and brown trout fishery. DFG records did not reveal any detailed descriptions of the fishery in the Walker River. The DFG records indicated that brown and rainbow trout were the primary game species present and that cutthroat trout and white fish were present.

III. Project Development

Descriptions of the events which led to the construction of the original Bridgeport Dam were not discovered. However, several proposed improvements to the original Bridgeport Dam resulted in some changes to the downstream fishery. Originally there was a "gentleman's agreement" between the Walker River Irrigation District and the California Department of Fish and Game which provided for 6 cfs release for fishery maintenance. No written agreement to this release schedule was found.

In April of 1953 the Walker River Irrigation District applied to the State of California Water Rights Board for a permit to appropriate additional water at Bridgeport Dam. It was the intention of the District to increase the elevation of the reservoir by three feet. This action was to bring the dam up to the capacity originally designed for in 1923 and which had not been completed due to a lack of funds.

The District was short of funds and completion of the project was again delayed. In 1957 the Walker River Irrigation District filed a Notice of Intent to apply for a loan under Public Law 984, the Small Reclamation Projects Act, for the purpose of financing certain improvements and repairs to their dam at Bridgeport

Reservoir. In addition certain repairs, improvements and new construction were to be made downstream in Nevada. The California Department of Fish and Game filed a protest to the Water Rights Application to enlarge the capacity of Bridgeport Reservoir. In 1960 the California Department of Fish and Game initiated a request for an agreement between the District and the Department to establish a legal instream flow for fish. The terms of this recommendation follow:

1. April 1 through September 30 of each year 50 cfs or the natural inflow to Bridgeport Reservoir, whichever is less.
2. October 1 through March 31 of the following year 15 cfs or more whenever Bridgeport Reservoir storage is at or in excess of 1500 acre-feet, provided that in dry years when the 500 acre-feet minimum pool provision is in effect, the district shall release the natural inflow less seepage and evaporation losses even though this may result in a release of less than 15 cfs. However, if in a dry year the storage is at or more than 1500 acre-feet the minimum release of 15 cfs shall be maintained.

In 1963 the final terms of the agreement were completed between the Walker River Irrigation District and the California Department of Fish and Game. The final agreement signed on February 5, 1963 is as follows:

"The District shall provide in the East Walker River immediately below Bridgeport Dam for the preservation of fish

and wildlife, the following water release:

- a. April 1 through September 30 of each year fifty (50) cfs or the natural inflow to Bridgeport Reservoir whichever is less,
- b. October 1 of each year through March 31 of the following year eight (8) cfs or more whenever Bridgeport Reservoir storage is at or in excess of 1500 acre-feet, provided that in dry years when the 300 acre-foot minimum pool provision is in effect, the District shall release the natural inflow less seepage and evaporation losses even though this may result in a release of less than 8 cfs. However, if in a dry year the storage is at more than 1500 acre-feet, the minimum release of 8 cfs shall be maintained."

"5. The District shall regulate discharges in the East Walker River below Bridgeport Dam in such a manner that the changes in river stage or elevation shall not exceed three-tenths (3/10) foot per hour nor more than one (1) foot in any 8 hour period, as measured at the U. S. Geological Survey stream gaging station 1500 feet downstream from Bridgeport Dam, except in cases of flood or Act of God."

No description of the methodology used to determine minimum instream flow requirements was discovered. It was implied that the judgement of DFG personnel familiar with the East Walker

River below Bridgeport was the basis for their early recommendation. Biologists indicated that an increase in flow would improve the fishery. In an intraoffice memo of December 10, 1959, the Region 5 office of the DFG released recommendations on minimum and maximum flows. Below Bridgeport Dam a minimum of 15 cfs and a maximum permissible flow without detriment to the fishery of 40 cfs was recommended. However, at that time they did not qualify these numbers because they were also recommending in a water rights agreement a minimum flow of 50 cfs. No clarification of this discrepancy was found.

At the present time the Walker River Irrigation District is still trying to initiate the improvement to Bridgeport Dam. The initial Water Rights Permit was issued June 18, 1926 and in January 1970 the District had received nine extensions of the permit and was requesting an additional 3-year extension. It appears as though they cannot finance their share of the proposed improvements even with PL 984 funding.

IV. Post-Project

The original Bridgeport Dam was completed in 1923 and operated under an informal agreement to release a minimum of 6 cfs for the maintenance of fish. A comparison of the post-project hydrograph (Figure 2) indicates that the period of extreme low flow was above the instream flow minimum.

Initially the DFG did not have a minimum instream flow release nor minimum pool requirements. At the time of construction these

features of operation were not considered. However, when the Walker River Irrigation District proposed enlargement and improvement of Bridgeport Dam the California DFG under the New Water Rights application and application for PL-984 small reclamation project funding was able to obtain minimum instream flow requirements. These requirements are described in detail in the Project Development section of this case study.

It was the conclusion of the DFG that the proposed improvements even without securing instream flow requirements will be advantageous to the fishery resources and will have no appreciable effect upon wildlife resources. "If instream flow requirements are obtained we will have gained protection for the reservoir fishery and we will have improved the river fishery." (California DFG, May 1957).

In November of 1962 the fishery personnel from Region 5 California DFG sampled the East Walker River below Bridgeport Dam with electroshocking equipment. Four representative areas of the river between the dam and the Nevada state line were sampled. The average distance sampled was 200 feet. Streamflow was estimated at 20 cfs. The sampling revealed a very heavy population of suckers (probably Pantosteus lahontan) and a good population of mountain whitefish (Coregonus williamsoni) few chubs (Siphateles sp.) and only 4 brown trout (Salmo trutta). On the basis of this information the DFG concluded the trout population was in poor condition. They indicated that a heavy loss of fish occurred when

the reservoir was drained in 1960 and mud and silt entered the streambed. The final recommendation was to chemically treat the river and restock with trout from the hatcheries.

Chemical treatment was not approved, subsequently the DFG planted the river with catchable sized brown trout at a concentration of 1,540 catchables per mile. Creel census data taken during the 1963 trout fishing season indicated a mean catch per angler of 1.2 fish which was comprised of planted rainbow and brown trout.

In April of 1971 California DFG in cooperation with the Nevada Fish and Game Department compared creel census data and angling pressure on the East Walker River. It was determined that angler pressure had increased substantially the last 4 years. In order to improve fishing the 20,000 catchable rainbow trout allotted to the river below Bridgeport Dam should be spread out over a longer stretch of river which extends into Nevada.

In 1974 the California DFG upon examination of data collected by field personnel proposed new angling regulations for the East Walker River below Bridgeport Dam to the Nevada State Line.

The 8-1/2 miles of the East Walker River from Bridgeport Reservoir to the Nevada state line is one of the eastern Sierra's best known trophy brown trout streams. The forage available through the native minnows present in the drainage allows brown trout to reach sizes of 2 to 5 pounds and occasionally larger. These trophy-size browns have caused the local residents and many

other wild trout devotees to propose that this section of stream be included in the Wild Trout Program.

To increase the catch rate toward one trout for every 2 to 3 hours of fishing and allow more fish to be returned to the stream to reach trophy size, it is proposed that the limit be reduced to 2 trout. Preliminary results indicate that this will allow 3 out of every 4 fish now entering the creel to be returned to the stream.

To help insure that these released fish will survive to be potentially caught again or reach trophy size, it is further proposed that an artificial lures restriction be used in support of the 2-fish limit. While properly released bait-caught fish have been shown to survive in numbers comparable to fish taken on artificial lures, our heavy reliance upon the catch and release portion of this program strongly suggests that the angling method should be restricted to artificial lures.

V. Conclusions

Records of instream flows prior to the construction of Bridgeport Dam in 1923 are incomplete. Subsequently, a comparison of the pre- and post-project flow regime is limited. Examination of the data available indicates the pre- and post-project flows are characterized by high spring and early summer flows which coincided with the spring snowmelt and runoff.

Upon completion of the dam there were no instream flow release requirements established. However, the Walker River

Irrigation District voluntarily maintained a minimum release of 6 cfs.

The proposed enlargement of Bridgeport Reservoir required the Walker River Irrigation District to apply for a new water rights application. Subsequently the California DFG was able to add Fish and Wildlife Protection requirements to the application. The Fish and Wildlife stipulation provided minimum instream flow release requirements. The release requirement was based on the judgement of DFG personnel familiar with the East Walker River.

The release agreement stipulated the following release schedule April 1 through September 30, 50 cfs, October 1 through March 31, 8 cfs.

The DFG has monitored the river below the dam for the past four years. The CDFG has determined that the trout fishery has been reduced. Angler use has almost doubled. The DFG is now proposing the East Walker River be included in a special management program for Wild trout.

The flow releases have been well above the minimum requirements. Subsequently the minimum releases have not been evaluated.

BIBLIOGRAPHY

Personal Communications

- Eliason, Bruce E. 1975. California Department of Fish and Game.
Harmon, Everett. 1975. Walker River Irrigation District.
Pister, Philip. 1976. California Department of Fish and Game.
Richardson, William. 1976. California Department of Fish and Game.
Roundtree, Herbert. 1975. Walker River Irrigation District.

References

- California. Department of Fish and Game. 1957. Review of notice of intent - small reclamation project application (public law 984). 6 pp.
- . 1960. Report to the California-Nevada Interstate Compact Commission on the fish and wildlife resources of the Truckee, Carson, and Walker River basins. 126 pp.
- California-Nevada Interstate Compact Commission. 1964. Resolution regarding terms and conditions in Bridgeport Reservoir permits.
- California. State Water Resources Control Board. 1970. Staff summary for hearing permit 2536 (application 1389).
- Walker River Irrigation District and California. Department of Fish and Game. 1963. Stipulation and agreement between the Walker River Irrigation District and the California Department of Fish and Game.