

Project Completion Abstract
For Environmental Maintenance Projects (Roads Activity Area) & Road Deactivation,
Landslide and Gully Rehabilitation (Terrestrial Activity Area)
Stream Crossing Replacements in the Babine Lake Watershed of the
Sutherland Operating Area, Vanderhoof Forest District, Northern Interior
Forest Region

Objectives of the overall project

This project replaces three stream crossings that were barriers to fish passage in the Babine Lake Watershed, Sutherland Operating Area, Vanderhoof Forest District:

1. At 0.7km on the Sutherland-Dipper FSR, replacement of a 900mm closed metal pipe with a 4270x1840x18000 open bottom arch on concrete footings.
2. At 43.5km on the Sutherland FSR, replacement of a 1400mm closed metal pipe with a 4270x1840x18000 open bottom arch on concrete footings.
3. At 26.5km on the Sutherland FSR, replacement of a 800mm closed metal pipe with a 3660x1910x17640 open bottom steel arch on steel footings.

These 3 streams provide high value habitat for Rainbow Trout and were barriers to fish passage as assessed under the 2008 criteria for fish passage due to outlet drops and constricted widths. Erosion and sedimentation was also a problem at these sites. The replacements included proper armoring and sediment control measures over the area affecting the stream.

The project is not located in a community watershed.

FIA Investment Schedule Number and Project Number

Investment Schedule NOTSA248032

Project Plan

Sutherland 26.5km 8032004

Sutherland 43.5km 8032005

Dipper 0.7km 8032006

Recipient Name and Division/ MoF District/ MoF Region

BCTS Vanderhoof Forest District, Stuart-Nechako Business Area.

Author(s) of the Project Completion Abstract

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Name of Watershed / Sub-basin, & Location

These three sites are all in the Babine Lake Sub-basin (BABL) of the Skeena Watershed:

Dipper 0.7km is off the Sutherland FSR at 43km

- UTM 10U 374634 6022887
- Watershed Code 480-993600-63500-37500-18200

Sutherland 43.5km

- UTM 10U 375282 6023158
- Watershed Code 480-993600-63500-37500

Sutherland 26.5km

- UTM 10U 405586 6013446
- Watershed Code 480-993600-70900-69500

The Sutherland FSR begins approximately 40km west of Vanderhoof.

Introduction

A 2008 Fish Passage Culvert Inspection by Avison Management Services Ltd. found these crossings to be barriers to fish movement due to outlet drops and increased flow velocities caused by stream constriction:

1. The Dipper 0.7km crossing was a 900mm CMP on a 2.4m wide stream with a 33cm drop.
2. The Sutherland 43.5km crossing was a 1400mm CMP on a 2.9m wide stream with a 60cm drop.
3. The Sutherland 26.5km crossing was a 800mm perched CMP on a 2.6m wide

stream with a 20cm drop. The perched inlet had ponded the upstream.

Site plans and engineered drawings were prepared in summer 2009 by DWB Consulting Services Ltd. Environmental Mitigation Plans were prepared by Karen Grainger, RPBio, in September 2009. The project was tendered in October 2009 and won by Canyon Tree Farms of Fort St James. All 3 sites were completed in November, 2009.

Environmental Maintenance Project Plan (Roads Activity Area) or Prescriptions (Terrestrial Activity Area)

Fish Salvage: A fish collection permit was obtained for fish salvage (permit no. SM/PG09-57897). However, because of winter conditions and cold water temperatures, electrofishing was not possible. There was no overwintering potential near the Dipper 0.7km or the Sutherland 26.5km crossings so fish were assumed to be absent and no fish salvage was completed.

The only crossing with potential overwintering habitat at the site was Sutherland 43.5km, with a large outlet pool approximately 1.5m deep. The pool was created from scouring due to an undersized culvert and needed to be filled in for the new crossing. Overnight minnow traps on November 3, 2009 yielded 3 juvenile Rainbow Trout so the pool was planned to be drained and salvage by dipnetting. The stream was diverted on November 11 and the pool was drained by pumping. One hundred and ten (110) juvenile Rainbow Trout were removed by dipnetting and released downstream in suitable overwintering habitat. The largest was 22cm long while most were approximately 10cm long.

Stream Diversion: All 3 streams were diverted for construction using diversion culverts and lining temporary channels with plastic.

Streambed Reconstruction:

Material was brought in that was a combination of fines and large angular gravels to boulders. Since 30cm of material is required to bring the elevation of the streambed up above the footings, fines are required in the mix to prevent de-watering of the streambed.

The Dipper 0.7km streambed was constructed to 2.4m at 8% which is a step-pool morphology. Large boulders were placed across the arch

every 2-3 metres to create pools with 10-15cm drops.

The Sutherland 43.5km streambed was constructed to 2.9m at 4% which is a cascade-pool morphology. Large boulders were interspersed along the stream to interrupt flows and create small pools.

The Sutherland 26.5km streambed was constructed to 2.6m and 4% which is on the border of Riffle-Pool and Cascade-Pool morphology. The streambed included some large boulders to slow down flows and create scour pools.

The new streambeds were washed and pumped to an upland site. The sites quickly froze due to winter conditions.

Site Restoration and Long-term Erosion Control:

The sites were extensively armoured. Tailditches were constructed as required to ensure that ditchwater did not enter the streams. Exposed soils were seeded and covered with mulch.

Description of Completed Works

Construction started November 1, 2009 and finished on November 28, 2009. The Sutherland Road is being used for log hauling during the 2009-2010 logging season and beyond.

Construction at these sites included:

- Dipper 0.7km – 410m³ cut, 615m³ fill and 150m³ riprap;
- Sutherland 43.5km – 770m³ cut, 1030m³ fill and 210m³ riprap;
- Sutherland 26.5km – 1720m² cut, 1705m³ fill and 100m³ riprap; and
- Approximately 60 lineal meters of streambed.

Cost Summary Information

3 designs \$11,627.00
3 structures \$84,187.82
3 installations \$108,210.93
Environmental Monitoring \$7,680.00
Total: \$211,705.75

Photographs:



Dipper 0.7km Photo 1. Pre-existing 900mm CMP outlet, September 2009.



Sutherland 43km Photo 1. Pre-existing 1400mm CMP outlet, September 2009.



Dipper 0.7km Photo 2. Stream diversion, November 3, 2009.



Sutherland 43km Photo 2. Outlet pool to be salvaged, November 11, 2009.



Dipper 0.7km Photo 3. Finished step-pool morphology streambed inside new arch.



Sutherland 43km Photo 3. Some of the Rainbow Trout salvaged from outlet pool on November 11, 2009.



Sutherland 43km Photo 4. Salvaged outlet pool has been completely drained with 110 Rainbow Trout removed by dipnetting, November 11, 2009.



Sutherland 26.5km Photo 1. Pre-existing 800mm CMP outlet, September 2009.



Sutherland 43km Photo 5. Finished cascade-pool morphology streambed, November 17, 2009.



Sutherland 26.5km Photo 2. Finished riffle-pool morphology streambed, November 28, 2009.