

# **Use of Systems Approach to Address Drainage on Agricultural Fields and in Natural Channel Designs**

**Geoff King<sup>1</sup>,  
Simon Vandriel<sup>2</sup>,  
Jacqui Empson Laporte<sup>3</sup>, etc.**

<sup>1</sup>*Maitland Valley Conservation Authority, Wroxeter, ON, Canada*

<sup>2</sup>*Vandriel Construction, Clinton, ON Canada*

<sup>3</sup>*Ontario Ministry of Agriculture, Food and Rural Affairs, Clinton, ON Canada*

This rolling farm near Belgrave continues to demonstrate the benefits of a systems approach to drainage on agricultural land, ten years after projects began to take shape.

The farm has been in the family since 1856. The heavy clay fields and high water table making management of water imperative to farming operations. In early 1950, a municipal drain was constructed, which outlets to Belgrave Creek. Soil erosion, flooding of agricultural land and bank instability resulted in increasing maintenance costs of the drain and the fields.

Between 2005 and 2019, Maitland Valley accessed funding to support construction projects designed and constructed by Van Driel Construction. A systems approach means that drainage is combined with changes in land management practices to address the complexity of erosion, drainage and water quality issues on large agricultural properties.

Agricultural runoff is directed through 2558 feet of Water and Sediment Control Basins (WASCoBs), 2030 feet of grassed waterways, and six constructed wetlands. Subsurface and surface controlled drainage is also utilized to regulate flows from tile drainage, and water is improved through French drains and nitrate filters. The system also includes riparian plantings, reforestation and 4033 feet of windbreaks.

Work continues with upstream landowners to further manage water before it enters the Scott Farm, through another series of WASCoBs and increased adoption of land management practices such as cover cropping.

While some of the work has been constructed under the Drainage Act, through the design of the municipal drain, some of the land-based projects and research projects are not.