

**Project Completion Abstract for Fish Passage Restoration Projects**  
(Engineering Activities)

**3000 ROAD, SITE 8/1666, FULTON RIVER WATERSHED**  
**NORTHERN INTERIOR FOREST REGION**

**Objectives of the overall project**

The overall objective is to provide unrestricted fish passage for all life stages of fish for the purpose of spawning, rearing or migration which will support increased fish sustainability, survival and production. The existing culvert installation was restricting access to identified fish habitat upstream and was replaced with an open bottomed fish friendly structure (13.0m pre-cast concrete bridge). The bridge will remove the identified fish passage barrier created by the culvert and will ensure unrestricted fish passage is provided for all life stages of fish in the reconstructed stream channel. The project is not located within a community watershed.

Stream - Unnamed Stream,  
Stream Classification – S3  
Fish Species – Dolly Varden

**FIA Investment Schedule Number, Project Number, and Fiscal Year**

FIA Investment Schedule Number: NOTSA 032502  
Project Number: 2502001  
Contract Number: 06-FIA-05  
Fiscal Year: 2006/2007

**Recipient Name and Division/ MoF District/ MoF Region**

West Fraser Mills Ltd.  
Pacific Inland Resources Division,  
Smithers, BC.  
Skeena Stikine Forest District  
Northern Interior Forest Region

**Names/Affiliation of Registered Professionals Involved in the Project**

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**Name of Watershed / Sub-basin, & Location**

Watershed: Fulton River  
Watershed Code: trib to 480-697200-54400-  
Stream Name: Unnamed  
1:20,000 Mapsheet: 093L 097  
Location: 3000 Road, ~11.5 km  
Site Number: Site 8/1666  
UTM Coordinates: E 644046 N 6093900

**Introduction**

An analysis of fish passage issues in the Bulkley TSA by Pacific Inland Resources, a division of West Fraser Mills, revealed that a pre-code stream crossing (Round 1700mm CMP) existed on the 3000 Road at ~11.5km that did not meet current fish passage requirements. The 3000 Road is a permanent main haul road that has been in use for more than 25 years. In an effort to expand the available habitat for various fish populations, the current structure will be replaced with a permanent pre-cast concrete bridge.

Fish Passage Culvert Inspection – Sept. 3/03  
Barriers – Partial; Culvert slope (6.5%) and culvert water velocity at high flows are barriers to juvenile fish passage upstream  
Priority rank score – 44 (H)  
Fish Species (DV) – 10 Habitat Value (M) – 7  
Barrier (Partial) – 7 Habitat (>1km) – 5  
% Stream Barred (>70%) – 10  
Upstream Barriers (Yes) – 5

**Description of Design**

The stream in question is fish bearing and the existing culvert, although large enough to accommodate  $Q_{100}$  flows, is a partial barrier to upstream fish passage. Since restoration of fish passage was the objective of the project, an open bottom structure that would span the reconstructed stream channel was chosen. A pre-cast concrete

bridge was selected for its longevity, low maintenance requirements and in order to minimize in-stream earthworks. Steel pipe piles were chosen as the most economical bridge foundation with pre-cast concrete spread footings as an alternative if piles were found to be unsuitable for the site.

**Description of Completed Work**

Construction commenced on Oct. 16/06 with the driving of the piles. Piles on the empty side encountered a very large rock or bedrock at approximately 1.5m depth which prevented further penetration of the piles into the soil and resulted in the decision to install spread footings on the empty side. Piles on the loaded side were successfully driven to refusal. Following fish salvage (no fish captured), construction reconvened on Nov. 11/06 with the removal of soil to expose the piles on the north end, pumping of the stream flow around the site, removal of the existing round metal culvert, reconstruction of the stream channel and restoration of the stream flow to the newly reconstructed channel. On Nov. 12/06, the rock on the south side of the crossing was exposed, the area was levelled as best as possible and the spread footings were placed. Pipe pile pieces were placed and welded to the spread footings. The end cap beams were placed and welded on both sides of the crossing. On Nov. 13/06, Rip-rap was placed in front of the cap beams, the bridge slabs were placed on the cap beams, the approaches were levelled, welding of the shear plates started (~1/2 of them welded), expandable foam was injected between the slab joints and the bridge signs were erected. Nov. 14/06 the no-post barriers arrived and were installed at each corner of the bridge and the remaining shear plates were welded by a contract welder. Isolation nets were removed from the stream channel. An environmental monitor was on site for all in-stream work phases.

**Cost Summary**

Site Prescription/ Site Design	\$2970.00
Project Supervision	\$8042.03
Fish Salvage and	\$9980.40
Environmental Monitoring	
Works	\$86,729.00
	\$1749.18
<hr/> Total	<hr/> \$109,470.61

**Post-construction Inspection**

An engineer was on site for all stages of construction, therefore a formal post-construction inspection was not completed on this site. The engineer verified that all stages of the bridge construction were completed to design specifications, documented daily progress and submitted signed and sealed record drawings and a Certification of Construction along with a daily progress report.

**Photographs**



**Photo 1.** 3000 Road-Site 8/1666 culvert outlet conditions. No outfall drop but steep culvert gradient (6.5%).



**Photo 2.** Engineer inspecting shear plate welding.



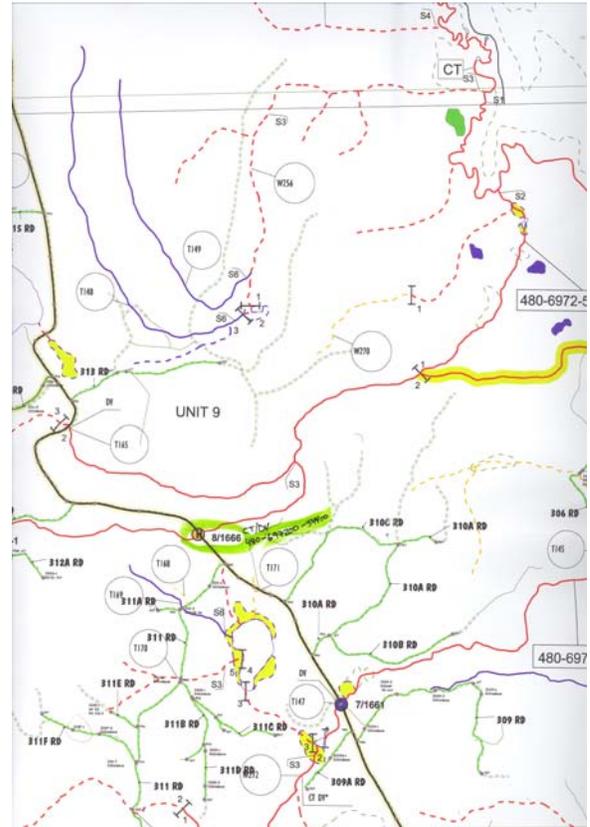
**Photo 3.** 3000 Road-Site 8/1666, d/s view of reconstructed stream channel (Nov.14/06).

**Note to Author:**

The layout of the Project Completion Abstract should be in a two-column format (as viewed in Page Layout mode). The two page format of the abstract (not the content) is illustrated in the Annual Compendium of Aquatic Rehabilitation Projects for the WRP 1999-2000 available at

<http://srmwww.gov.bc.ca/frco/bookshop/wrp.html>

**Key Map**



**TRIM Mapsheet 093L.097**