

Memorandum

To: Randal C. Benthin
Senior Biologist Supervisor

Date: April 6, 2006

From: Steve Baumgartner, Associate Biologist
Northern California-North Coast Region
Department of Fish and Game
601 Locust Street, Redding, California 96001

Subject: Salt Creek, Shasta County

Salt Creek originates in the gently rolling terrain west of Redding near the intersection of Swasey and Lower Springs Roads and flows from southwest to northeast before its confluence with the Sacramento River. The creek channel is alluvial by nature and contains some patches of bedrock. The channel transports fine to medium-coarse sediment, the largest up to one foot in diameter. The lower half of the channel below Highway 299 is more confined than the broader floodplain areas of the upper reach which is broader and more depositional.

For the last several years discussion has centered on the possibility of providing a broader window of opportunity for salmonid passage through the Highway 299 culvert to allow fish access to spawning habitat in the upper Salt Creek watershed. Currently, small numbers of fall-run and late fall-run Chinook salmon (*Oncorhynchus tshawytscha*) as well as hundreds of rainbow trout (*O. mykiss*) ascend the stream from December through early spring when streamflows are adequate and congregate in the few pools downstream of the culvert. These areas of high fish density have become popular as poaching spots and present a continual problem for Department of Fish and Game enforcement personnel.

The downstream end of the culvert under Highway 299 is slightly elevated above a small pool. The water velocity through the culvert results in a partial barrier for salmonids except for a narrow window of time after storm events when high flows recede and velocities slow to provide for fish passage. During the moderate to high streamflow periods, rainbow trout repeatedly attempt to pass upstream of the culvert, only to be washed downstream. The installation of a series of baffles on the floor of the culvert would significantly slow the water velocity and provide for fish passage across a broader range of flows. In addition to the baffles, a grade control structure is needed at the pool downstream of the culvert to facilitate fish entry into the culvert.

Multiple surveys of substrate and streamflow upstream of the culvert in the main stem of the creek have revealed large suitable spawning areas for at least 100 pairs of rainbow trout above the culvert. The three largest of these spawning areas total over 1500 square feet. As a general rule, rainbow trout need from 12 to 15 square feet of spawning substrate per pair. In addition to these large spawning areas, dozens of small patches

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measuring from 15 to 30 square feet of suitable spawning areas exist throughout the upper watershed in at least six of the tributaries. During a site visit in January of 2006, three pairs of rainbow trout were seen on redds in the upper watershed and several others were holding in other spawning areas in the tributaries upstream of the culvert. In December of 2004, several rainbow trout were seen in the upper tributaries including a redd with eggs upstream of Lower Springs Drive. Providing fish passage across a broader range of flow conditions would allow this spawning habitat to be more fully utilized as well as ease poaching pressure on the dense groups of fish concentrating in the pools below the culvert.

Streamflow, spawning, and rearing conditions will fluctuate annually due to the variability of rainfall in the Salt Creek watershed and will influence juvenile survival to varying degrees. Therefore, a strong monitoring commitment of spawning and rearing across different water year types will be required of the Department to ensure juvenile stranding or dewatering of redds is not an issue. I will be deploying thermographs and surveying the creek for spawners beginning in early December. The spawning and temperature data will be used to calculate larval emergence and evaluate reproductive success. I will continue to survey the creek throughout the winter and spring at regular intervals to monitor juvenile rearing and outmigration. In addition, a dedicated group of anglers from the Shasta Fly Fishers has pledged support to this passage issue and frequently monitor the stream for spawning and rearing activity.

It is my recommendation to install a series of baffles in the Highway 299 culvert and construct a grade control structure downstream of the culvert to assist in rainbow trout passage across a broader range of streamflows. My position is supported by individuals from Wildlife Protection, Fisheries Management, CalTrans, and members of fly fishing groups in the Redding area. In the event of a protracted drought, or if we find upstream passage results in unacceptable stranding, we will have the flexibility to remove baffles and modify the extent of fish passage.

Please direct comments and questions to Steve Baumgartner by phone at (530) 225-2370 or e-mail at sbaumgartner@dfg.ca.gov.

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