

CASE STUDY REPORT #56  
ROCK CREEK DIVERSION DAM  
ROCK CREEK

I. Project Description

Rock Creek Diversion Dam was constructed in 1963 by the City of Los Angeles Department of Water and Power. Rock Creek is a tributary to the Owens River in Mono County.

Rock Creek Diversion Dam diverts up to 50 cfs and 40,000 acre-feet per annum into Crowley Lake (see Figure 1) where they augment flows released from Lake Crowley for power, irrigation and municipal supply to Los Angeles.

II. Pre-Project Condition

Rock Creek is typical of eastern Sierra streams. Flow originates from snow and ice remnants in the Alpine Eastern Sierra Mountains at elevations of 10,000 to 13,000 feet. Three diversion structures were in operation prior to the construction of Rock Creek Diversion Dam. Two of these diversions were used for irrigation within Little Round Valley by a local resident. The third diversion was used for the generation of power and domestic use in a resort known as Tom's Place and for use in homes located in Birchim subdivision.

Instream flows prior to the construction of Rock Creek Diversion Dam were greatest during spring snowmelt and runoff. Figure 2 indicates that pre-project instream flows exceeded 83 cfs in May and June.

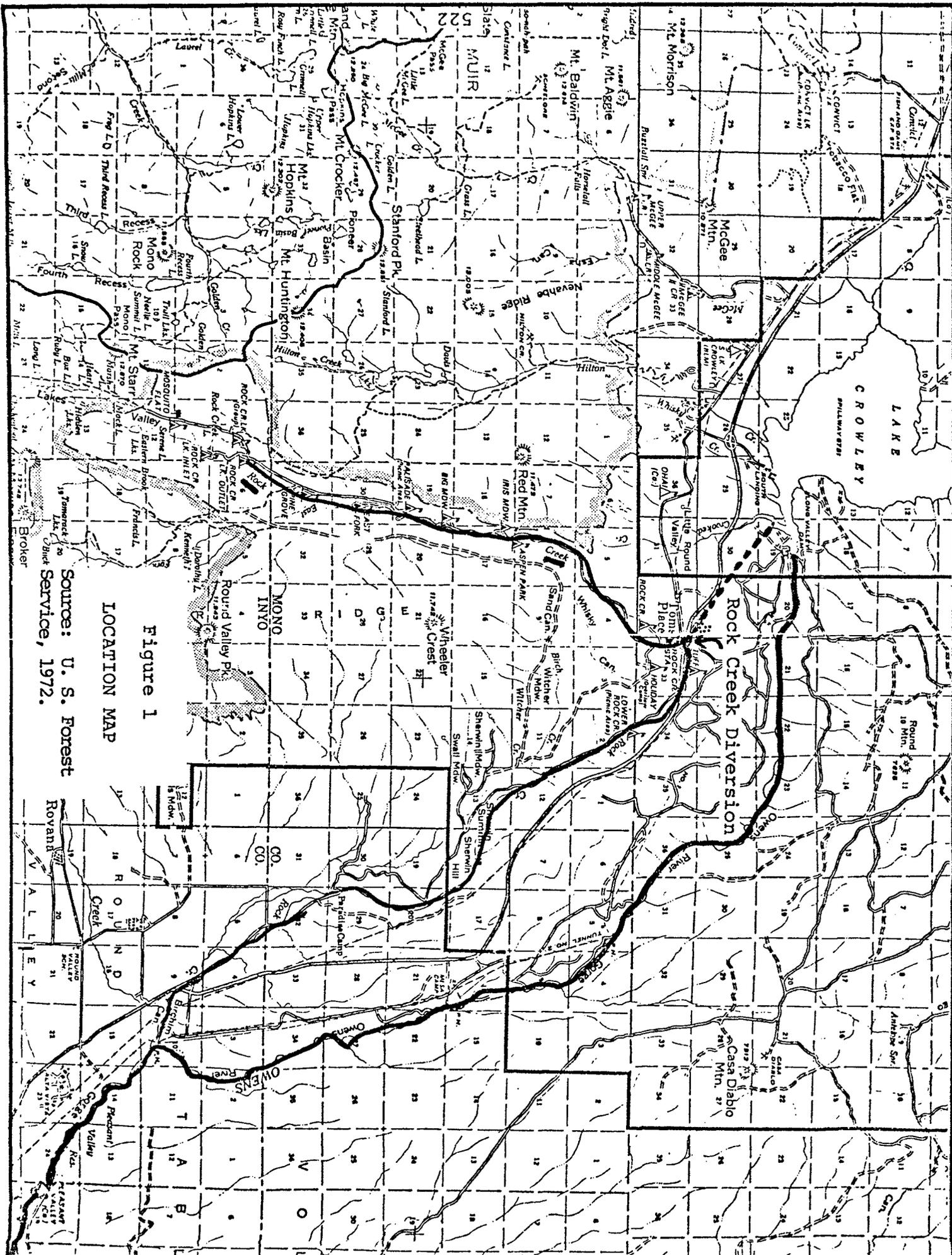
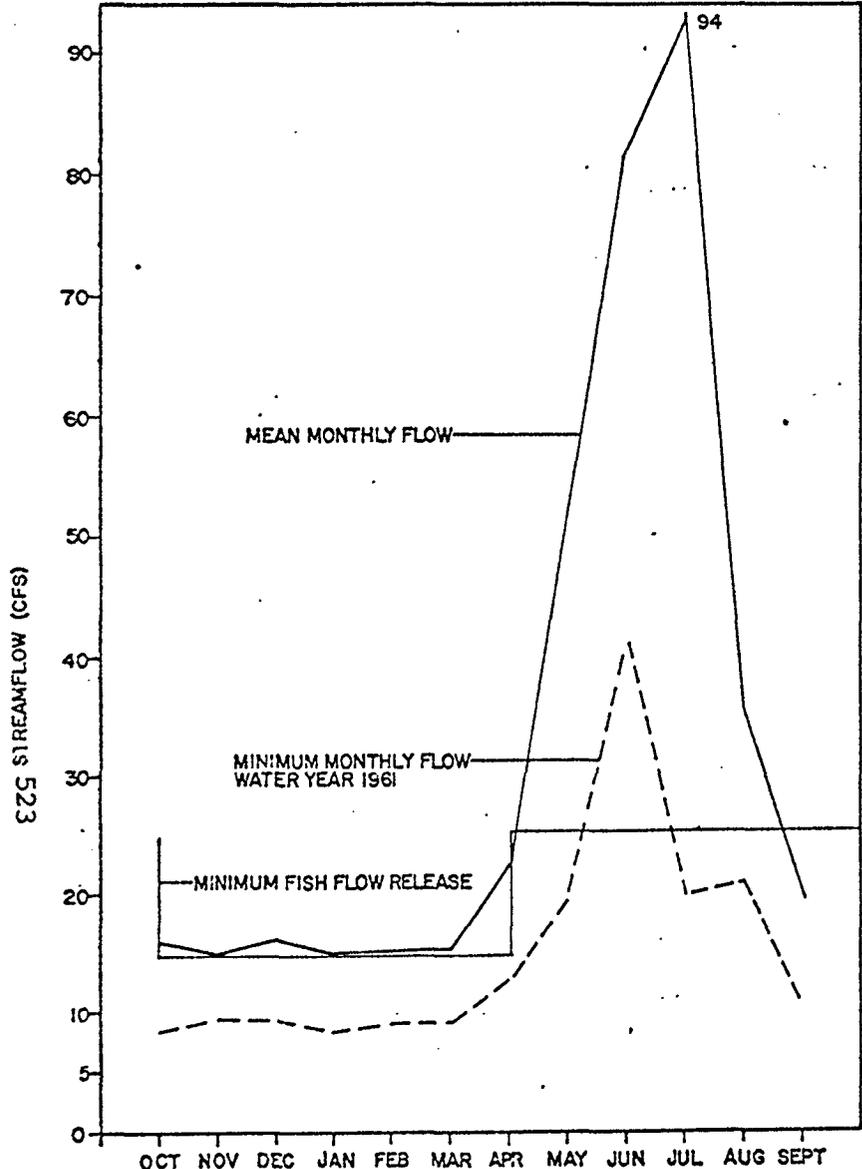


Figure 1  
LOCATION MAP

Source: U. S. Forest  
Service, 1972.



PRE-PROJECT: OCTOBER 1932--SEPTEMBER 1961  
 GAUGE STATION NO.  
 SOURCE: LOS ANGELES DEPARTMENT OF WATER AND POWER

POST-PROJECT: OCTOBER 1963--SEPTEMBER 1974  
 GAUGE STATION NO.  
 SOURCE: L.A.D.W.P.

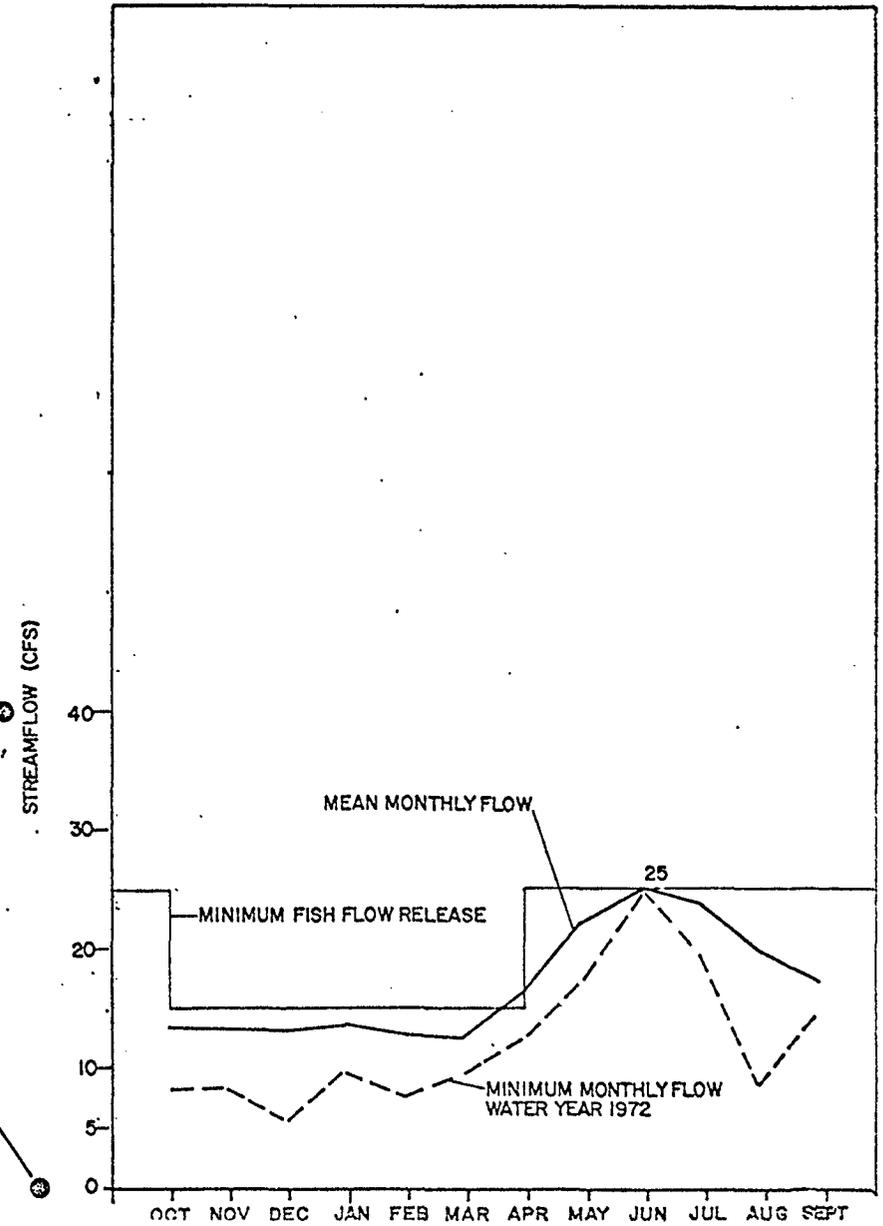


FIGURE 2  
 STREAMFLOW CONDITIONS, ROCK CREEK  
 ROCK CREEK DIVERSION

The pre-project fishery was supported by catchable size rainbow trout planted by the California Department of Fish and Game (CDFG). Small numbers of fingerling brown trout were planted; however, the brown trout fishery was self-sustaining (Richardson, pers. comm., 1976). Although brown trout were planted only occasionally they annually comprised 17 percent of the total catch. Biologists from the CDFG have observed substantial numbers of small rainbow trout indicating that rainbow trout also reproduce in the stream. No attempt was made by CDFG to differentiate between naturally spawned and planted rainbows, thus no estimate was made as to what extent naturally spawned rainbows contributed to the fishery. "With adequate sustained flow, living and spawning conditions for trout in Rock Creek are excellent, and with considerably lighter fishing pressure Rock Creek probably could maintain itself as an excellent fishery with little or no planting, as it did in earlier days" (CDFG, 1959).

### III. Project Development

In 1924 the City of Los Angeles applied for Water Rights Application No. 3850. This application was for a permit to appropriate 50 cfs by direct diversion and 40,000 acre-feet per annum by storage, year round, from Rock Creek. The water would be diverted by gravity through a canal about 2-1/2 miles long to Lake Crowley and would be used for power purposes at power plants below Lake Crowley on the Owens River.

In a hearing on Application No. 3850, Decision 455 was issued on April 11, 1940 by the State Engineer, predecessor to the Water Rights Board. Decision 455 approved a change in the point of diversion to a downstream point near the highway bridge at a resort called Tom's Place. Decision 455 also indicated that insufficient evidence had been introduced with respect to requirements for domestic and recreation purposes and for proper sustenance of fish life. The State Engineer ordered that further action be withheld until further evidence is presented to answer the above-mentioned areas of concern.

The City of Los Angeles proposed in testimony of September 15, 1959, release ranges between 8.0 second-feet in October and 30.8 cfs in June or natural flow, whichever is less, as measured at the gauging station below Tom's Place. The CDFG during the same hearing proposed required releases be 25 cfs or natural flow of the stream when less than 25 cfs.

The City of Los Angeles presented to the Water Rights Board hydrologic data for the period of 1948-1958 which indicated that natural stream flows in Rock Creek rarely exceeded 25 cfs. They indicated that a more reasonable instream flow minimum release of 15 cfs occurred more frequently than 25 cfs.

The CDFG qualified the importance of Rock Creek, "over and above its value for recreational, Rock Creek is also important as a spawning area for the fish in Pleasant Valley Reservoir. Artificial drying up of the Owens River above Pleasant Valley leaves Rock Creek in Birchim Canyon as the only spawning area available to the entire lake (see Case Study Report #57).

CDFG established a minimum instream flow study to develop instream flow recommendations. This study was initiated in 1957 and lasted through 1959. Four stations were established just above or below one of the City of Los Angeles gauging stations. These stations were purposely chosen near the city's measuring weirs in order that observation and measurement of the stream could be correlated with accurate flow readings. Data collected during the study consisted of the following items.

1. The city gauge readings were taken and flows determined therefrom.
2. Water temperature was recorded.
3. The stream width was taken at a carefully marked position and depth measurements were taken at 2-foot intervals along the tape used to measure the width. In this way the cross-sectional areas were measured and calculated.
4. A photograph was taken of the stream section being studied each time flow measurements were taken.
5. Observations regarding stream conditions at that particular flow were made and notes were taken regarding same.

"From the measurements taken at each station, graphs were drawn showing the relationship between cross-sectional area, average depth, velocity, and the stream flow in cfs" (Water Rights Board, 1959). From the information gathered by these studies, Decision 975 was issued by the Water Rights Board.

Decision 975 issued by the State of California Water Rights Board on June 30, 1960, set forth the following instream flow release requirements for fish and wildlife:

"Permittee (City of Los Angeles) shall continuously bypass not less than 25 cfs or the natural flow or Rock Creek when less than 25 cfs from April 1 to September 30 of each year and 15 cfs or the natural flow of the stream when less than 15 cfs from October 1 of each year to March 31 of the succeeding year for the maintenance of fish life." (Water Rights Board, 1960)

#### IV. Post-Project

Completion of Rock Creek Diversion Dam has altered the instream flow considerably. A comparison of the pre- and post-project hydrographs indicates the maximum flows which normally occurred from spring runoff have been diverted and the natural instream flows greatly reduced (see Figure 2).

CDFG indicates that they have continued planting rainbow trout at levels equivalent to pre-project allotments. CDFG Region 5 inland fisheries supervisor indicates that the minimum instream flow release recommendations have maintained the pre-project fishery and may have provided some fishery enhancement.

#### V. Conclusions

The operation of Rock Creek Diversion Dam reduced the peak seasonal flows that occurred during the spring snowmelt (see Figure 2). The mean monthly streamflows displayed in the post-project hydrograph (Figure 2) are generally in compliance with flows allocated for fish and wildlife. However, the operation

of Rock Creek Diversion Dam has not affected the populations of rainbow and brown trout residing in the stream. The minimum instream flow recommendations have preserved the pre-project fishery (Richardson, pers. comm.), which would indicate that the methods used to determine instream flow needs were effective. The technique used by the CDFG in the determination of instream flow requirements consisted of instream observations during known flows in conjunction with technical analysis that included usable width and temperature studies.

#### BIBLIOGRAPHY

##### Personal Communications

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##### References

- California. Department of Fish and Game. 1959. Written evidence submitted by California Department of Fish and Game, in the matter of application 3850, State of California, State Water Rights Board to be heard September 15, 1959 at 9:30, in the City Council Room, City Hall, 207 West Lime Street, Bishop, California. 44 pp.
- California. Water Rights Board. 1960. Decision no. D975 in the matter of application 3850 of the City of Los Angeles to appropriate water from Rock Creek in Mono County. 8 pp.