NSERC HydroNet Symposium

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*Upstream Lake Sturgeon Passage at the Vianney- Legendre Vertical Slot Fishway.* A. Marriner; Dr. David Zhu, University of Alberta.

The vertical slot fishway located on the Richelieu River, approximately 20km upstream of the confluence with the St. Lawrence River has been designed to pass numerous species of fish including lake sturgeon. It is one of very few fishways worldwide that successfully passes sturgeon. Additionally, the St. Lawrence River is home to a healthy population lake sturgeon. This makes the Vianney- Legendre Vertical Slot Fishway an exceptional candidate to study in order to determine how and why it successfully passes lake sturgeon.

A detailed study of the fishway hydraulics will be undertaken over the next 3 years. During the spring 2011 lake sturgeon migration, detailed velocity measurements will be taken in 7 of the 16 fishway pools. The entrance and exit pools, the 2 turning pools, and 1 representative pool from each of the 3 straightaways have been selected for measurement. Velocity measurements will be taken using an ADV. 50cm x 50cm x 50cm (x, y, z directions) will be used for grid spacing. Finer grid spacing will be used in regions of specific interest (for example up and downstream of the slot openings). Turbulence levels, shear stresses, and energy dissipation rates will be calculated from the velocity measurements made in the field. Data divers placed upstream, downstream, and in selected pools will continuously monitor changes in water levels and corresponding flow rates in the fishway over the course of the migration period. The field data collected will be used to validate the physical scale (laboratory) and CFD (computational fluid dynamics) models to be constructed upon completion of the field season.

The knowledge gained on the hydraulics of the fishway will be combined with a concurrent study focusing on the biological aspects of the lake sturgeon migration.