Ontario Federation of Agriculture

Great Lakes and St. Lawrence Cities Initiative
iance des villes des Grands Lacs et du Saint-Laurent

Thames River

PHOSPHORUS REDUCTION COLLABORATIVE

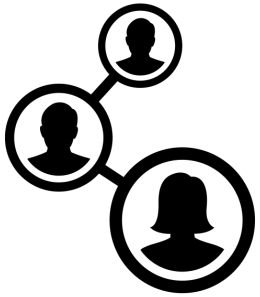
CHARLIE LALONDE

Manager

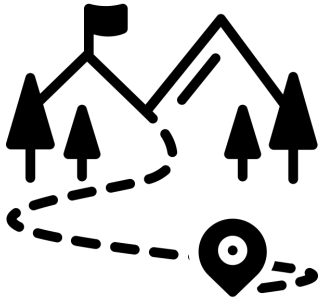
Latornell Conference

November 21st,2019

PURPOSE OF TODAY'S PRESENTATION



Sharing awareness of innovative solutions that may be of interest to your communities



Potential to use technologies at end of project

Hear your ideas and comments

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Nutrients, One of Four GL Priority Areas

- Farm efforts to reduce losses through various programs
  - 4R nutrient stewardship
  - Manure management – timing matters
  - Tillage reduction and residue management
  - Cover crops
  - Precision agriculture
- Drainage as part of a multi-barrier approach through
    - Thames River Phosphorus Reduction Collaborative

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A PARTNERSHIP APPROACH

Cities Initiative & Cities of Chatham-Kent & London

Farm organizations - OFA

Drainage sector

Environmental and conservation groups

First Nation

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A PARTNERSHIP APPROACH Through Drainage Act

Working through Drainage Superintendents for approvals

Drainage sector support

- Funding & Knowledge
- Contractors for each site
- Manufacturers of materials
- Professional Drainage Engineers
- LICO
- London and Chatham Kent Engineering Services
- OMAFRA
- Upper & Lower Thames Conservation Authorities

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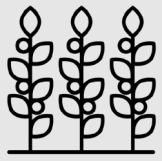
PHOSPHORUS LOSS AND PATHWAYS



Loss from agricultural lands as non-point source

- Low concentrations and millions of acres

Greatest losses in non-growing season

- Snow melt
- Severe rain events
- Type of cover crop matters at freezing

Lack of economic push…losing 0.50 kg/hectare of P worth $1.25

Pathways from Agriculture

- Surface to ditches and municipal drains…erosion
- Field tile systems to municipal drains
- Direct inlets link surface to tiles
- Soil type matters

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TECHNOLOGIES WITH OPPORTUNITIES

1

Pumping water into treatment systems

a) Muddy River at London site – Electolysis of lava rock to release binding metals – recovery after flocculation

b) Waterloo Biofilter at Chatham-Kent Pump Station – Electrolysis, Digestion and P recovery

2

Intercept field tile waters with sorption materials

a) GAPS silt sock at Oxford site – binds surface water P for reuse
   - Two designs – Blind inlets and hickenbottoms

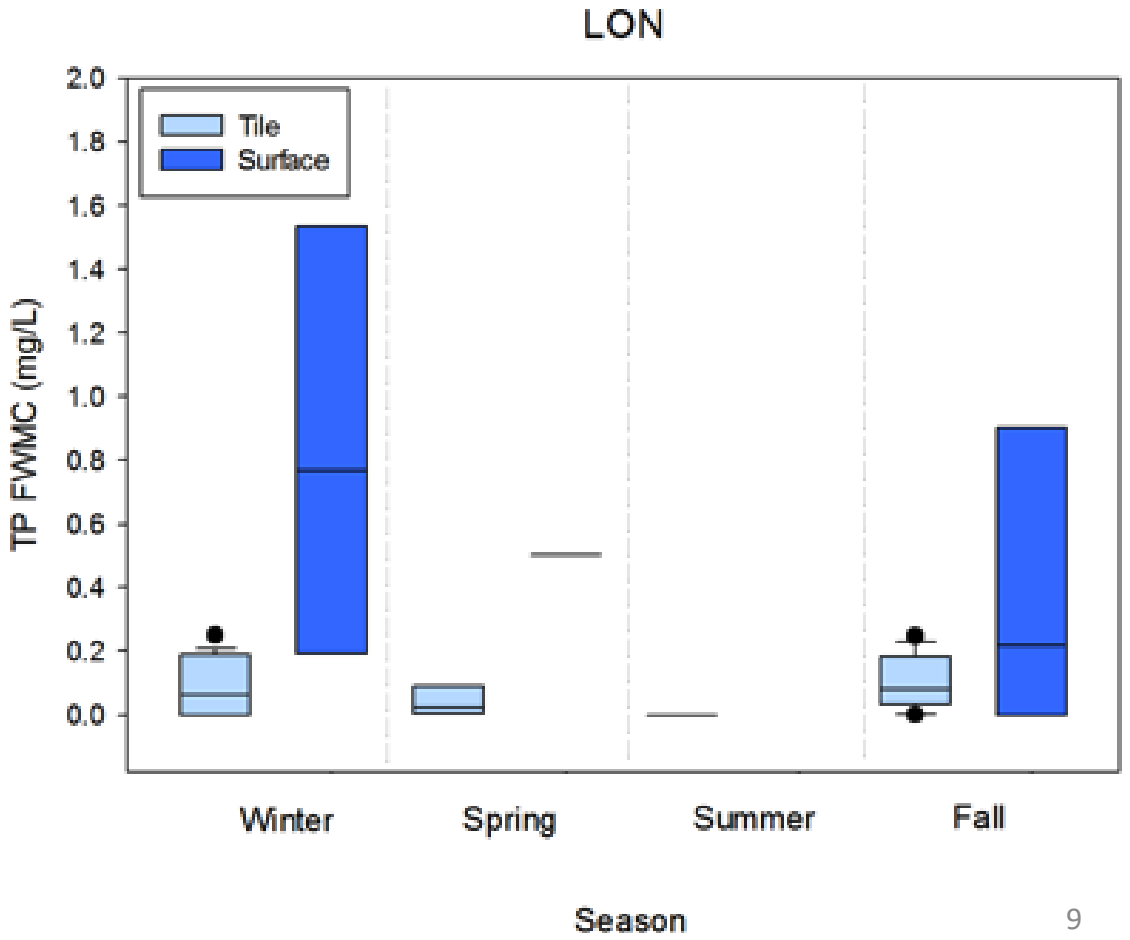
b) ESSRE (Pa) filter tank on Chippewa First Nation Lands – binds P in underground drains
   - Binding agents from Meta Materia in Ohio and AB Tech & Biochar Now both in Colorado

c) UTRCA/Blue Water Pipe field tile design on farms – slag (Fe) capsule to bind Phosphorus

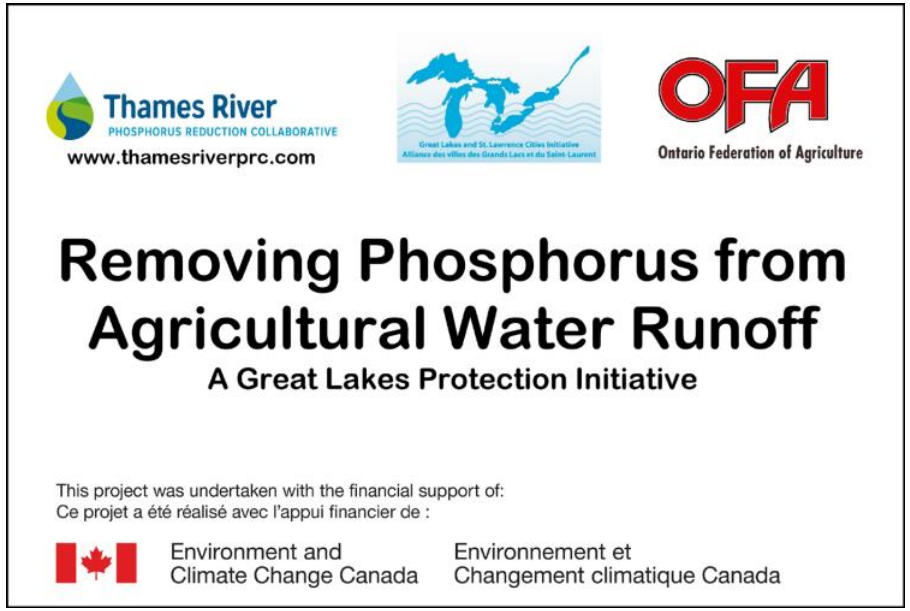
d) LTVCA field tile system in Chatham Kent – binds tile water P with a commercial product

Field Tile and Surface Runoff Sites

Next Phase – Monitoring and Results - 2020



Thamesriverprc.com for more information



CANADIAN AGRICULTURAL PARTNERSHIP

AAC agricultural adaptation council

Ontario

Canada