

**CLEAR CREEK – McCORMICK-SAELTZER DAM REMOVAL:
Dam removal re-opens spring run salmon habitat**

SHASTA COUNTY, CALIFORNIA



Photo credit: Alicia Gilbreath, 2007

Draining 278 square miles, Clear Creek is a 56-km long west bank tributary to the Sacramento River, just south of Redding, California.

Clear Creek has been severely degraded over the years by gold and aggregate mining, diversion of fish flow, and disruption of longitudinal connectivity by dams. The upper reaches of Clear Creek are impounded by Whiskeytown Dam, a large dam from which most flow is diverted to the Sacramento River to generate power. Fish passage was also blocked by Saeltzer Dam, a small diversion dam downstream. To restore fish access to the reach between Saeltzer and Whiskeytown Dams, Saeltzer Dam was removed in 2000.

What was done and why?

Mining activities have been heavy on Clear Creek since 1848, when Major Reading made the second gold discovery in California there. Historic dredge-mining for gold and gravel has altered the channel form by removing point bars, floodplains and riparian vegetation.

In some areas, the stream is straight and highly entrenched (NRCS, 1999); in others, it has multiple channel.

Saeltzer Dam was a concrete and timber crib gravity structure built in 1912 to divert less than 1 cubic meter/second (35 cfs). Located 10 kilometers from the confluence with the Sacramento River, at about 6 meters high and 56 meters long (Hepler, 2001 and 2004), the dam blocked fish from upstream migration.

Spring-run Chinook salmon, who return to freshwater to spawn in the early fall, require cool water temperatures to survive in the summer months, and therefore typically need to reach higher elevation habitat. In California, 95% of the spawning habitat for spring-run salmon is inaccessible and the species was listed federally as threatened in 1999. Clear Creek provides habitat for spring-run Chinook, as well as fall-run Chinook salmon and steelhead trout.

In 1992, the Central Valley Project Improvement Act authorized the Bureau of Reclamation to increase anadromous fish populations in the Central Valley within 10 years. Specific actions identified included improving fish access above Saeltzer Dam. Efforts to provide fish passage above Saeltzer dating back to the 1950's had failed. Federal and State fisheries biologists estimated that approximately 2,000 spring run Chinook and 2,000 steelhead could spawn in the reach between Saeltzer and Whiskeytown dams, but the passing rate in 1999 was less than 1%.

By 1997, the Saeltzer Dam was in poor condition. Cracking was visible, the concrete had clearly deteriorated, and there was evidence of leaks. At least 3 people died trying to walk across the dam after getting swept off their feet and falling to the rocks below (Hepler, 2001, 2004). These factors contributed to the arguments to remove Saeltzer Dam in the autumn of 2000. Monitoring demonstrates that spring-run salmon now puts upstream and spawn in the reach above the old dam site.

Who was involved?

Funders included: the US Bureau of Reclamation (through the CVPIA Restoration Fund), the California Department of Fish and Game, The Packard Foundation (through the Nature Conservancy), and the Metropolitan Water District (through the California Urban Water Agencies). Other assistance was provided by the Western Shasta Resource Conservation District, the Department of Water Resources, and CALFED (Hepler, 2001).

Today several agencies are involved in restoration efforts on Clear Creek, including Western Shasta Resource Conservation District, Graham Matthews and Associates (GMA), Bureau of Land Management, United States Geological Society, United States Fish and Wildlife Service, PRBO Conservation Science, CALFED, and others. In the last decade, the Central Valley Project Improvement Act and the California Bay-Delta Authority are the primary funders of more than \$21 million dollars (Brown and DeStaso, n.d.) in restoration efforts focused on five primary activities, including: a major rehabilitation project on the Lower Clear Creek Floodway increasing the minimum

instream flow, spawning gravel augmentation, erosion control projects, and fish passage. Adaptive management and monitoring are also major, ongoing components of the work on Clear Creek.

Where can I see the project?

The restoration site is located west of Redding, California in the Whiskeytown National Recreation Area (-122.4559 N 40.4953 W).

Why is this a model project?

Although extended pre-removal baseline data is lacking, removing the Saeltzer Dam appears to have successfully improved fish passage, especially for spring run Chinook who needed access to the upstream habitat areas for significant population improvement. Prior to removal, the passage rate in 1999 was 1%, while post-project monitoring survey results indicate that approximately 70% of spring-run Chinook are passing upstream.

For more information on these projects, please contact:

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