

State of California

The Resources Agency

Memorandum

To : Warden Rennie Cleland

Date: September 1, 1981

Telephone: ATSS ()

From : **Department of Fish and Game - Region 3**

Subject: Mark West Creek at Rancho Mark West

On August 20, 1981 Seasonal Aid Leslie Harris and I inspected Mark West Creek at Rancho Mark West along the St. Helena Road. We talked with the owner, Jim Doerksen (telephone 415-595-5900, 415-591-9959, or 707-539-7004) and received his permission to take a look at the creek through his property and to take stream flow measurements. I told Mr. Doerksen of the complaints regarding sudden reductions in stream flow from downstream landowners.

Mr. Doerksen indicated that he had also noticed significant fluctuations in stream flow entering his property. He could not attribute the fluctuations to a particular cause; the only diversions he knew of upstream were several for gardens. Mr. Doerksen described his diversion as being for only four hours once every two weeks. The exact frequency of irrigation is determined by soil moisture monitors.

We walked downstream for several hundred yards from Mr. Doerksen's house, observing the stream. Fish habitat was abundant with many big rocks, undercut banks, small and large pools. Stream flow was adequate for fish survival. Water temperature (58°F) was excellent for steelhead production. Young-of-the-year steelhead were quite abundant throughout as were roach. Sucker, stickleback, and sculpin were seen. Of some concern were the few large green sunfish seen in some of the larger pools; these may have come from Mr. Doerksen's farm pond located near the creek, but they were noted as far upstream as the Calistoga Road bridge as early as 1969. Because of their aggressive nature, the green sunfish pose a serious threat to the native aquatic life.

At a point about 50 yards upstream of Mr. Doerksen's diversion pump we measured the stream flow with a Pygmy flowmeter. The flow at about 1000 hours was .277 cubic feet per second or 125 gallons per minute.

The diversion pump at Rancho Mark West draws its water from a small (15' x 15' x 4') on stream reservoir on Mark West Creek formed by an earth dam. The pump is of the centrifugal type with a 6" intake and a 4" outlet, powered by a 6-cylinder gasoline engine. The intake appeared to be unscreened. Sid Alsap of the Sonoma County Water Agency estimated, based on my description of the pump, that the diversion rate could be from 100-to 200 gallons per minute.

My assessment of Mark West Creek in the vicinity of Rancho Mark West and of the diversion at Rancho Mark West is that the diversion is quite capable of diverting all the surface flow of Mark West Creek at that point, causing a severe reduction of surface flow downstream for a considerable distance. Such a flow reduction would dewater the riffles and lower the water level in the pools. Some fish could be stranded and die in the dewatered riffles; fish in the pools would probably not be greatly affected if the flow reduction were only for a few hours. Given the apparently high productive potential and undisturbed state of Mark West Creek along the St. Helena Road and the depressed population of steelhead throughout the stream, such a diversion must be considered a substantial alteration of the stream.

This diversion could be mitigated by limiting the diversion rate to a maximum of about 50 gallons per minute for 4 hours per day. The minimum flow to be bypassed should be 75 gallons per minute from April 15 through November 1. The pump intake should be screened adequately to prevent impingement of steelhead fry.

The dam used to pond water for the diversion is constructed of a fine grained soil. This material will smother the gravels downstream when the dam is breached. This will cause an unacceptable degradation of steelhead spawning habitat in Mark West Creek. This soil dam should be removed from the stream to a point above high water before it can wash out. A quantity of this soil has already been deposited on the gravels just below the dam. Attempts to clean out this material would only cause additional damage. Any future dam should be of clean river-run gravel.



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Fishery Biologist
Region 3

WGC:tf

cc: Bill Cox