



The Scott Drain

Integrating Natural Channel Design, Controlled Drainage and Agricultural Practices

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Outline

- Watershed Challenges
- Rural Stormwater Management/System Approach
- Scott Municipal Drain Project
- Steenstra Municipal Drain Project

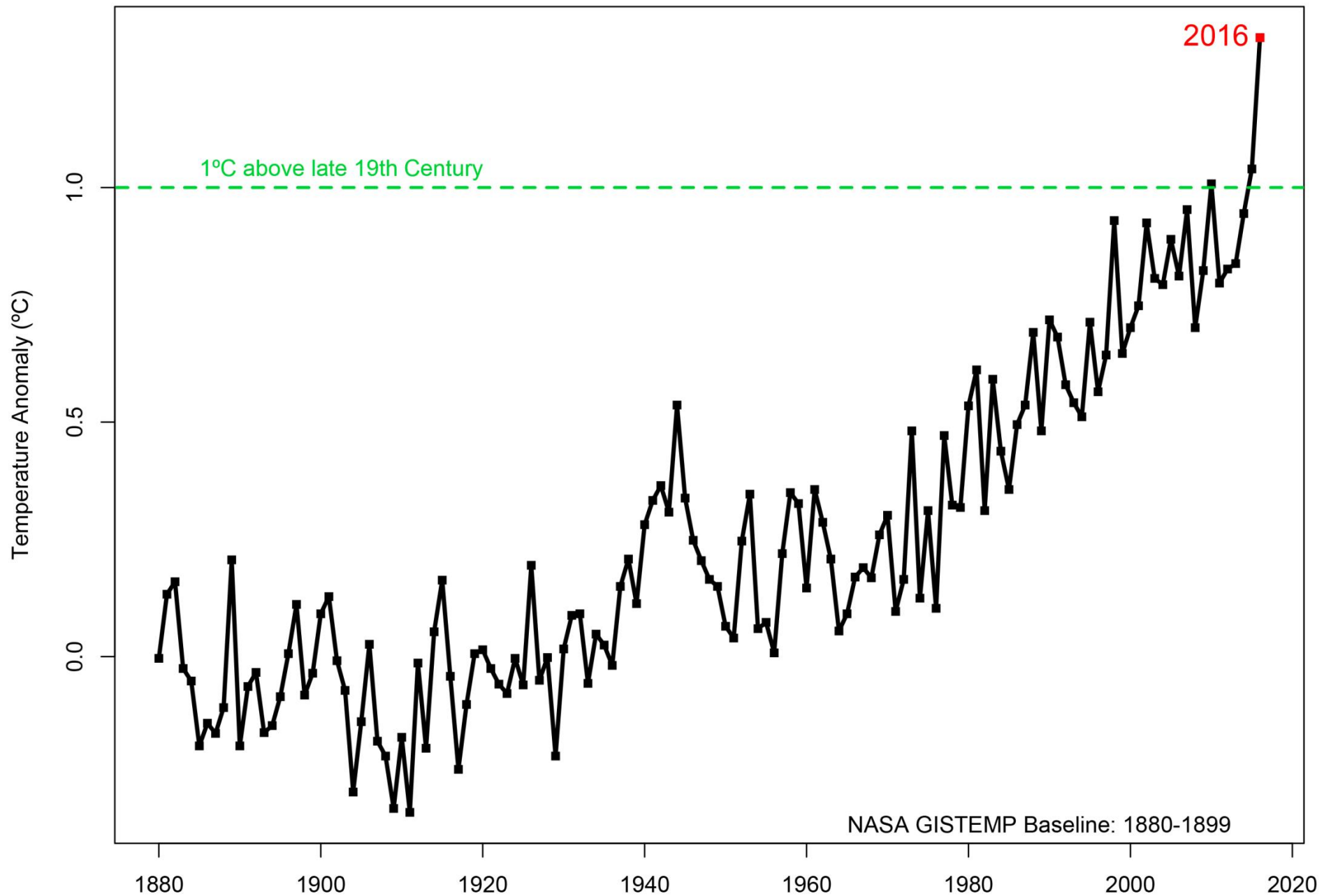


The Maitland Watershed Resiliency Challenge





Global Mean Surface Temperature (January-June)



Benmiller - 2012





Garvey/ Glenn High Flows - 2013



2011

2013 Ice Storm - Wroxeter





Wind Erosion



Changing Agricultural Landscape



Watersheds Less Resilient



Wetland Loss

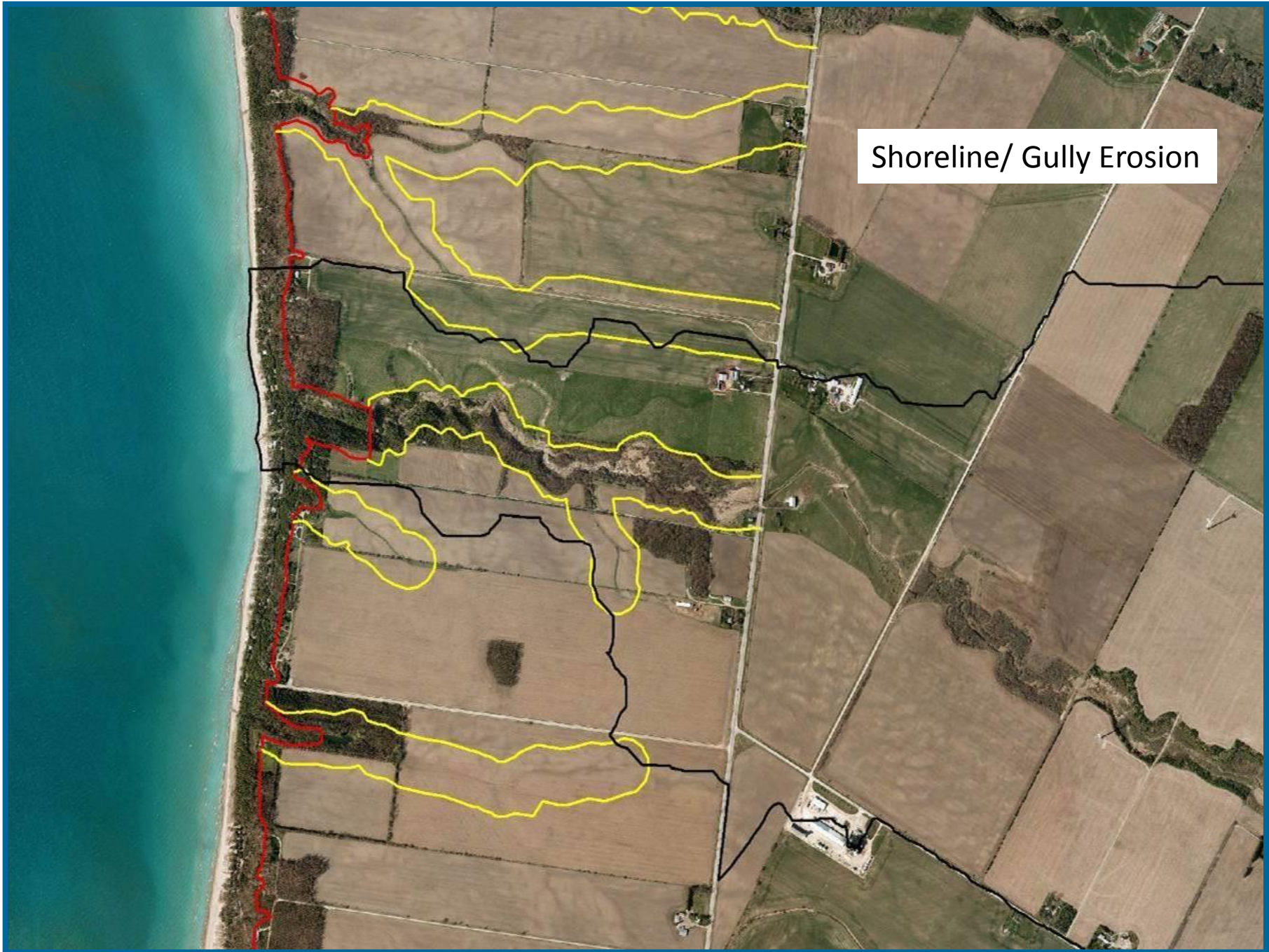




Watercourses Straightened



11/04/2005



Shoreline/ Gully Erosion

Inspiration for Resiliency



Rural Storm Water Management – System Approach

Scott Municipal Drain



Key Messages

Prevent/ Trap/ Treat



Prevent



Trap



Treat

08/11/2015

Prevent



Trap



Slow it down, Spread it out Soak it in



Treat



SCOTT MUNICIPAL DRAIN








Demonstration Site - 2007

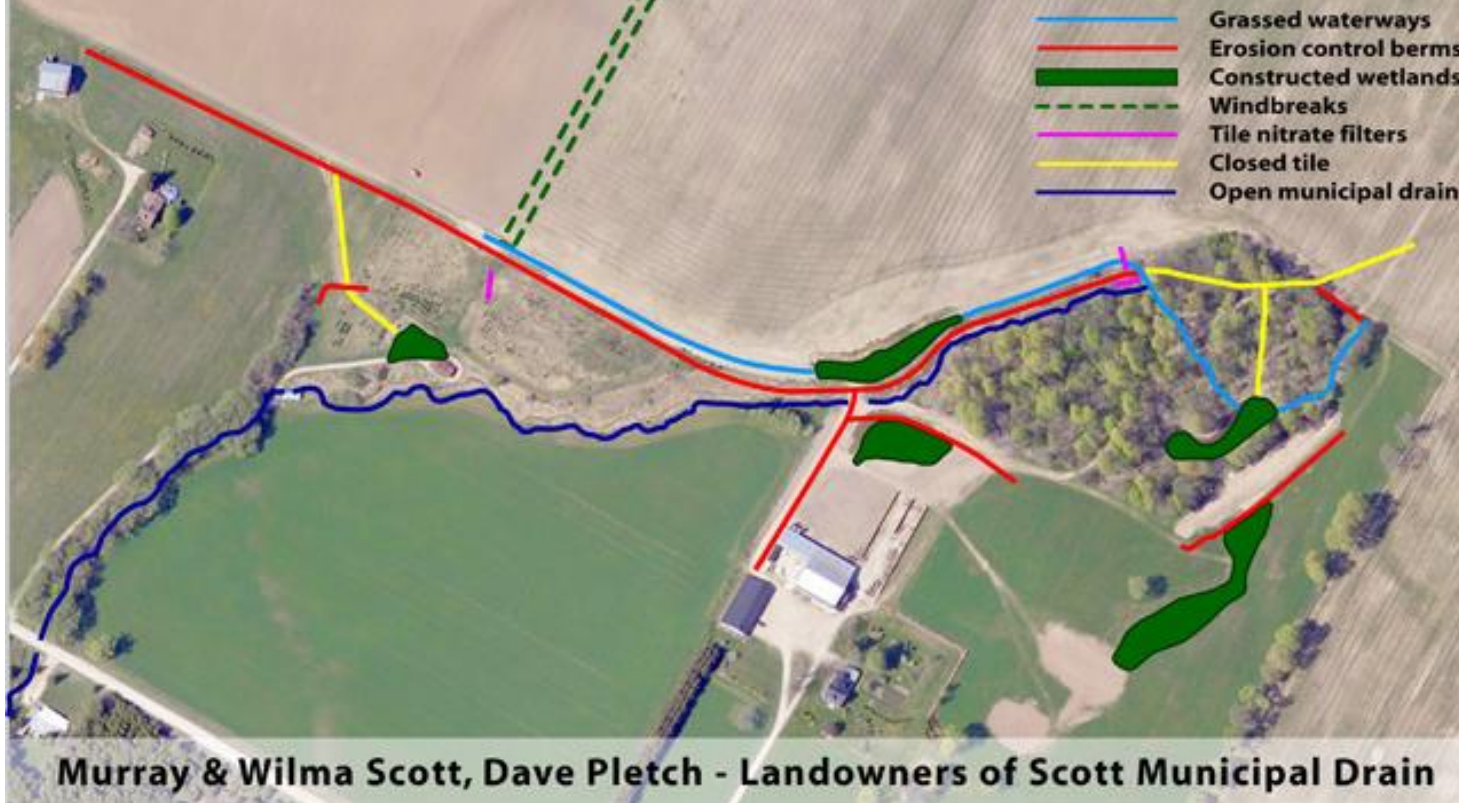


Greencover Canada
Programme de couverture
végétale du Canada
DEMONSTRATION PROJECT
PROJET DE DEMONSTRATION

www.ontariosoilcrop.org

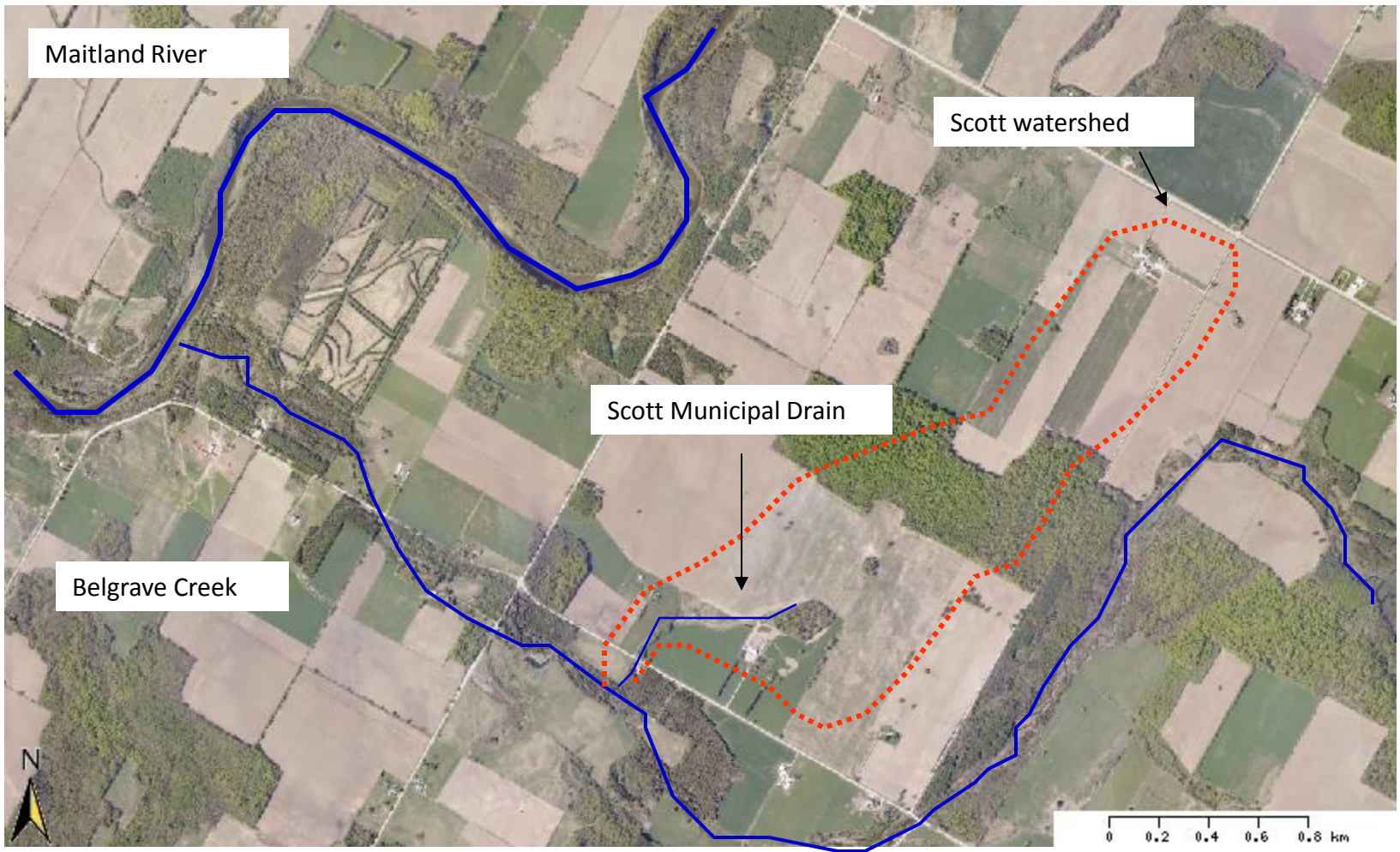


-  Grassed waterways
-  Erosion control berms
-  Constructed wetlands
-  Windbreaks
-  Tile nitrate filters
-  Closed tile
-  Open municipal drain



Murray & Wilma Scott, Dave Pletch - Landowners of Scott Municipal Drain

Landowners working in cooperation with interest groups and agencies to develop a self sustaining municipal drain that provides good drainage, healthy fisheries, wildlife habitat and improved water quality.



System Approach

Barn roof water was diverted into the storage area.
Clean water diversion.



Tile outlet from barn roof

06/29/2006



Agri Drain Control Box
Controls level in the ponding area.



French drains that
controls flows



2006



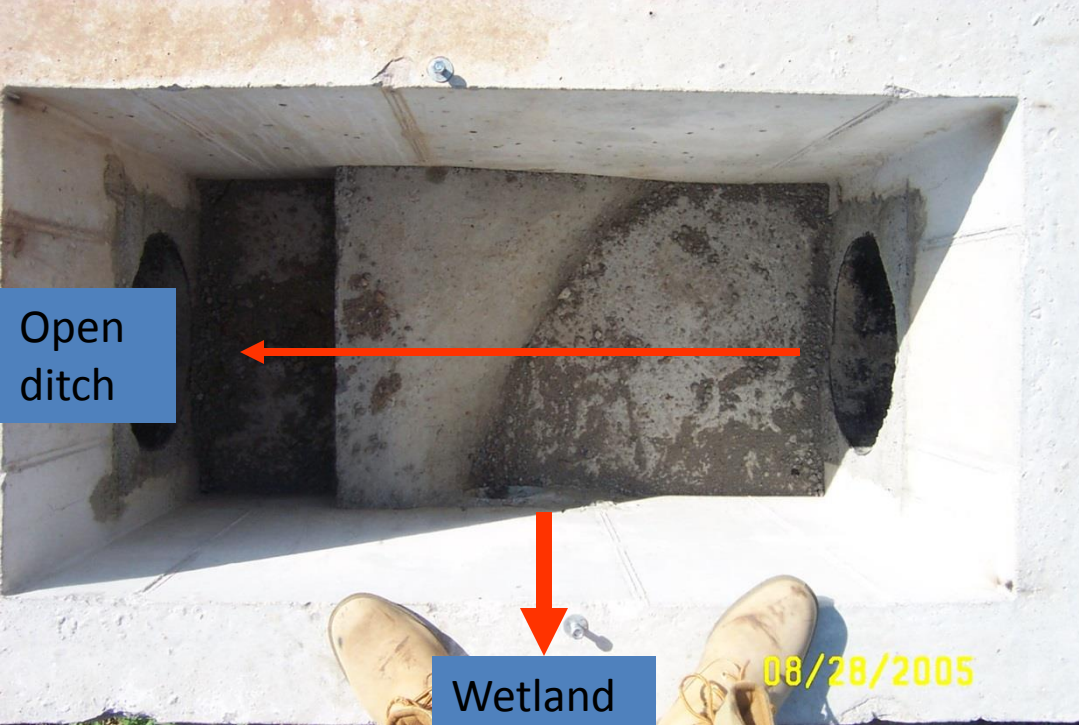
2016



Municipal Drain Diversion Box

Diverts flows from 14 in. closed municipal drain into constructed wetland





Open ditch

Wetland

08/28/2005

High flow conditions



09/26/2005



16/06/2008

Constructed wetland stores water and improves water quality and increases base flows. Provides excellent habitat.



10/16/2006

2006



06/26/2006

2008



01/04/2008

Wetland Storage –
April flooding 2008

Modified Drain Cleanout



08/11/2005





Disturbed bank well protect. Limited bank erosion concerns
and sediment control not an issue.



08/11/2005

Natural Channel Design – Self Cleaning/ better fish habitat/
improved drainage outlet/reduced cost to maintain and improved
water quality.



08/11/2005

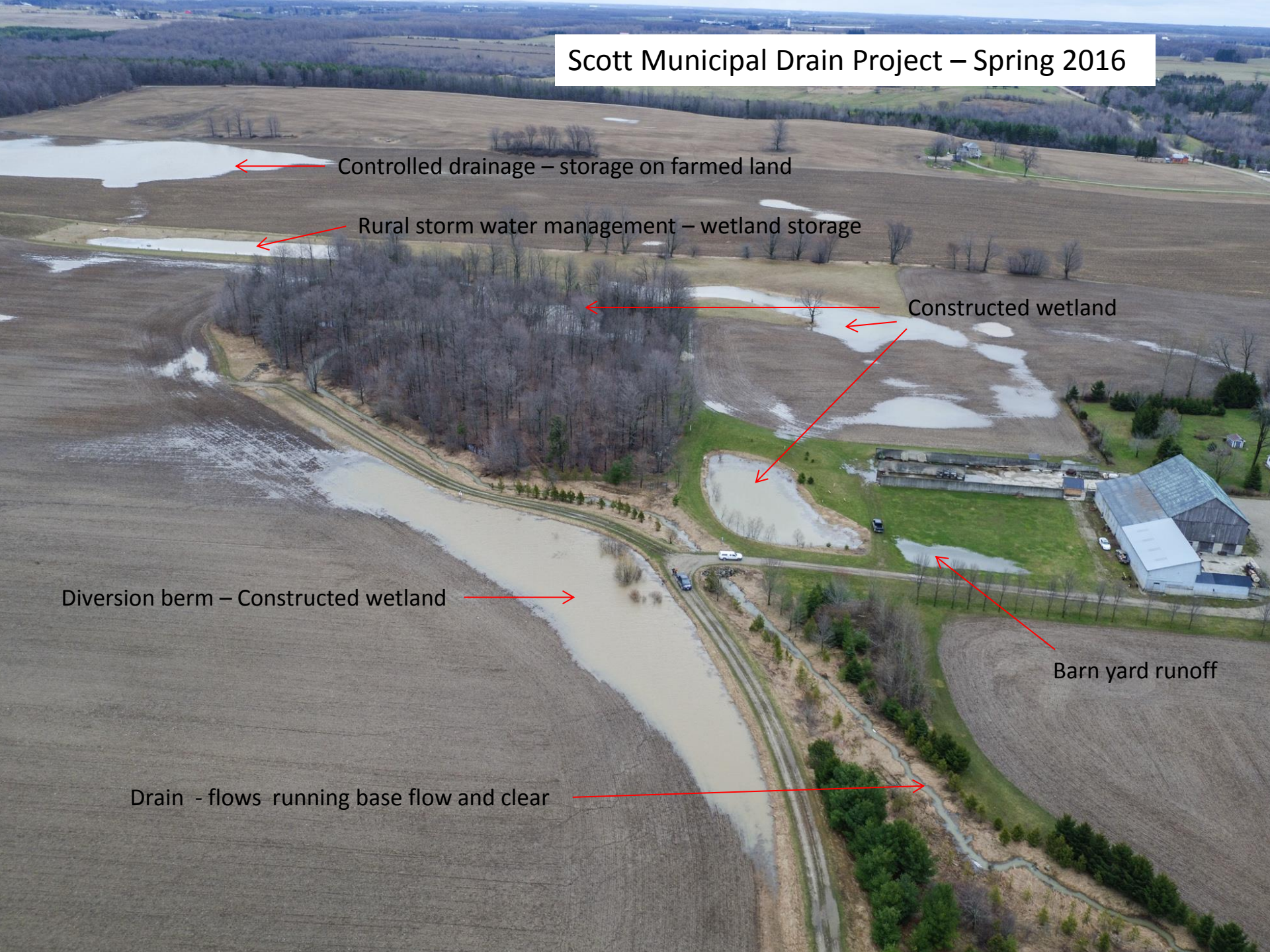


2005



2016

Scott Municipal Drain Project – Spring 2016



Controlled drainage – storage on farmed land

Rural storm water management – wetland storage

Constructed wetland

Diversion berm – Constructed wetland

Barn yard runoff

Drain - flows running base flow and clear

Rural Storm Water Management





Brook Trout Spawning Habitat

Steenstra Municipal Drain Demonstration Project



Landowners of the Steenstra Drain Watershed



Fisheries and Oceans Canada / Pêches et Océans Canada

Canada



Ontario



WETLAND HABITAT FUND
FONDS POUR LES HABITATS HUMIDES

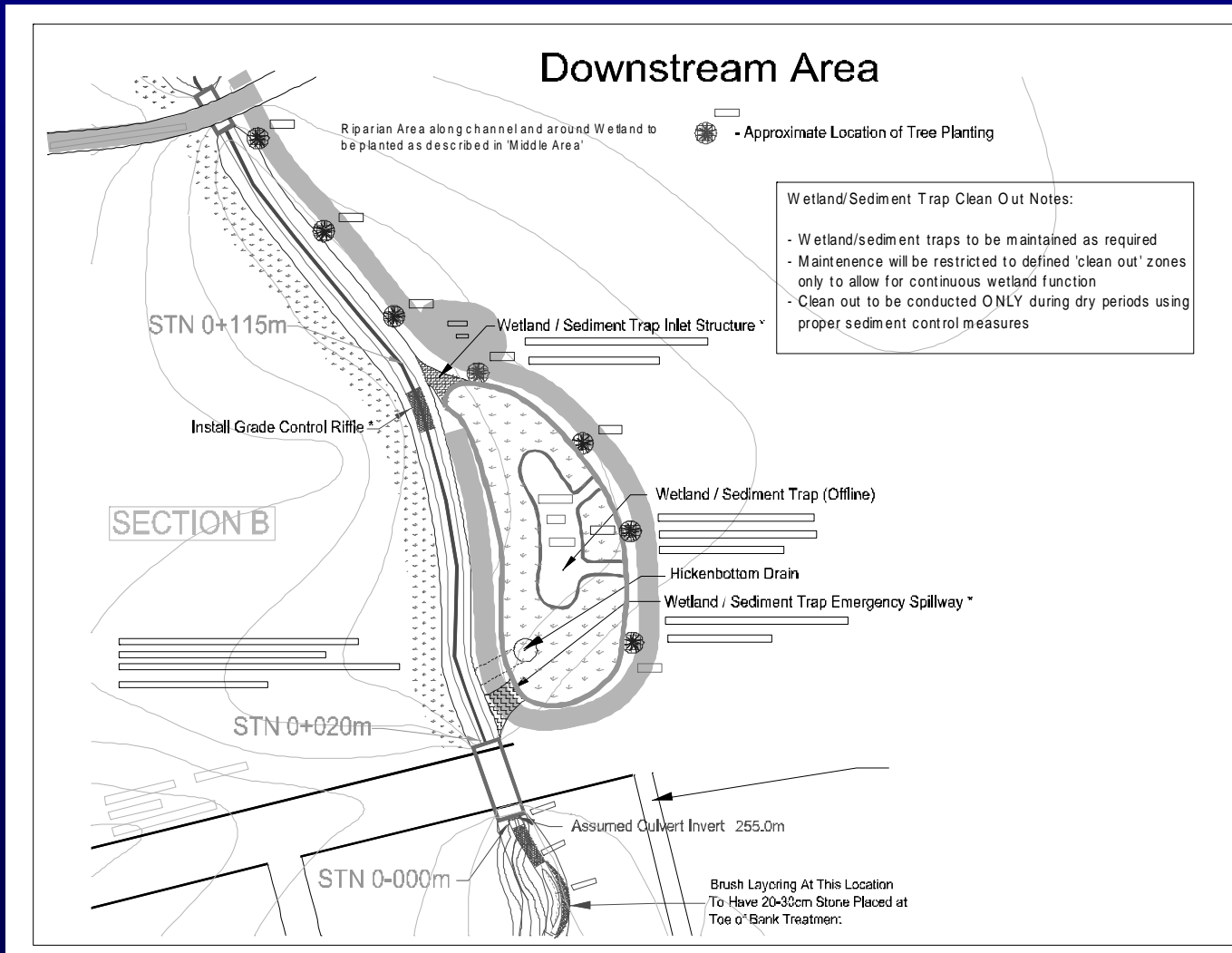
Landowners working in cooperation with interest groups and agencies to develop a self sustaining municipal drain that provides good drainage, health fisheries, wildlife habitat and improved water quality.

Steenstra Drain Sediment Issue



03/06/2004

Steenstra Drain Downstream Wetland Sediment Trap





**Steenstra Drain
Downstream Wetland
Sediment Trap**

Before

03/05/2004

After



After – high flows

12/01/2006



After



2016

Before



Sediment Control Structure Control Surface Water Runoff

After



After – heavy rains

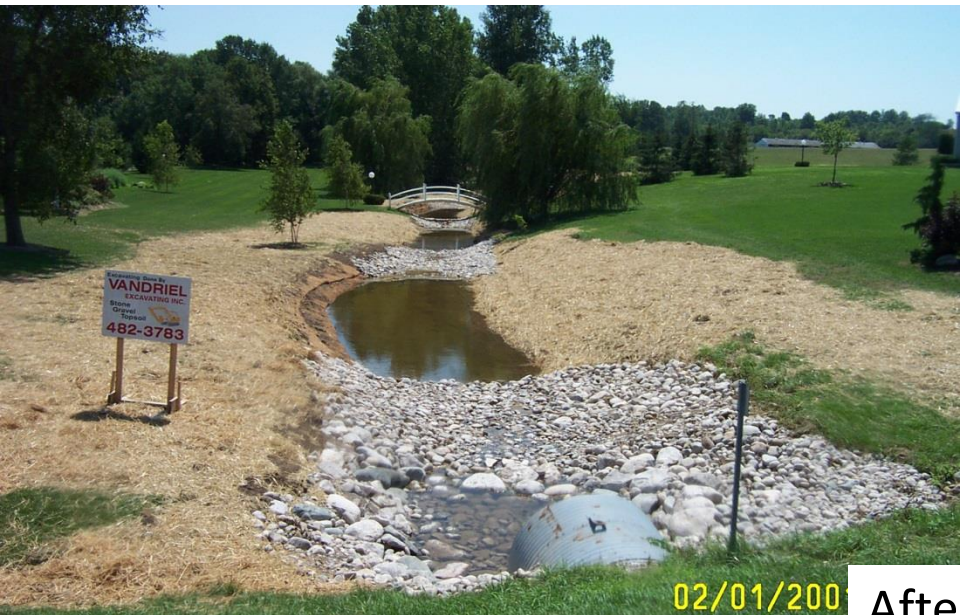


12/01/2006

After



Before



After



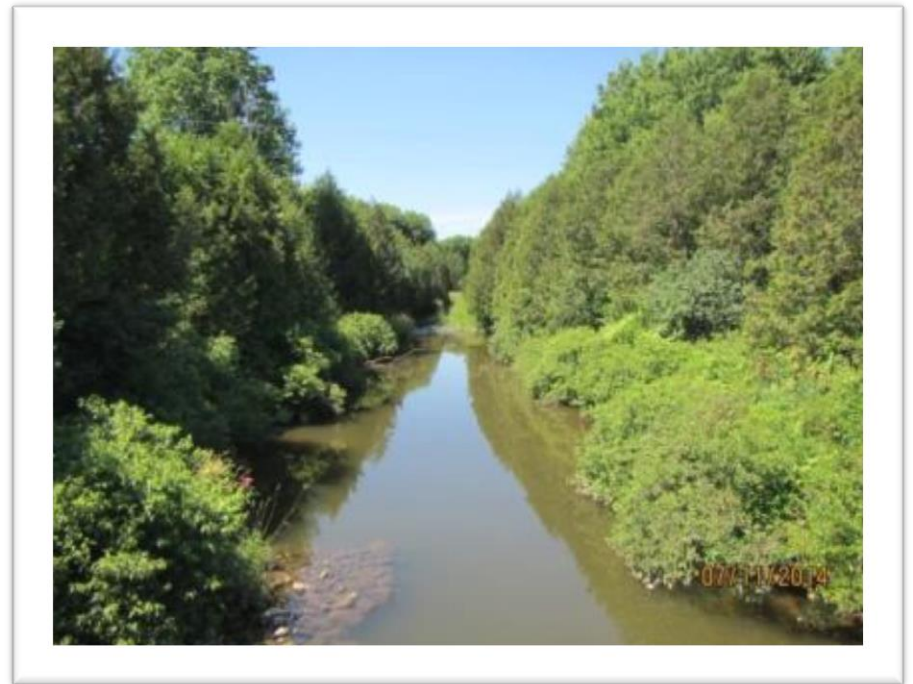
2005

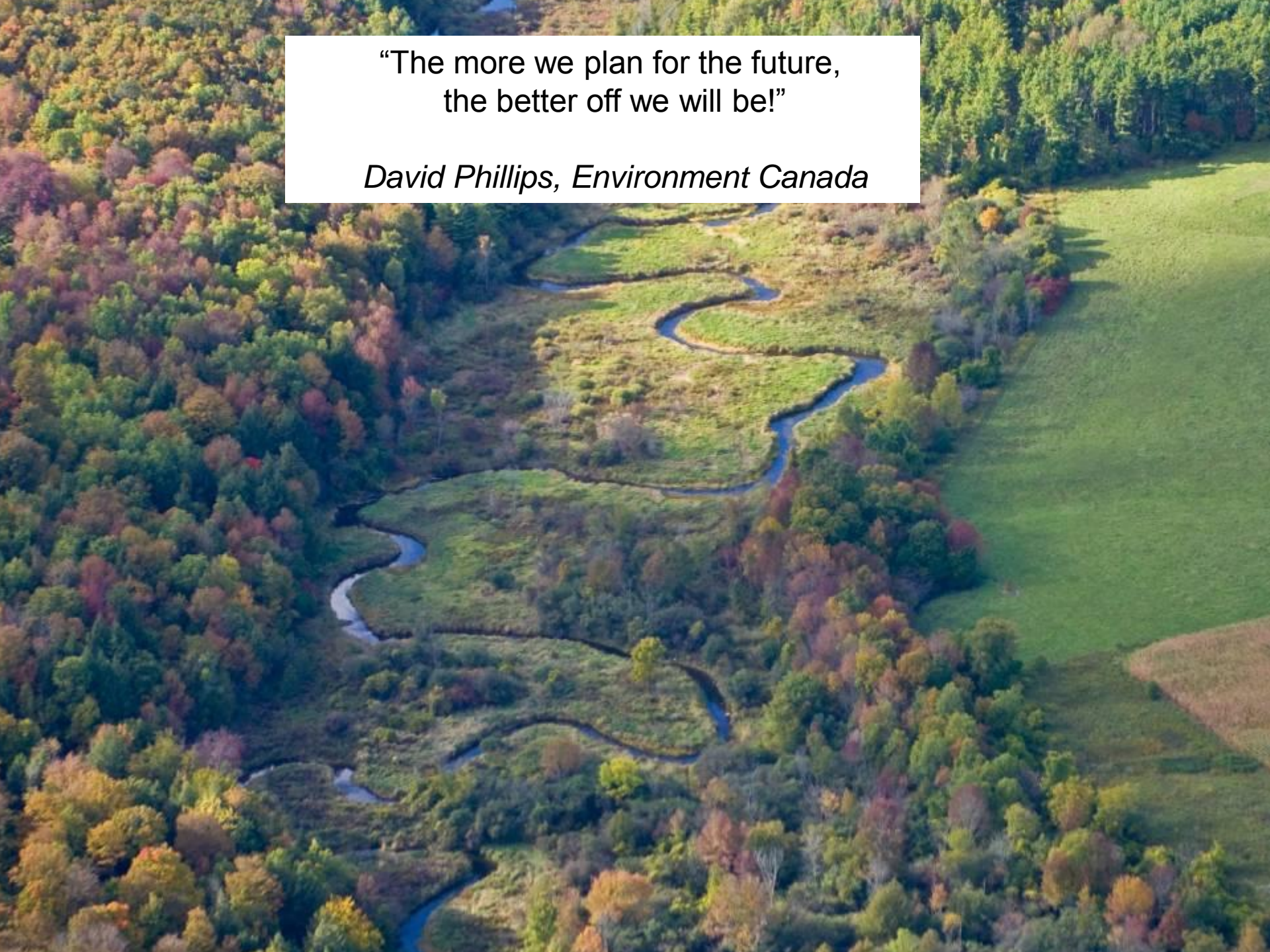


2016

Belgrave Creek Restoration Project

40 Years Later



An aerial photograph showing a river meandering through a landscape. The river is dark blue and winds through a mix of green grassy fields and dense forests. The trees in the forest are in various stages of autumn, showing shades of green, yellow, orange, and red. The overall scene is a beautiful natural landscape.

“The more we plan for the future,
the better off we will be!”

David Phillips, Environment Canada