**Stream Restoration of Lower Grey Creek**

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Grey Creek is a steep mountain stream, located nine miles from Valdez, Alaska, that crosses the Trans Alaska Pipeline at milepost 791. The stream drains 2.3 square miles of glaciated, forested and alpine land. Annual precipitation approximately 70 inches and bankfull flow is estimated at 230 cubic feet per second (cfs).

Four hundred feet from the Pipeline, the Creek drains to Canyon Slough, a side channel of the Lowe River. The stream slope varies between 2% and 8% in the vicinity of the Pipeline. The reach downstream of the Pipeline crossing became unstable due to degradation resulting in entrenchment and bank erosion. As a consequence, the ford crossing of the creek became a barrier to upstream migration of salmon. A restoration technique new to the Trans Alaska Pipeline Service Company (TAPS) utilizing riffles to mimic certain aspects of natural channels was undertaken in 2004. The goal was to address the need of maintaining Pipeline integrity while providing a stable reach with a functional floodplain and unimpeded fish passage. Four riffles were constructed on a stepped profile to reduce channel bed and bank erosion and to re-establish fish access over the ford crossing. Also, the right bank floodplain below the crossing was lowered to allow flows to inundate the floodplain at bankfull discharge.

Initial results after one year of monitoring are encouraging. The restored reach is achieving the intended objectives despite a high runoff event in September 2005 that exceeded the bankfull stage and doubled the size of the alluvial fan at the confluence with Canyon Slough.

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