

PROJECT DESCRIPTION

Coldwater Consulting Ltd., working with Kilgour and Associates, undertook a fish habitat suitability assessment that examined a number of sites on the Spanish and Vermilion Rivers near Espanola, ON. Coldwater’s work included field measurements, hydrodynamic modelling and fish habitat suitability modelling.

DESIGN APPROACH

Coldwater undertook field measurements campaigns in 2011 and 2012, collecting data on bathymetry, flows, levels, temperatures and substrate at numerous sites throughout the Spanish and Vermilion Rivers. This data, as well as with LIDAR and hydrology data, was then used to build four separate TELEMAC hydrodynamic models. The calibrated flow models were then used with hydrology data to build long-term simulations of flow in the two rivers. Four flow regimes were modelled: existing, non-fluctuating, run-of-river and pre-development. Statistical techniques were used to estimate high-frequency fluctuations not normally considered in these studies.

Two of Coldwater’s proprietary fish habitat suitability models, SturgeonMapper and WalleyeMapper, were applied to investigate spawning conditions. Both models also take into account post-spawning water level fluctuations that can lead to losses in areas that become temporarily dry. In all, four walleye populations and two sturgeon populations were studied. The spawning potential (active days or reproductive score) under the four flow regimes was studied at each site using 10-year simulations. In addition, investigations of various powerhouse operations that lead to rapid discharge variations were studied to investigate post-spawning losses.

CLIENT

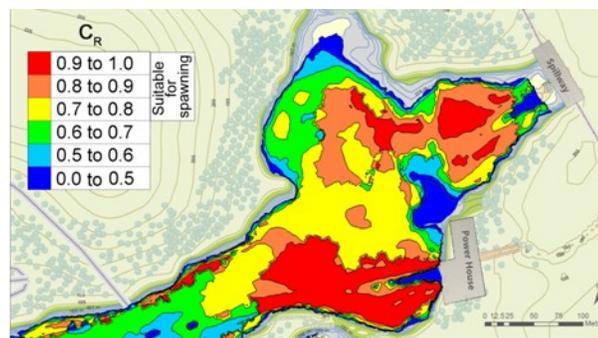
Kilgour and Associates
on behalf of Vale Canada Ltd.

LOCATION

Espanola, ON

DATE

2011-2012



Average sturgeon reproduction score over the period 2001-2011