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# **Erosion and Sediment Control Study: Lake Simcoe Watershed**

**Commissioned by  
Lake Simcoe Region Conservation Authority**

**Presenters:**

**Tim Krsul, Ministry of Environment and Climate Change**

**Steve Auger, Lake Simcoe Region Conservation Authority**

**Natasha Kone, Golder Associates**

**March 24<sup>th</sup>, 2016**



# **The Study**

**This Erosion and Sediment Control Study for the Lake Simcoe Watershed was:**

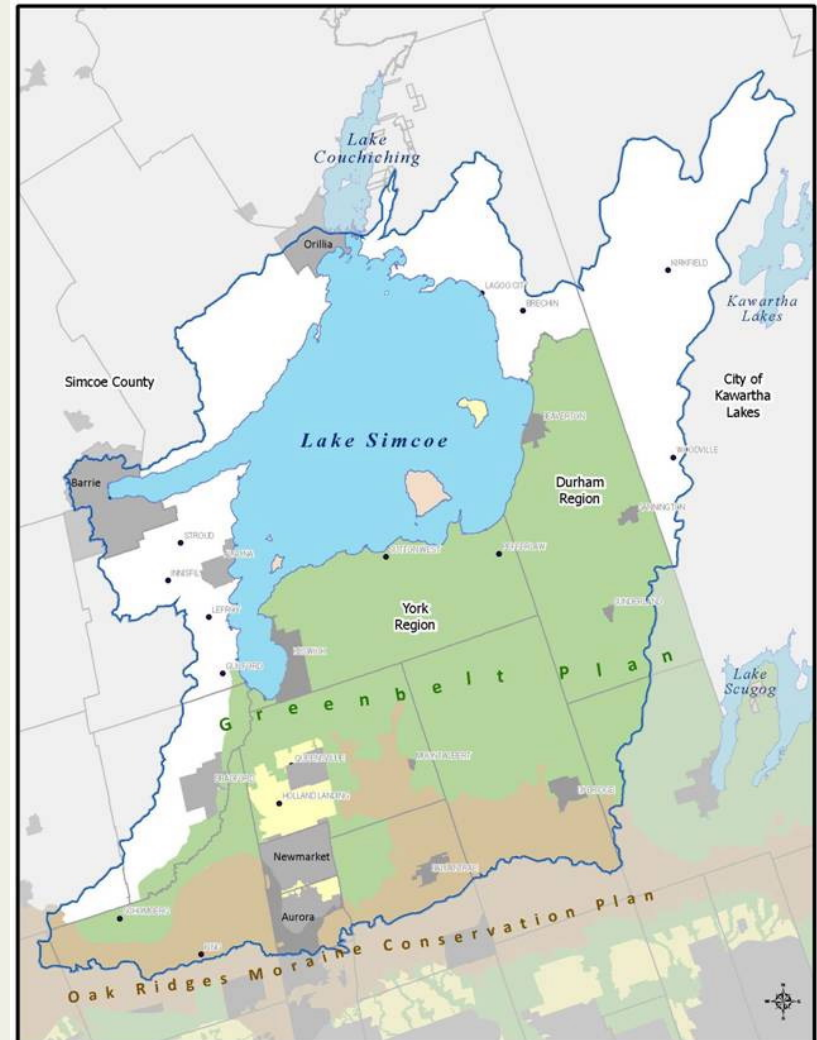
- **Funded by the MOECC**
- **Commissioned by the LSRCA**
- **Implemented by Golder Associates**



# The Back Story

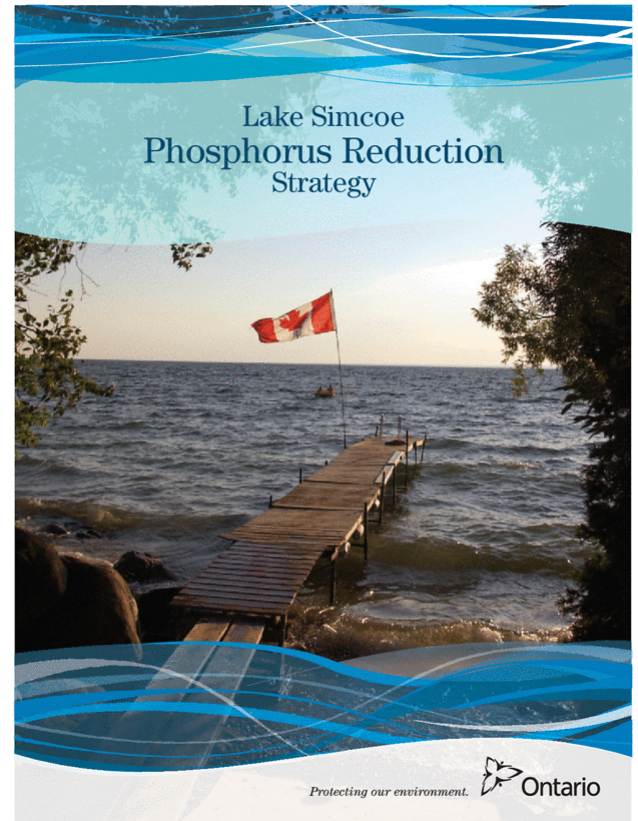
## Lake Simcoe Watershed Context

- Lake Simcoe basin – 18 subwatersheds
- Lake area - 722 sq km
- Watershed area - 2899 sq km
- 22 Municipalities (4 upper tier and 18 lower and single tier)
- Land Use - agricultural, urbanizing
- Six drinking water treatment systems draw from the lake, providing clean water to local communities
- 135% increase in population in 35 years (now 435k)

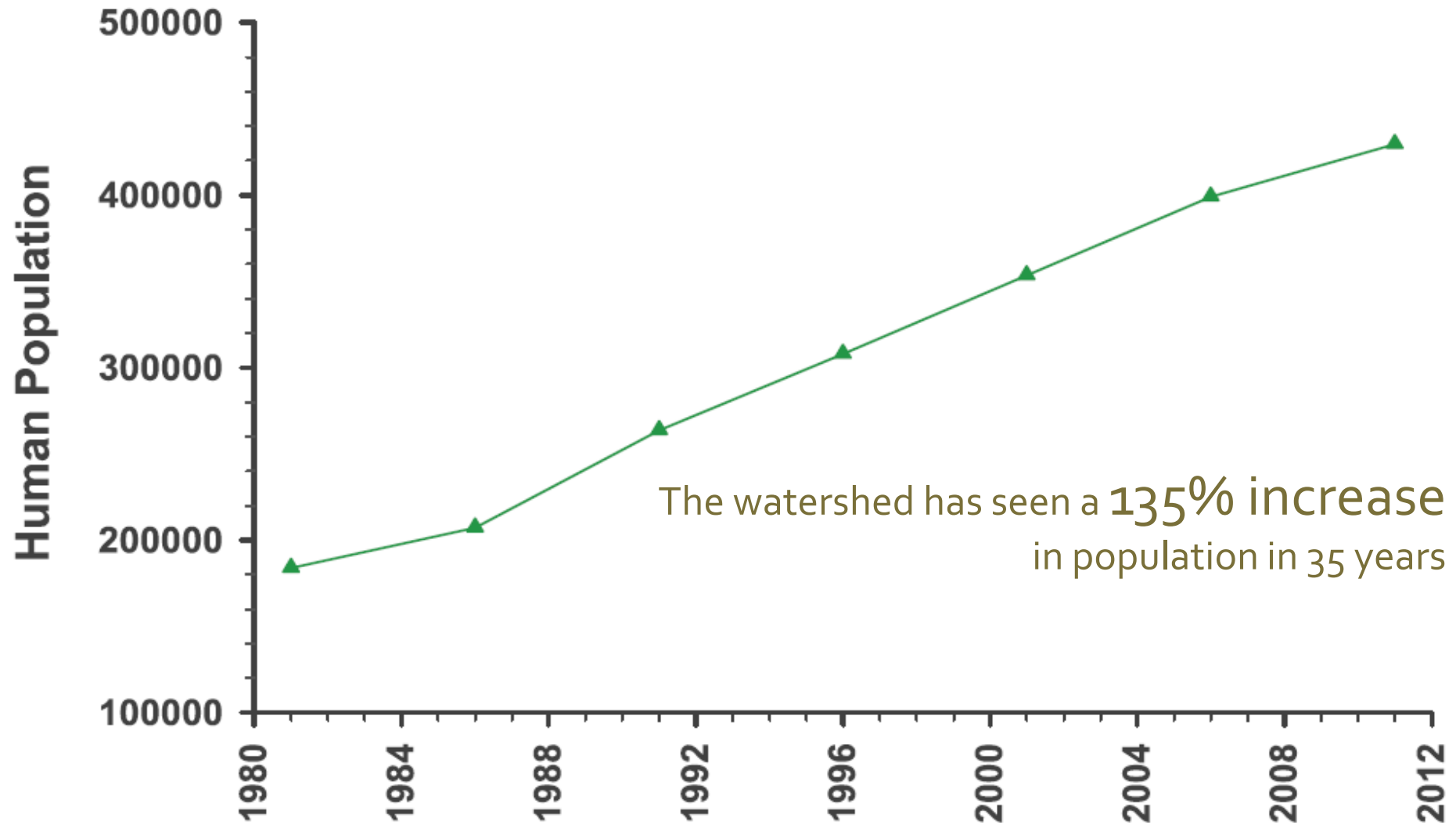


# Phosphorus Reduction Strategy

- Urban runoff and stormwater are key contributors to phosphorus loading (31% or approximately 22 T/yr).
- The Phosphorus Reduction Strategy notes the need for a long-term, sustained approach that:
  - Builds on monitoring and research knowledge
  - Focuses on phosphorus reduction at its source and then works to reduce it in the environment
  - Sets proportional reduction targets
  - Considers cost and benefit
  - Encourages continuous improvement and adaptive management
- Working toward the biggest impact when good practices are adopted by many.

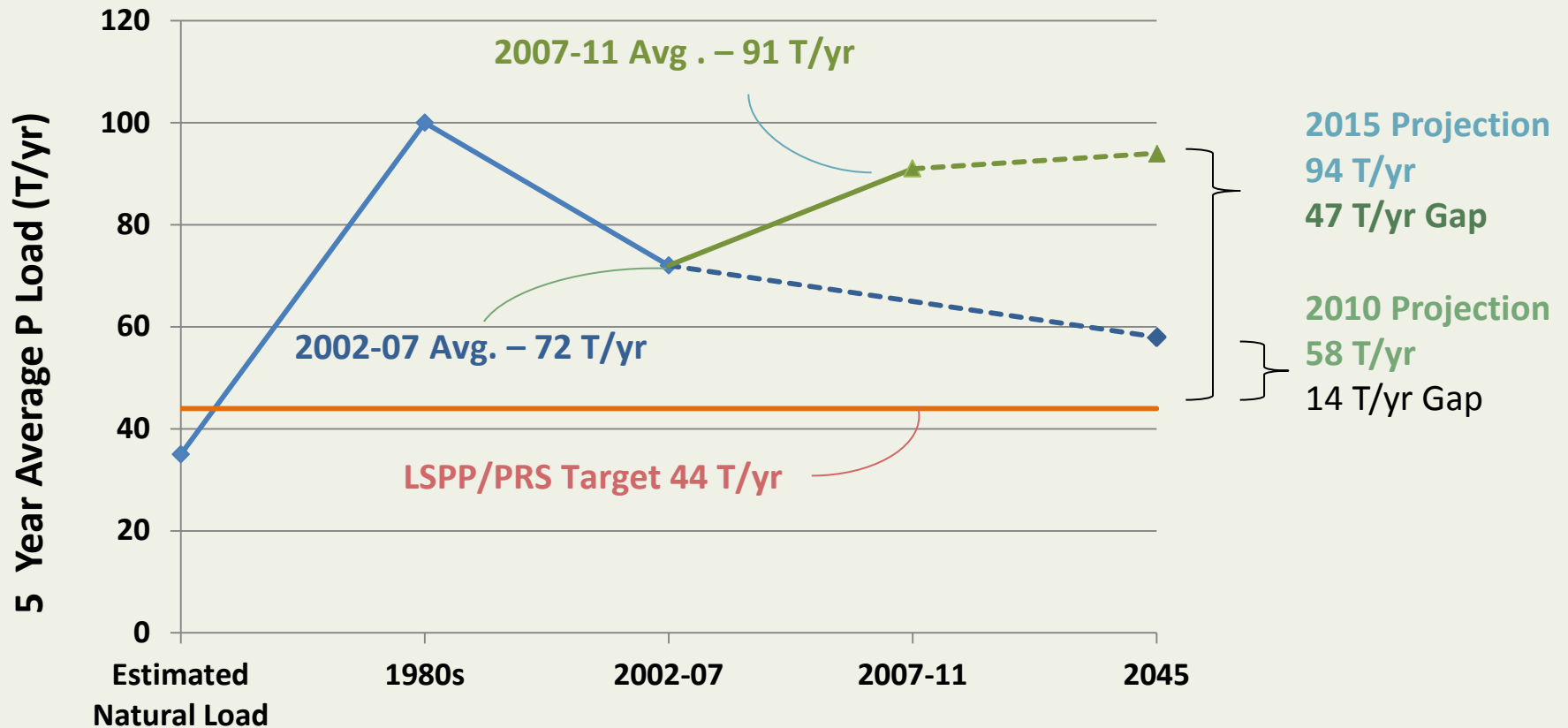


# Human Population in the Lake Simcoe Watershed



# Mind the Gap

## Phosphorous Load to Lake Simcoe



# The Back Story

## LSPP Water Quality

- Policy 4.16, 4.17, 4.20 encourage actions regarding sediment and erosion from construction activities
  - Identifying best management practices,
  - Measures encouraged through site plan control:
    - vegetation removal minimized
    - conveyance controls
    - erosion and sediment controls
    - restore cover
- A challenging policy to implement but important agenda as urban areas are believed to contribute 31% of the load despite making up 7% of watershed.
- To date focus has been on;
  - reviewing measures to reduce water quality impairment.
  - completing sub watershed plans with local implementation.
  - encouraging adoption of best practices
- This research provides some insight into current practices and suggested next steps for reducing phosphorus from urban areas.



# Objectives and Stakeholders

- Identify factors that Drive or Deter Adoption of E&SC Measures
  - E&SC Legislation, Implementation, Maintenance, Monitoring, Enforcement, Training
- 30 Stakeholder Interviews: October to December 2015
  - 11 municipalities, 9 Industry,
  - 4 Government Agencies,
  - 2 Conservation Authorities,
  - 2 First Nations, 2 Academics
- Outcomes of the Study include:
  - Refine Guidelines, develop more consistent application and inspection of Standards (e.g., OPSDs).
  - Support better resourcing for Inspection and Enforcement along with justification for more training and certification.



Summary of Selected Themes in Legislation, Guidance Documents and Plans					
Themes	Site Alteration	E&SC Plan Required	Fill Importation	Surface Water	Implementation
Description	Requirements to address changes in hydrologic characteristics	Sediment migration and control	Quality Characteristics	Quality and Quantity monitoring and/or control	Tracking, inspection and enforcement of monitoring or E&SC Plan
Legislation					
DFO Fisheries Act	Implicitly implied	Implicitly implied	No	Implicitly Implied	Yes
EPA	Implicitly implied	Implicitly implied	No	Implicitly Implied	Yes
OWRA	Implicitly implied	Implicitly implied	No	Implicitly Implied	Yes
Planning Act	Yes	Implicitly implied	No	No	No

# Summary of Selected Themes in Legislation, Guidance Documents and Plans - 2

Themes	Site Alteration	E&SC Plan Required	Fill Importation	Surface Water	Implementation
Conservation Authorities Act	Yes	Yes	Yes	Yes	Yes
Clean Water Act	No	No	No	No	No
Lake Simcoe Protection Act	Yes	Yes in LSPP	No	Implicitly implied	No
Lakes and Rivers Improvement Act	Yes	Implicitly implied	No	Yes	Implicitly implied
Nutrient Management Act	No	No	Yes	Yes	Yes (under OWRA)

Summary of Selected Themes in Legislation, Guidance Documents and Plans - 3					
Themes	Site Alteration	E&SC Plan Required	Fill Importation	Surface Water	Implementation
Water Opp and Water Conservation Act	No	No	No	No	No
Safe Drinking Water Act	No	No	No	No	No
Environmental Assessment Act	No	No	No	No	No
Public Lands Act	No	No	Yes	No	No
Endangered Species Act	No	No	No	No	No

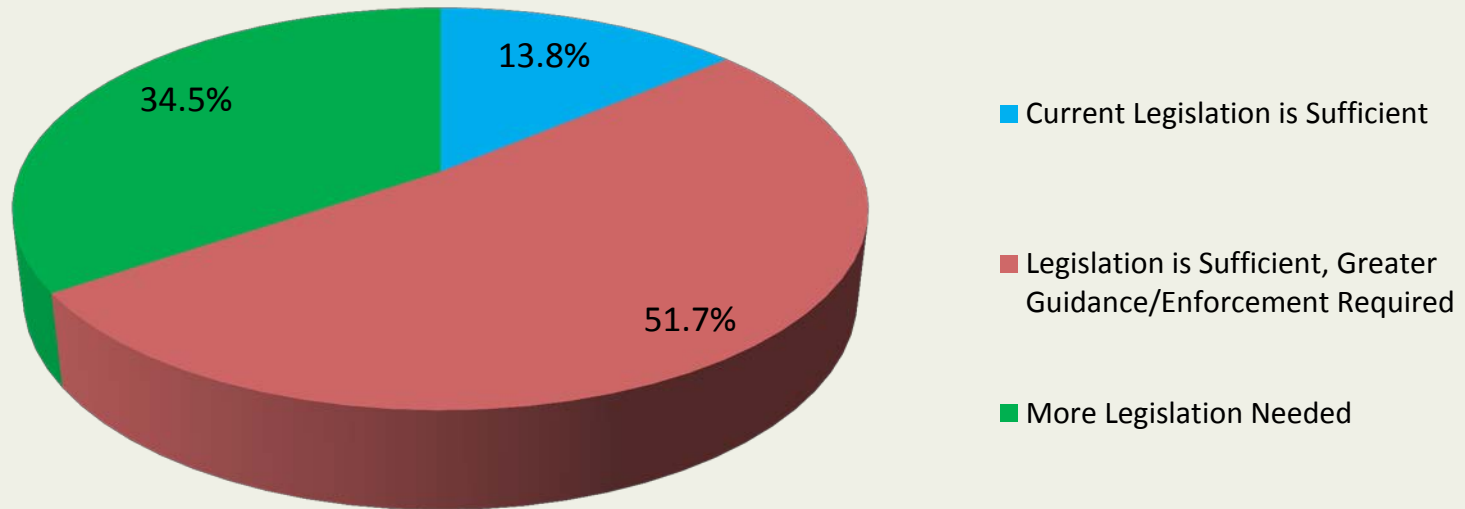
Summary of Selected Themes in Legislation, Guidance Documents and Plans - 4					
Themes	Site Alteration	E&SC Plan Required	Fill Importation	Surface Water	Implementation
Provincial Guidance Documents					
MOECC SWM Manual	Yes	Yes	No	Yes	No
OPS for Roads and Public Works	No	Yes	Yes	No	No
Growth Plan for Greater Golden Horseshoe (2013)	No	No	No	No	No
Greater Golder Horseshoe E&SC Control Guidelines for Urban Construction	Yes	Yes	Yes	Yes	No



Summary of Selected Themes in Legislation, Guidance Documents and Plans - 5					
Themes	Site Alteration	E&SC Plan Required	Fill Importation	Surface Water	Implementation
Regional and Municipal Guidelines					
Lake Simcoe Protection Plan	Yes	Yes	No	Yes	Yes
Lake Simcoe / South-eastern Georgian Bay Clean-Up Fund	No	No	No	No	No
Simcoe County Official Plan	Yes	Yes	No	Yes	No
City of Barrie Official Plan	Yes	Yes	No	Yes	Yes (by-laws)
City of Orillia Official Plan	Yes	Yes	No	Yes	Yes (by-laws)
Town of Aurora Official Plan	Yes	Yes	Yes	Yes	Yes (by-laws)

# Regulatory Framework

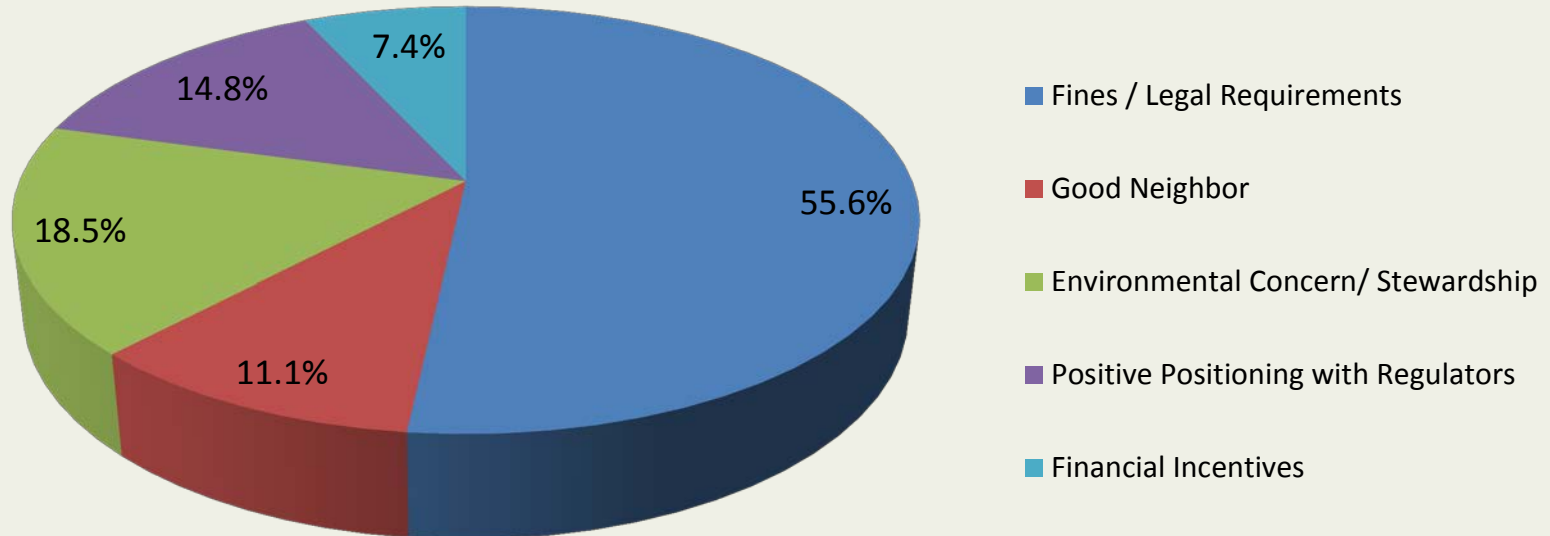
- 65.5% of respondents said that *legislation* is sufficient
- 51.7%, of those said that more *guidance* is needed for implementation



- 34.5% said more robust legislation is needed.
  - 'clear regulatory framework for the entire system'.
- A Provincial Based Policy / Performance Standard
  - Transparent Rules and Decision Making
  - Based on Science and Provided Metrics
- Respondents want clarity on who and how it is being enforced

# Drivers

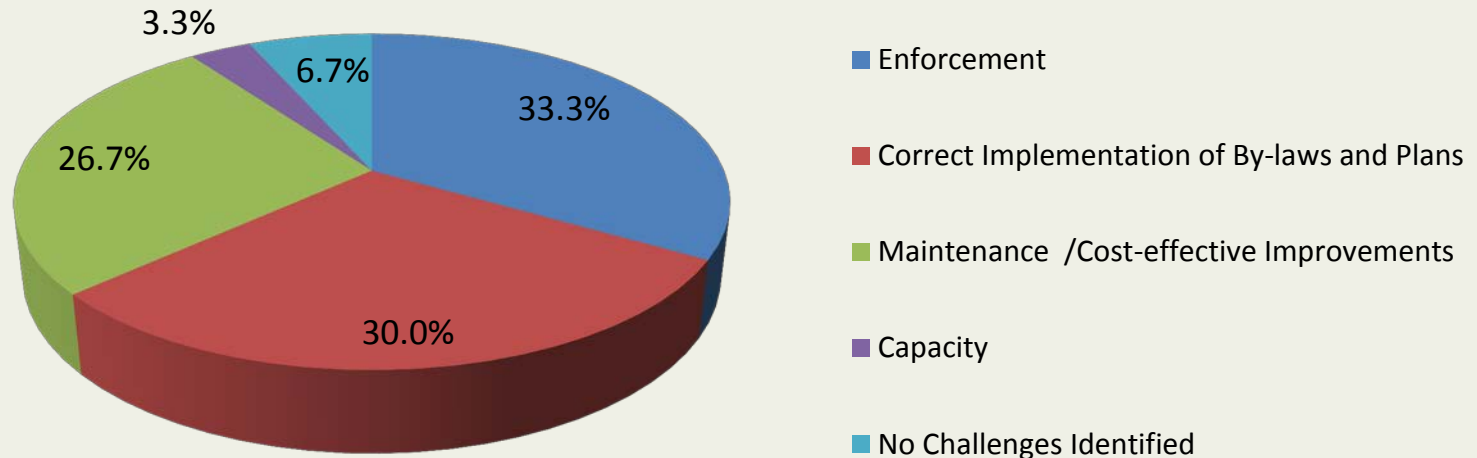
- Fines and adherence to legal requirements represented the greatest ‘pull factors’ – 55.6%
- Environmental Stewardship was second most common answer (First Nations 100%, Municipalities 27%)



- Most common answer for industry (43%) was: **Having A Good Reputation With Regulators**
  - Length of time for approvals, permitting new projects, avoidance of fines, trust with regulators
- Laws and Fines need to be implemented – Increased Enforcement
- Non compliance with implementation standards is more costly in the long run

# Challenges

- **Enforcement (33.3%)**
- Stakeholder Groups: Federal and Provincial (71%), Academics (100%), Municipalities (33%)
  - Lack of Inspection and therefore challenge to get compliance without enforcement

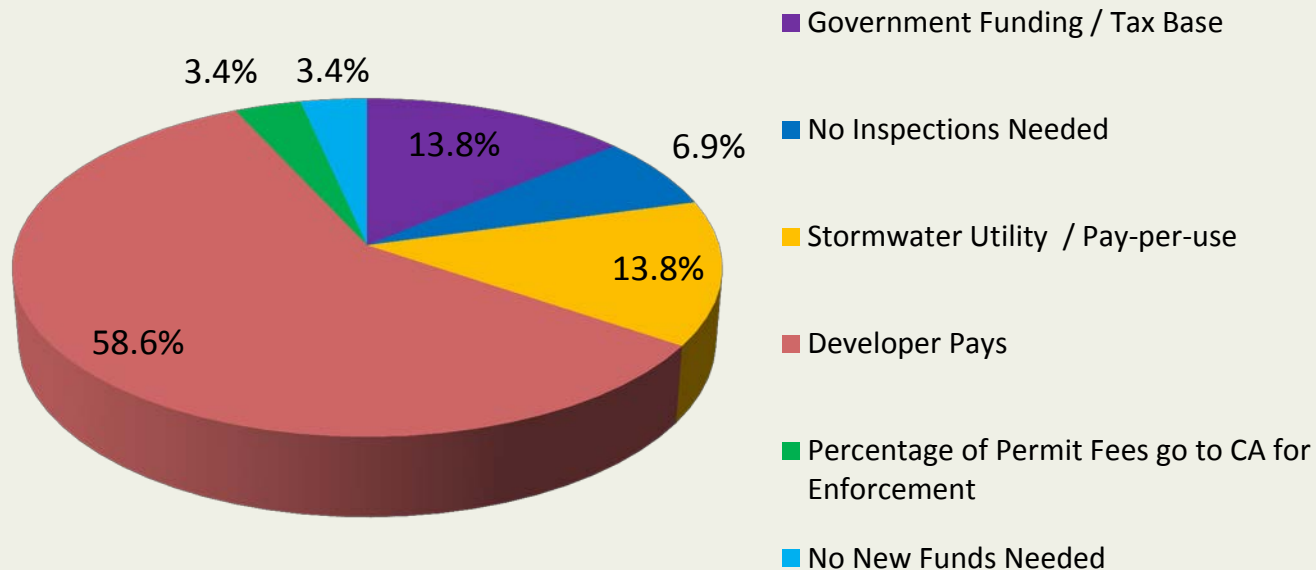


- **Correct Implementation of Requirements (30 %)**
  - Stakeholder Groups: Municipal (33%), Industry (38%)
  - Education and Training is one of the most important components to increasing E&SC performance.
  - 68% of all respondents have had some sort of E&SC training. 67% of all training is CISEC
- **Maintenance / Cost Effective Improvements (26.7%)**
  - Stakeholder Groups: Municipalities (40%), Industry (38%)
  - Developers and their Contractors have to be on board.
  - E&SC plans have to be flexible / dynamic
    - Increased communication between Regulators / CA and Contractors

# How to Pay for Enforcement

With concerns around the lack of enforcement voiced by respondents, a key issue to resolve is the identification of practical and acceptable strategies to increase funding for inspections and enforcement.

- 58.6% note that 'Development should pay for Development' (permit fees, securities, letters of credit)
- Some larger municipalities hold securities for 100% of E&SC costs, including cost of enforcement





# How to Pay for Enforcement (cont)

- Municipalities who have better processes of linking permit fees (and other money) to required level of effort for inspection have less resourcing problems;
- Prefer standard permit fees for municipalities within a region, to limit trade off between fees and attracting development
- Potential for a portion of municipal permit fees to go to Conservation Authority to support their permitting and enforcement capabilities
- Some Regional Municipalities are funding Conservation Authorities so that they have dedicated people to work on their capital projects
- Some municipalities are considering implementing a Stormwater Utility fee (similar garbage collection and other municipal service fees)

# Select Themes from Stakeholder Groups

- Federal and Provincial Agencies
  - Have limited enforcement and permitting capabilities
  - Narrow mandate for E&SC enforcement action (discharge of deleterious substances impairing fish habitat (DFO), known red side dace habitat (MNRF))
  
- Regional Municipalities / Municipalities
  - Are largely responsible for enforcement in their communities
  - Capacity is correlated to the size of their constituency (tax base)
  - Small municipalities have small constituencies, but large land base. This leads to challenges with developing sufficient policies and implementing them.

# Research Findings and Recommendations from Federal and Provincial Agencies

- Different levels of government may not have a clear understanding of who is responsible for approval, inspection and enforcement of E&SC plans, particularly when Projects operate in multiple jurisdictions.



- It is recommended that more specific guidance should be provided by the Provincial government on how E&SC performance should be approved, inspected and enforced by all relevant levels of government (Provincial Ministries, Regional Municipalities / Municipalities, CAs).

# Research Findings and Recommendations from Regional Municipalities / Municipalities

- Institutionalize processes for increasing the capacity of smaller municipalities through collaboration with provincial agencies, regional municipalities, larger neighbouring municipalities or CAs, as appropriate.



Photo Source: Wikipedia

# Select Themes from Stakeholder Groups

- Conservation Authorities (CA)
  - Large Municipalities require CA support for capital and private development projects in designated areas only.
  - Small Municipalities require additional support from CA in identifying controls, monitoring and enforcement within and outside designated areas.
  - Have a large role in education and enabling cooperation between stakeholders.



# Research Findings and Recommendations from Conservation Authorities

- The LSRCAs should look for mechanisms to increase their capacity to support member municipalities in the review, approval, inspection and enforcement of E&SC performance within and outside designated areas. This will include identifying ways to raise financial resources to support member municipalities.



Photo Sources: L- Golder, R - STEP

# Select Themes from Stakeholder Groups

- Property Developers
  - Support clear requirements, and a ‘one window’ approach to regulators
  - Consultants noted that greater oversight by CA and Municipalities in enforcement would be beneficial.
  - Impetus for their clients to give high priority to E&SC, and internalize requirements into construction costs.

# Research Findings and Recommendations from Property Developers

- Developers should consider identifying BMPs in E&SC management in their internal corporate policies so that similar standards are applied at all their projects, irrespective of any differences in by-laws or legislative requirements in the different jurisdictions where they operate.



Photos Source: LSRCA

- Developers should include the costs of implementing E&SC measures (including contingency money for any unforeseen remediation activities that are required) into their construction contracts. Consideration should be given to using E&SC performance of construction contractors as a criterion for awarding contracts.

# Select Themes From Stakeholder Groups

- Agriculturalists
  - E&SC is important because land and soil quality is important for good agricultural yields
  - Need funding / support for capacity development that is targeted to them to increase the E&SC management – (high uptake of OMAFRA's growing forward 1 and 2 programs)
  - Rules for site alteration, ditching etc.. should be targeted to the scale of agricultural developments and should not have onerous requirements (paperwork, engineering studies)

# Research Findings and Recommendations from Agriculturalists

- Site alteration requirements for farmers should be tailored to the scope and scale of these activities, and the abilities of farmers to implement the requirements.



Photos Source: LSRCA

- Programs such as the HMDS JMSB should be developed to institutionalize E&SC management in agricultural regions, when these projects make sense and are supported by local farmers.



# Select Themes From Stakeholder Groups

- First Nations
  - Priority is environmental stewardship and community sustainability
  - Committed to “doing it right”.
  - Challenges include: capacity and awareness,
  - In favor of development, however need to understand the E&SC requirements and engage the right skills.
    - Consultants, federal and provincial programs, grant initiatives

# Research Findings and Recommendations from First Nations

- Provincial agencies and CAs should continue to work with First Nations to increase their awareness of E&SC management, support initiatives that promote improved E&SC performance in their communities and support First Nations commitment to environmental stewardship of the Lake Simcoe watershed.



Photo Source: LSRCA

# Additional Research Findings and Recommendations

## Training

- Continue to ensure availability of CISEC and other training opportunities within the Lake Simcoe watershed. Develop training or integrate training around the rules and regulations that must be adhered to, in Lake Simcoe context, for effective E&SC performance.



Photos Source: LSRCA

# Additional Research Findings and Recommendations

## Self-Assessment and Declaration by a Qualified Professional

- Develop a profile of what a Qualified Professional in E&SC should be (i.e., educational, professional designation and experiential criteria) and work with regulators to ensure that there are standardized expectations of who can provide declarations of E&SC performance for industry-led monitoring and reporting processes.

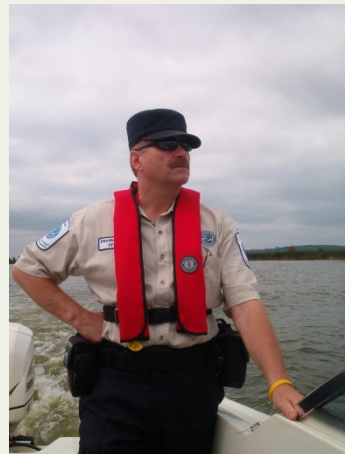


Photo Source: LSRCA



# Additional Research Findings and Recommendations

## Use of Technology recommended

- Undertake an inventory of all technology currently being used for E&SC management and identify technologies that may support improvement in E&SC performance in the Lake Simcoe watershed; and



Photo Sources: L- Golder, R - Raken

- Continue to showcase and highlight different technologies, and their applications at the LSRCA Stormwater Management Technical Working Group Meetings to educate stakeholders and identify options that can be adopted within the Lake Simcoe watershed.

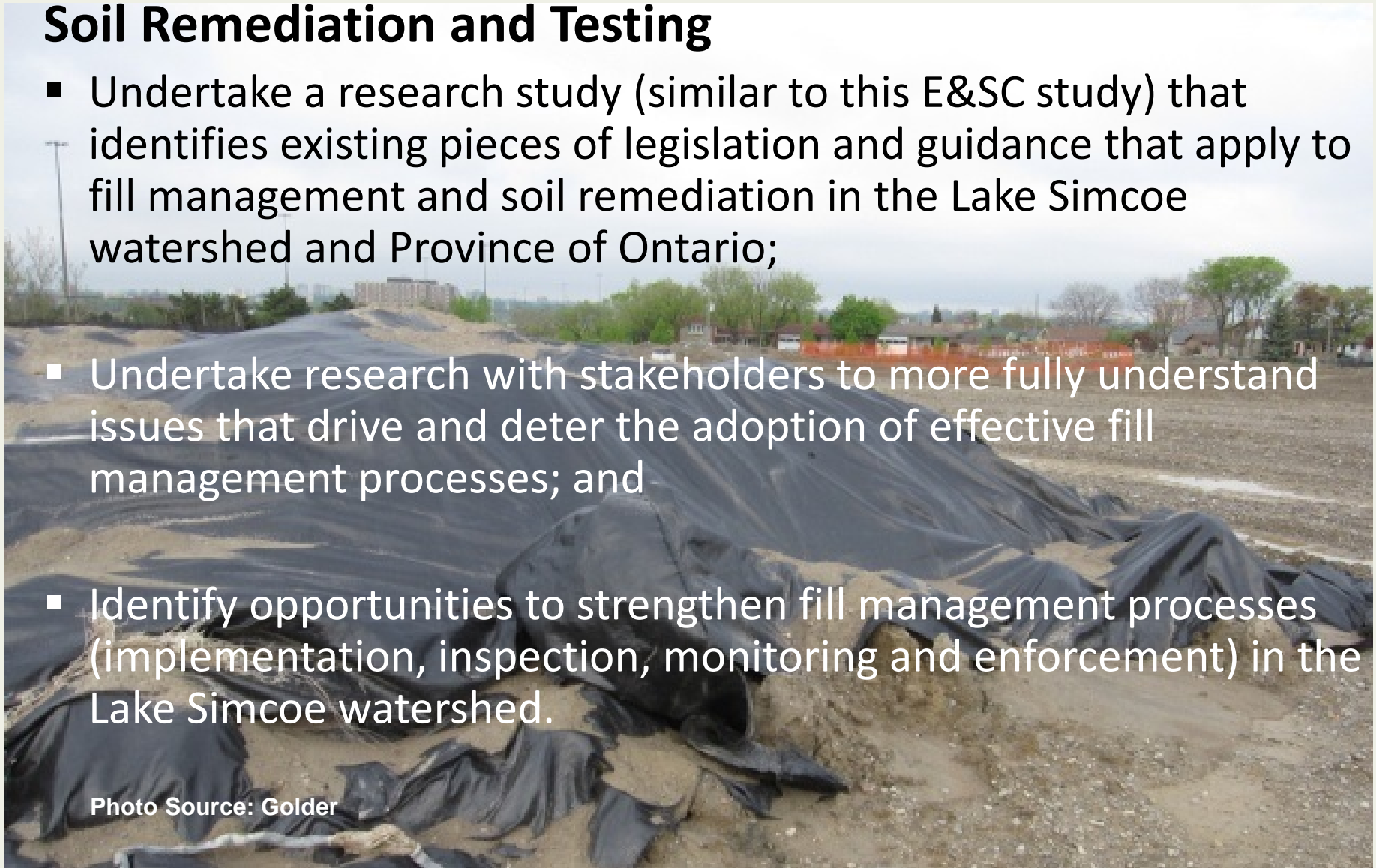


# Additional Research Findings and Recommendations

## Soil Remediation and Testing

- Undertake a research study (similar to this E&SC study) that identifies existing pieces of legislation and guidance that apply to fill management and soil remediation in the Lake Simcoe watershed and Province of Ontario;
- Undertake research with stakeholders to more fully understand issues that drive and deter the adoption of effective fill management processes; and
- Identify opportunities to strengthen fill management processes (implementation, inspection, monitoring and enforcement) in the Lake Simcoe watershed.

Photo Source: Golder



# Additional Research Findings and Recommendations

## Consolidated Erosion and Sediment Control Standards

- Identify the appropriate level of government, or government agency, to develop an E&SC standard. The majority of respondents noted that this could be the Provincial Government or Conservation Authority
- Develop a clear E&SC standard in consideration of all existing legislation, by-laws and guidance documents. This standard should provide technical direction based on scientific knowledge and metrics.
- The E&SC standard should be based on sector, rather than jurisdiction. That is, subdivision developers should face similar requirements irrespective of the municipality in which they operate. This should also apply for other sectors (i.e., agriculture, aggregates, linear infrastructure).

Photo Source: Golder



# Conclusions

Continued funding and other resource opportunities need to be realized through support and leadership from the MOECC and LSRCa to move the recommendations from this study forward, to support meeting LSPP, and to develop policies that support better E&SC practice in the following key areas:

- Training / Professional Accreditation;
- Resourcing Implementation, Monitoring, Inspection and Enforcement; and
- E&SC Standardization.

Photo Source: LSRCa



# Acknowledgements

- LSRCA Stormwater Management Technical Working Group
- Lake Simcoe Region First Nations
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(Kaitlyn Read, Brian Burr, Ben Longstaff, Jessica Burns, Bill Thompson, Rob Baldwin & Tom Hogenbirk)

Photo Source: Golder



# Thank-you, Questions?

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# -Thank-you, Questions?

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