

Modeling Lampricide Transport in the St. Marys River

Hung Tao Shen*, Qing Xu, and Poojitha D.Yapa

*Department of Civil and Environmental Engineering
Clarkson University, Potsdam NY13699-5710*

ABSTRACT: This paper describes use of an integrated chemical/oil spill computer model to study lampricide transport in the St. Marys River. The model is developed based on a depth-averaged two-dimensional advection-diffusion equation using a Lagrangian discrete parcel method. The hydrodynamics in the model is computed using a depth-averaged two-dimensional finite element model. The model is used to analyze the effectiveness of alternative lampricide application strategies. This analysis showed that releasing TFM from both the Great Lakes Power Plant and the Edison Sault Power Station is more effective than releasing from the Great Lakes Power Plant only, in terms of kill-per-dollar. However, the total cost for two-site releases are higher than single-site releases. The simulations also showed that the optimum duration of TFM release is between 14 and 16 hours. Simulations of bottom velocity distribution showed that the area over which the granular Bayluscide application could cover 70 to 90% of the sea lamprey (*petromyzon matinus*) population in the St. Marys River, depending on the total river discharge.