

Large Scale Stream Channel and Flood Plain Rehabilitation of Resurrection Creek Near Hope, Alaska

Brian Bair¹ and Dave Blanchet²

Resurrection Creek, a 415 sq. kilometer watershed near Hope, Alaska, was home to Alaska's first gold rush in 1896. The creek provides habitat for all five Pacific salmon species as well as Dolly Varden and rainbow trout. The lower reaches of Resurrection Creek's main stem and tributaries were mined extensively for placer gold during the first four decades of the 1900's using hydraulic mining techniques. Miners used high pressure water jets to strip away the surface vegetation and soils, and then to sort gold from the underlying alluvial gravels.

Mining efforts left behind an array of tailings piles, some up to 10 meters high, that bisect and/or cover the alluvial valley bottom. Tailing piles disconnected and buried the historic complex of stream channels and wetlands. Mining left Resurrection Creek with a straightened, steepened, riffle dominated stream channel, with coarse bed substrate, and without floodplain or side channels. The steep, coarse tailings piles provide a poor medium for regrowth of riparian vegetation. The ground and channel disturbance adversely impacted high-quality, valley-bottom habitat for salmon, bears, bald eagles, moose and other fish and wildlife species.

In a 2001 Landscape Assessment, the USDA Forest Service identified a 1.6 kilometer hydraulically mined reach of Resurrection Creek with high restoration potential. A subsequent stream analysis completed in 2002 measured, evaluated, and compared channel and floodplain characteristics of the identified stream reach, and an unmined, upstream reach with similar valley characteristics.

In the summer of 2005, the Forest Service launched a large scale rehabilitation effort to accelerate the recovery of the stream channel and floodplains within the project reach. Channel and floodplain designs were based on relatively undisturbed and functioning reaches of Resurrection Creek. All native materials have been used for channel and flood plain construction.

Approximately 75 percent of the channel, side slough, and floodplain construction was completed during the May-July 2005. Project construction accomplishments include:

- 1) redistributing approximately 90,000 cubic meters of mine tailings to develop a new stream channel and floodplain;
- 2) excavating, shaping, and "stepping" 1.4 kilometers of new stream channel with natural pool/riffle/glide sequences, increasing the channel length by 30 percent;
- 3) shaping 16 hectares of floodplain to accommodate overbank flows;
- 4) constructing 1.6 kilometers of new side sloughs and ponds adjacent to the new stream channel;
- 5) placing 600 pieces of large wood into engineered log jams along the main channel;
- 6) spreading 3800 cubic meters of soil and woody debris onto the newly created flood plains to enhance conditions for natural revegetation and future hand planting.

Project construction is planned for completion in 2006, along with initiation of site revegetation efforts.

¹ Project Fisheries Biologist, USDA Forest Service, Wind River Administration Site, 1262 Hemlock Rd, Carson, WA 98610 bbair@fs.fed.us, 509 395-3360

² Project Manager/Hydrologist, USDA Forest Service, Chugach National Forest, 3301 C Street Suite 300, Anchorage, AK 99503 dblanchet@fs.fed.us, 907 743-9538