

Testimony of Fred Meyer
Department of Fish and Game
on Interim Feather River Flow
and Temperature Provisions

Feather River

The Feather River is the largest tributary of the Sacramento River below Shasta Dam. The lowest barrier to anadromous fish migration is Oroville Dam, the major storage reservoir of the State Water Project operated by the Department of Water Resources. The Oroville-Thermalito complex was completed in 1968, providing water conservation, hydroelectric power, recreation, flood control and fisheries benefits.

Water is released from Oroville Dam through multi-level outlet works to secure appropriate water temperatures for the Feather River Hatchery and downstream fisheries. Approximately five miles downstream from Oroville Dam, releases are diverted by the Thermalito Diversion Dam (Figure 1) into the Thermalito Power Canal, thence the Thermalito Forebay and another powerhouse to Thermalito Afterbay. To generate peaking power, water can be pumped from the Thermalito Diversion Pool back into Oroville Reservoir.

Feather River flows between the Thermalito Diversion Dam and the Thermalito Afterbay Outlet are a constant 600 cfs. This section is often referred to as the low flow river section. Releases flow through a powerhouse then through the Fish Barrier Dam to the Feather River Hatchery and the low-flow section of the Feather River. Thermalito Afterbay has a dual purpose, as an afterbay for upstream peaking power releases to assure constant river and irrigation canal flows, and as a warming basin for the irrigation water going to the rice fields. Thus water temperatures in the approximately 14 miles of salmon spawning area in the Thermalito Afterbay Outlet to the mouth of Honcut Creek (referred to as the high-flow section) are always higher than the in the eight miles of the low-flow section. Feather River Hatchery has a satellite rearing facility utilizing groundwater wells adjacent to Thermalito Afterbay. Fluctuations for peaking power in afterbay water levels have detrimental impacts on the flow and water temperature at this facility.

Existing fisheries resources of the Feather River play a significant part in the maintenance and restoration of anadromous fisheries of the Central Valley. Most importantly, the Feather supports a healthy population of spring-run chinook salmon. Feather River Hatchery is the only Central Valley egg source for this race of salmon. Spring-run salmon adults ascend the river in the spring, hold over the summer in deep pools in the low-flow section, and are allowed into the hatchery in September. These fish spawn in the hatchery and the riffles of the low-flow section during late September to late October.

Spring-run adult holding and early spawning requirements are the driving forces behind the Department's water temperature and flow recommendations for the low-flow section. This source of Central Valley spring-run salmon must be preserved if we are ever going to restore this race to anything like its former abundance. (It was once the dominant race of salmon in the Valley).

Present Feather River spring-run abundance (ten year, 1982 through 1991, average is 2,800) is greater than the pre-project average of 1,700 because of environmental conditions at the hatchery and in the river. Decisions in recent years relating to operation of Oroville Reservoir have led to warmer water being released to the hatchery and in the low-flow section. These decisions have placed this race of salmon at risk.

The majority of the chinook salmon in the Feather River are fall-run fish that spawn in the low-flow and high-flow sections during October through December. As with spring-run, the pre-project population of 39,100 is exceeded by the present average run in the hatchery and spawning in the river of 51,400 (average of ten years, 1981 through 1991, no estimate in 1990). In addition to spawning escapement, creel census estimates place the angler harvest in the river at about 10,000 salmon (fall- and spring-run combined). The post-project success with fall-run salmon is a major factor behind the October 15 through June 15 flow and temperature recommendations for the high-flow section, downstream rearing areas and emigration route for smolts through the Feather and Sacramento rivers.

The steelhead population of the Feather River is primarily of hatchery origin with only limited natural production of yearlings in the low-flow section. The mitigation goal of 2,000 steelhead is comparable to the present 10-year average (1982-83 through 1991-92) return to the hatchery of 1,454 steelhead and an angler catch in the Feather estimated as high as 7,785 fish. Steelhead fingerlings must be held in the river or the hatchery for a year so that they are large enough to survive their anadromous journey. Water temperature and flow conditions in the low-flow section are vital for the continued success of the Feather River steelhead program.

American shad ascend the Feather River to spawn in April through June. The number of shad in the river and thus the success of the anglers, depends on the relationship of the flows in the Feather at its mouth to the flow of the Sacramento River. American shad are attracted to the Feather in relative numbers to the Feather's flow contribution, i.e., the greater the flow, the more shad are attracted. In recent years, Feather River flows in April through June have been relatively low and the shad fishery has been depressed. Recommendations to benefit chinook salmon smolt rearing and migration in the spring will have accompanying benefits to the shad fishery.

Striped bass spawn in the lower Feather River up to the mouth of the Yuba River in the April through June period. Resident stripers are found in the entire river to Oroville all year with a peak in July through August. Spring flow recommendations will benefit striped bass spawning. Summer flows will support the stripers and other resident fishes - an exceptional smallmouth bass populations, catfish, half-pounder steelhead, and a few trophy-size brown trout deserve mention.

Studies of flow and water temperature in the Feather River in relation to the primary fish species are now underway. The following flow and temperature recommendations are preliminary and reflect the post-project experience with the controlled river and the hatchery.

1. Oroville Reservoir

A minimum pool of 1,500,000 acre-feet on October 1 of each year to assure water temperatures cool enough for spring-run salmon holding and spawning and successful hatchery operations for salmon and steelhead.

Peaking power pump-back operations should not occur at Oroville Reservoir when storage levels are below 1,700,000 acre-feet to avoid detrimental water temperature increases in the low-flow section.

2. Feather River Flows and Water Temperatures

a) Feather River Fish Barrier Dam to Thermalito Afterbay Outlet (low-flow section).

Flows should remain stable at 600 cfs and water temperature should not exceed 56°F in September through June and 60°F in July and August measured at the hatchery.

b) Feather River from Thermalito Afterbay Outlet to Mouth of Yuba River. (Flow and temperature measured at riffle one mile below Thermalito Afterbay Outlet).

| | <u>Minimum Flow</u> | <u>Maximum Mean Daily Water Temperature in °F</u> |
|----------------|-------------------------|---|
| Jan-Apr | 2,000 | 56 |
| May 1-15 | 3,000 | 60 |
| May 16-June 15 | 4,000 | 60 |
| June 16-Oct 15 | 1,000 | No requirement |
| Oct 16-Dec 31 | 1,700 | 56 |

c) Feather River from mouth of Yuba to Verona, measured at Shanghai Bend.

| | | |
|----------------|-------|----------------|
| Jan - March | 2,700 | 56 |
| April | 3,000 | 60 |
| May 1-15 | 5,000 | 60 |
| June 16-Oct 15 | 1,500 | No requirement |
| Oct 16-Dec 31 | 2,200 | 56 |

3. Flow fluctuations and streamflow reductions should be limited to a magnitude similar to that proposed for the Yuba River.
4. A dedicated block of 50,000 acre-feet of water should be made available from Oroville Reservoir to aid outmigrating chinook salmon by alleviating short-term water temperature barriers.

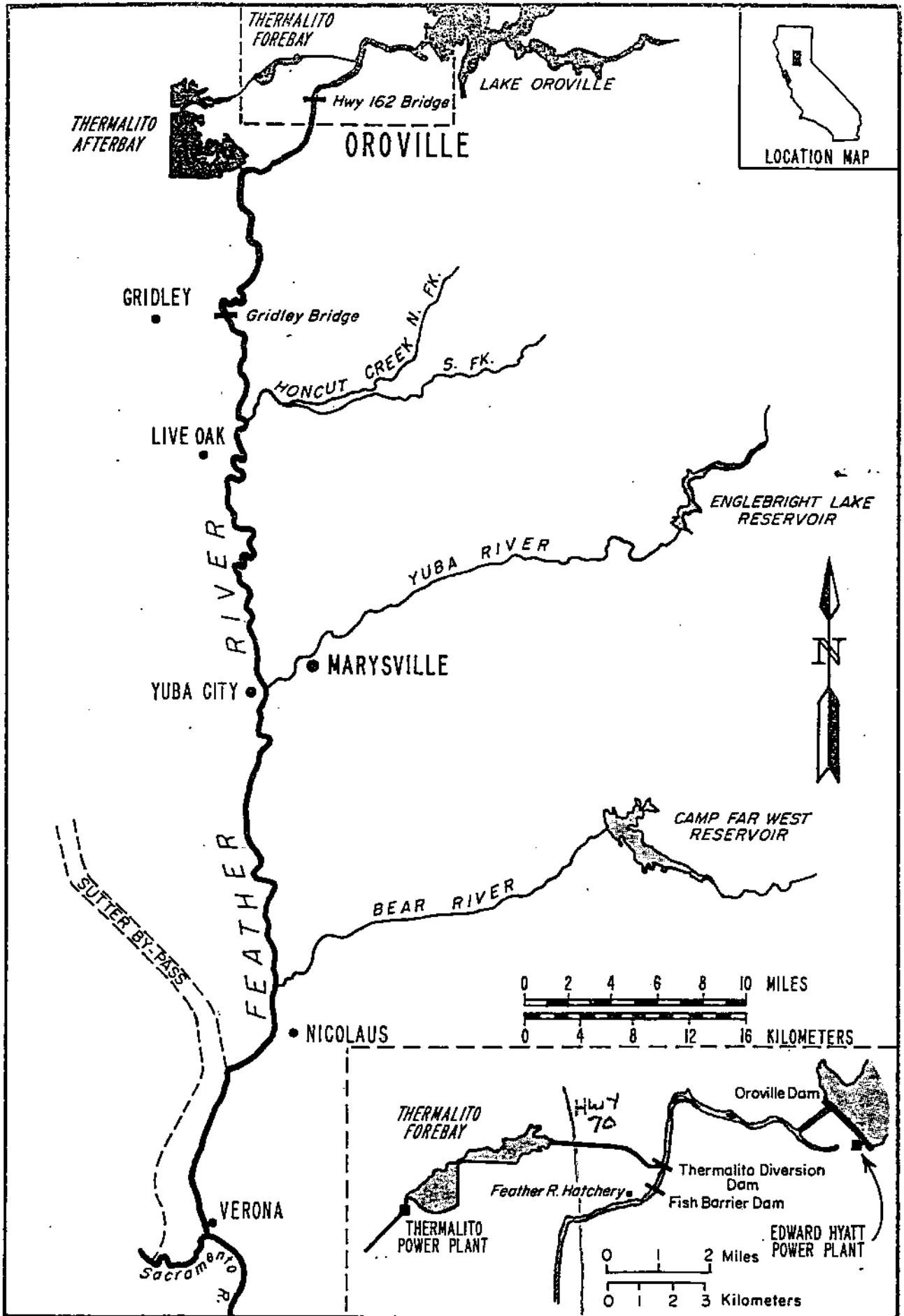


Figure 1. Feather River, from Oroville Dam to mouth.