A field study of the hydraulics at the Vianney-Legendre Vertical Slot Fishway, near St. Ours, Quebec.

\*A. Marriner, and D. Zhu, University of Alberta, Department of Civil and Environmental Engineering, Water Resources Group ([marriner@ualberta.ca](mailto:marriner@ualberta.ca))

Abstract

This study focused on the field hydraulics measured at the Vianney-Legendre vertical slot fishway. The fishway is a staircase style, vertical slot fishway on the Richelieu River, in southwestern Quebec, Canada. The fishway sits on the west bank of the river adjacent to a 3.4m high water controlling dam. Velocity measurements were taken in two straight pools and two turning pools. The maximum slot velocities ranged from 1.00 m/s to 1.23 m/s. The two straight pools shared a common flow pattern, similar to Pattern 2 flow. Kinetic energy levels were calculated for two straight pools. The turning pools also shared a common flow pattern. The pattern is characterized by a jet flow that wraps around the back wall of the pool leaving a large recirculation zone, approximately half the pools area, in the pool centre. A second, smaller recirculation zone formed in the upstream corner of the pool behind the long baffle. Water levels were measured in 5 pools. Water depths were greatest in the downstream ladder pools and least in the upstream ladder pools. Water level changes between adjacent pools were greatest in the upstream ladder pools and decreasing to the smallest in the downstream ladder pools.