ECS Lunch and Learn

Supporting internal knowledge transfer within TRCA

December 15, 2021

Toronto and Region Conservation Authority

Biodiversity Offsetting 101

Lunch and Learn

Presented by: Noah Gaetz, Senior Manager
Ecosystem and Climate Science

Dec 15th, 2021

Toronto and Region Conservation Authority

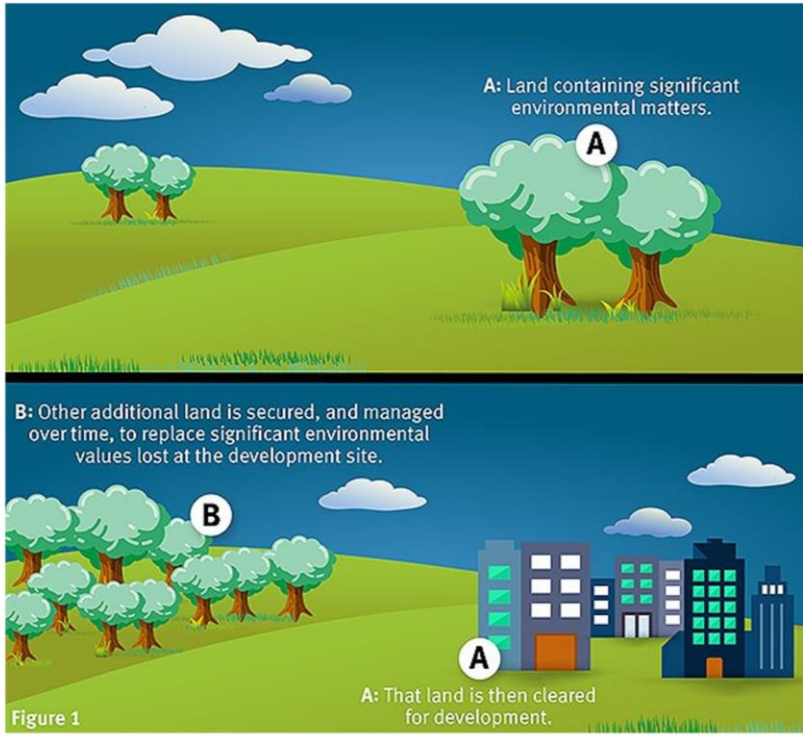
Discussion Outline

1. Defining Biodiversity Offsetting
2. The need for Biodiversity Offsetting
3. Challenges of Biodiversity Offsetting
4. Principles of Biodiversity Offsetting
5. Elements of Biodiversity Offsetting

Defining Biodiversity Offsetting

Several definitions – all basically say the same thing….

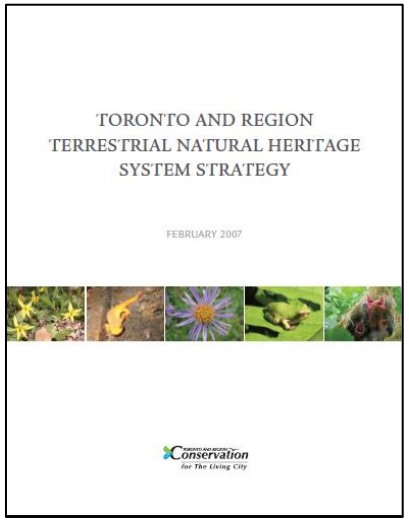
- Biodiversity offsetting entails a **trade-off**: accepting harm on the condition that it is counterbalanced by beneficial actions so that in the end nature is no worse off – or ideally even better off - *Ontario Nature*
- Biodiversity offsets are measurable conservation outcomes designed to compensate for **adverse and unavoidable impacts** of projects, in addition to prevention and mitigation measures already implemented - *International Union for the Conservation of Nature*
- Ecosystem offsetting is an approach **to offset the adverse impacts** of land use change on the natural heritage system through **the creation or restoration of natural features** – *Credit Valley Conservation*



Photo/image credit: Queensland Government

The need for Biodiversity Offsetting

- Much of Southern Ontario has limited natural cover – less than what is required for healthy and sustainable natural heritage systems.
  - TRCA Natural Cover: 24% (including cultural meadows)
- Several Municipalities and Conservation Authorities are working to increase natural cover to improve biodiversity and ecological function.
- Stress is placed on natural heritage systems as landscapes are developed.
- Despite strong protective policy, ecological impacts are unavoidable.



The need for Biodiversity Offsetting

- Continuously working to eliminate these losses
  - Strengthening protective policy
  - Advocating for improved community design
  - Communicating the importance of natural systems

- In addition, biodiversity offsetting has been used to help replace lost ecosystem functions and services.

Challenges of Biodiversity Offsetting

- Ecosystems are very complex and difficult to replicate
- Many ecosystems require a long time to mature and reestablish
- Newly restored ecosystems can be more susceptible to stresses such as invasive species and climate change
- Limited space to accommodate required restoration in proximity to where the impact occurred
- Lack of clear policy and direction
- Working within the linear land use planning process makes it difficult to address unexpected outcomes

Principles of Biodiversity Offsetting

Establishing a set of principles helps to ensure biodiversity offsetting is as effective as possible.

The following principles are adapted from several biodiversity offsetting guidance documents:

- *Biodiversity Offsetting Issues Brief, 2016 International Union for the Conservation of Nature*
- *Biodiversity Offsetting in Ontario: Issues, accomplishments and future directions, 2016, Ontario Nature*
- *The BBOP Principles on Biodiversity Offsetting, Business and Biodiversity Offsetting Programme*
- *Biodiversity Offsets: A User Guide, 2016, World Bank Group*
- *Ecosystem Offsetting Guidelines, 2016, Credit Valley Conservation*
- *Ecological Offsetting Policy. Lake Simcoe Conservation Authority*
- *Guideline for Determining Ecosystem Compensation, 2018, Toronto and Region Conservation Authority*

Principles of Biodiversity Offsetting

Principle 1: Strong and clear legislation, policy, and direction must be in place to guide offsetting decisions and actions

This should include:

- Setting limits to offsetting, establishing which ecosystems should not be impacted
- Outlining the process for how to determine offset requirements, the importance of engaging communities in decision making, the need for monitoring and adaptive measures

Principle 2: Science and traditional knowledge should be used to guide decisions, design, and implementation of biodiversity offsets

Principles of Biodiversity Offsetting

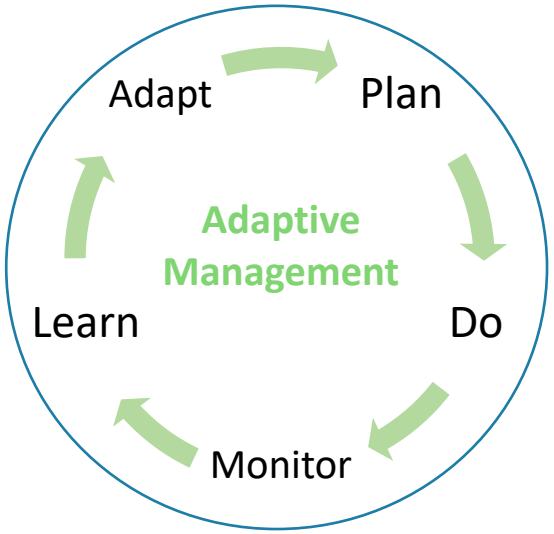
Principle 3: The biodiversity offsetting process should be equitable and inclusive, ensuring all affected parties have an opportunity to participate

Principle 4: The offsetting process should be transparent with information and decisions being openly communicated.

Principles of Biodiversity Offsetting

Principle 5: An adaptive management approach should be used including monitoring, tracking, and evaluation to help ensure offsetting is achieving its goals and to help address uncertainty in outcomes.

This can be challenging in a linear planning process

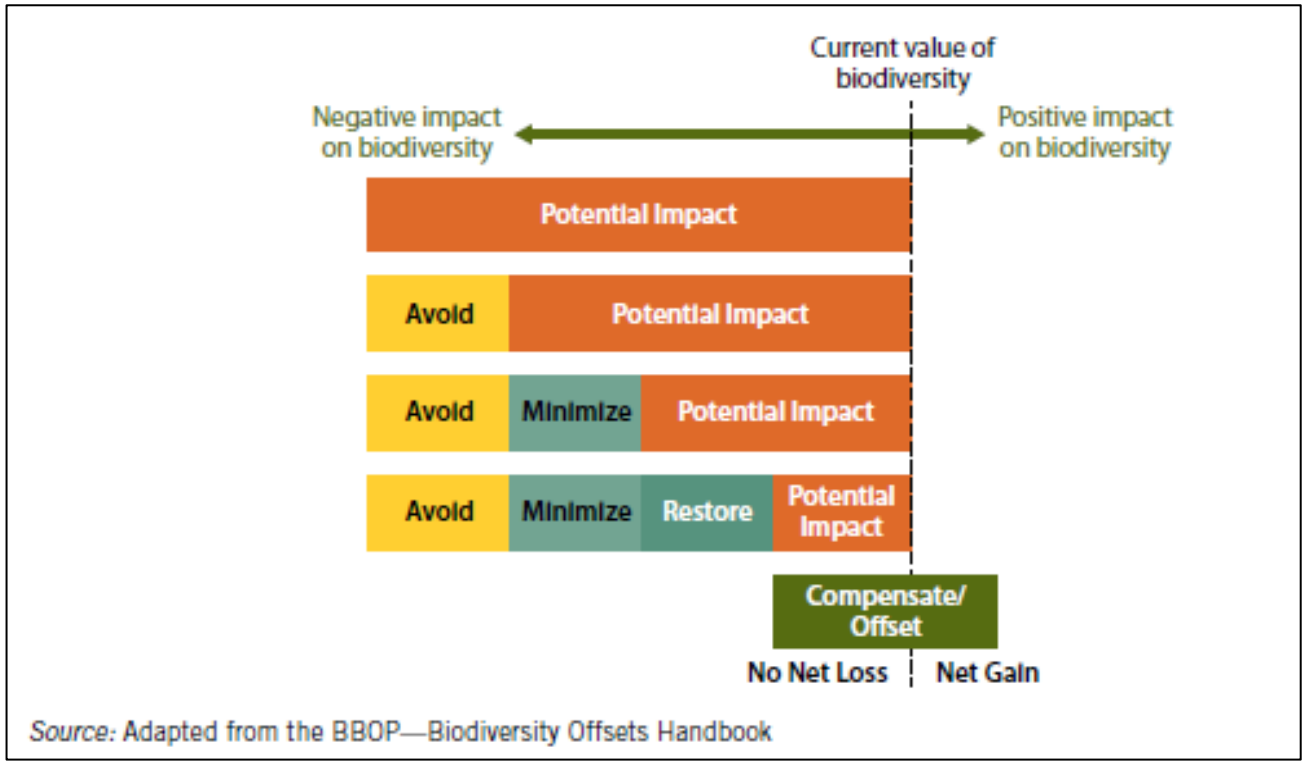


Principles of Biodiversity Offsetting

Principle 6: The Mitigation Hierarchy should be followed to minimize adverse impacts and offsetting should only be considered when all other opportunities to eliminate or minimize impacts have been exhausted.

Mitigation Hierarchy:

A decision-making framework involving a sequence of steps starting with the avoidance of impacts, followed by the minimization of inevitable impacts, on-site restoration and finally, where feasible and necessary, biodiversity offsets. - IUCN



Source: Adapted from the BBOP—Biodiversity Offsets Handbook

Principles of Biodiversity Offsetting

Principle 7: Offsetting activities should ideally achieve a net gain or at least no net loss

Net gain or no net loss of what?

- Ecosystem function?
- Ecosystem size?
- Over what time frame?

Ensuring additionality is critical

"For any offset to be real, it must be additional. In other words, biodiversity offsets must deliver conservation gains beyond those that would be achieved by ongoing or planned activities that are not part of the offset."

Source: Biodiversity Offsets: A User Guide, World Bank Group, 2016

Principles of Biodiversity Offsetting

Principle 8: In most instances offsetting actions should strive to reestablish the same biodiversity values as were lost (Like for Like)

Consider the size, structure, and location of the ecosystem, the function of the ecosystem, cultural values, and other ecosystem services important to the communities

Watershed planning and other strategic plans can help to guide offsetting actions when different ecosystem restoration is being contemplated – remove a forest, restore a wetland

Principles of Biodiversity Offsetting

Principle 9: Offsetting actions should be directed to restoring and securing ecosystems in proximity to where the impact occurred

Principle 10: Offsetting actions must be completed promptly (ideally before the impact) and last as long as the impact (typically in perpetuity)

TRCA's Guideline:

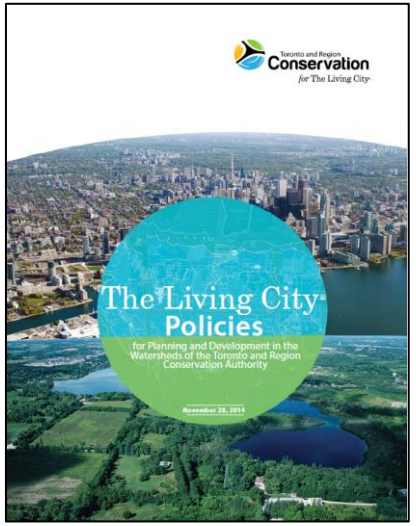
TRCA Guideline for Determining Ecosystem Compensation

Elements of Biodiversity Offsetting

1. Determining **when** offsetting is appropriate

- Guided by municipal, provincial, federal policy
- Situated within the established land use and infrastructure planning processes
- Has been a gap in Ontario for several years but is starting to be addressed

Guided by TRCA Living City Policies



Elements of Biodiversity Offsetting

2. Determining offsetting requirements

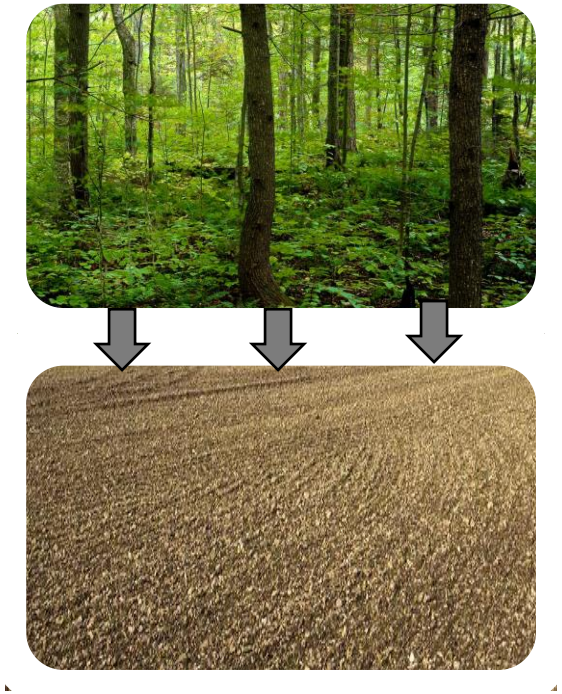
Two components addressed when establishing new ecosystem to offset impacts

The structure of the ecosystem

- Type of structure (forest, wetland)
- Quality of the ecosystem impacted
- Time to reestablish lost functions (lag time)
- Replacement Ratios or credits

The land base required to support the ecosystem

- Located in proximity to the impact
- Can be very challenging in an urban landscape



Guided by TRCA Guideline for Determining Ecosystem Compensation

Elements of Biodiversity Offsetting

3. Implementing offsetting actions

There are several different ways to execute offsets:

- On site versus Off site
- Proponent-led implementation versus Agency-led implementation
- Cash-in-lieu
  - Funds provided to an agency to undertake offsetting actions
- Habitat banks
  - Establishes protected ecosystems for the purpose of selling approved credits to proponents requiring offsetting

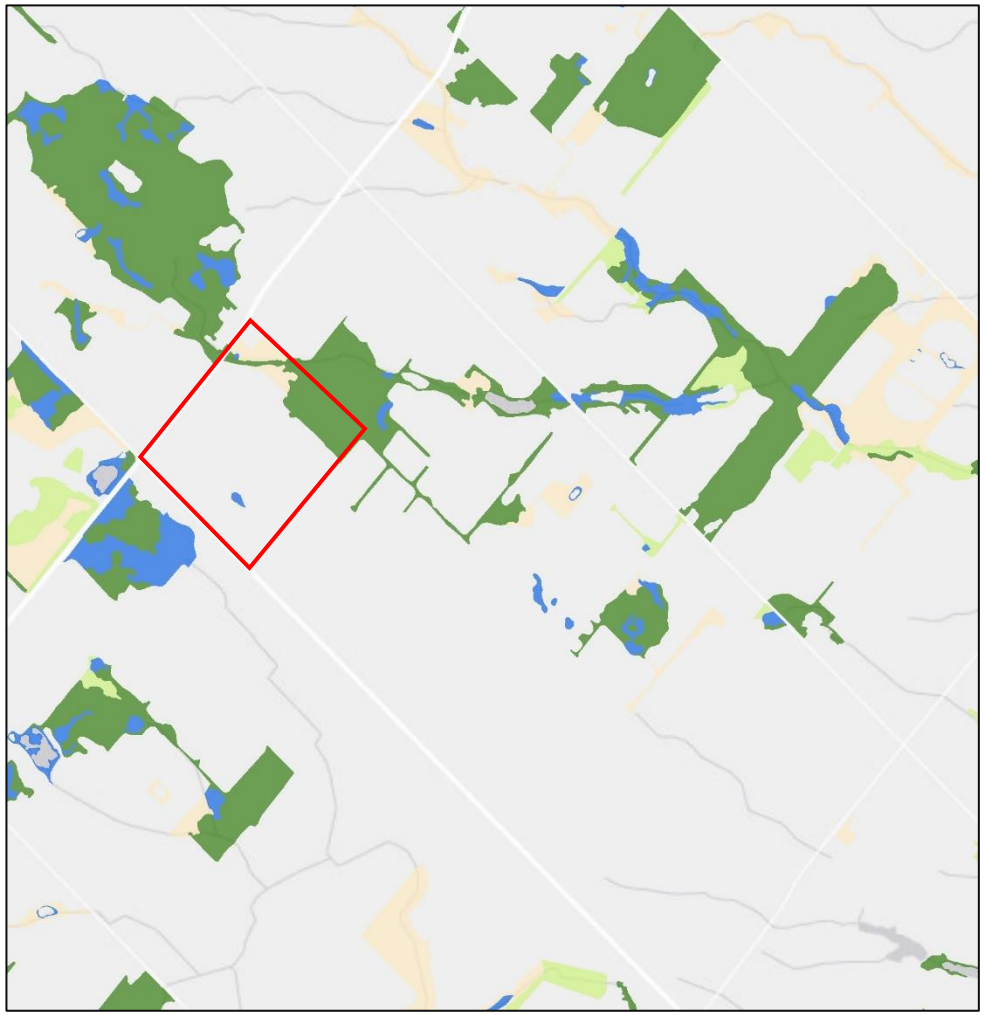
4. Monitoring, Tracking, and Reporting

- Critical to understanding the success of offsetting and improving future practice

Guided by TRCA Ecosystem Compensation Management Framework

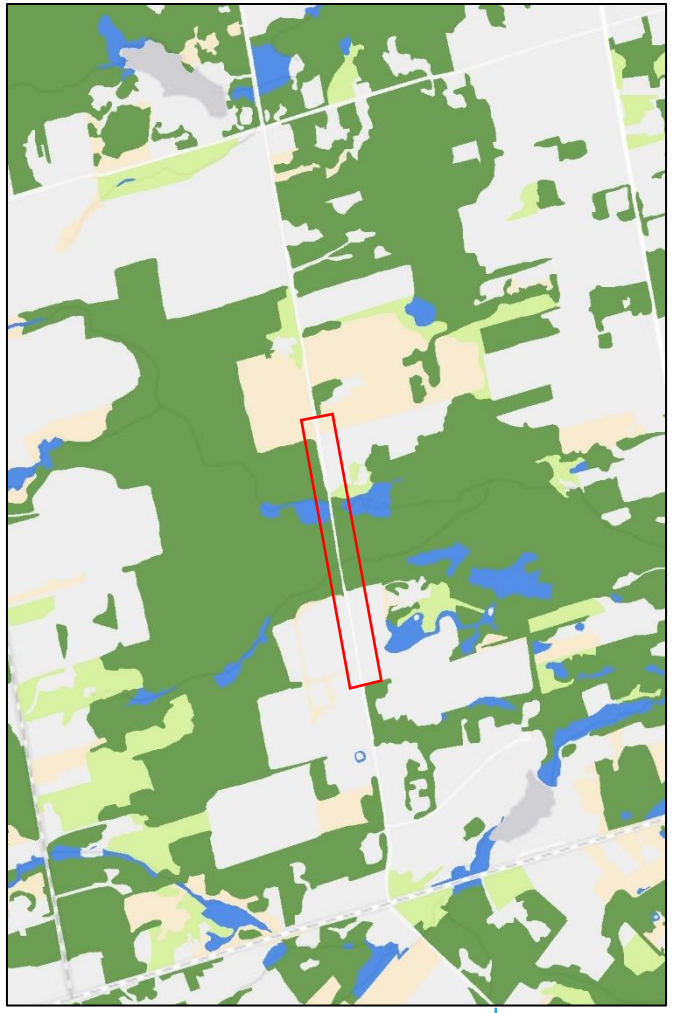
Illustrative Examples

Residential development



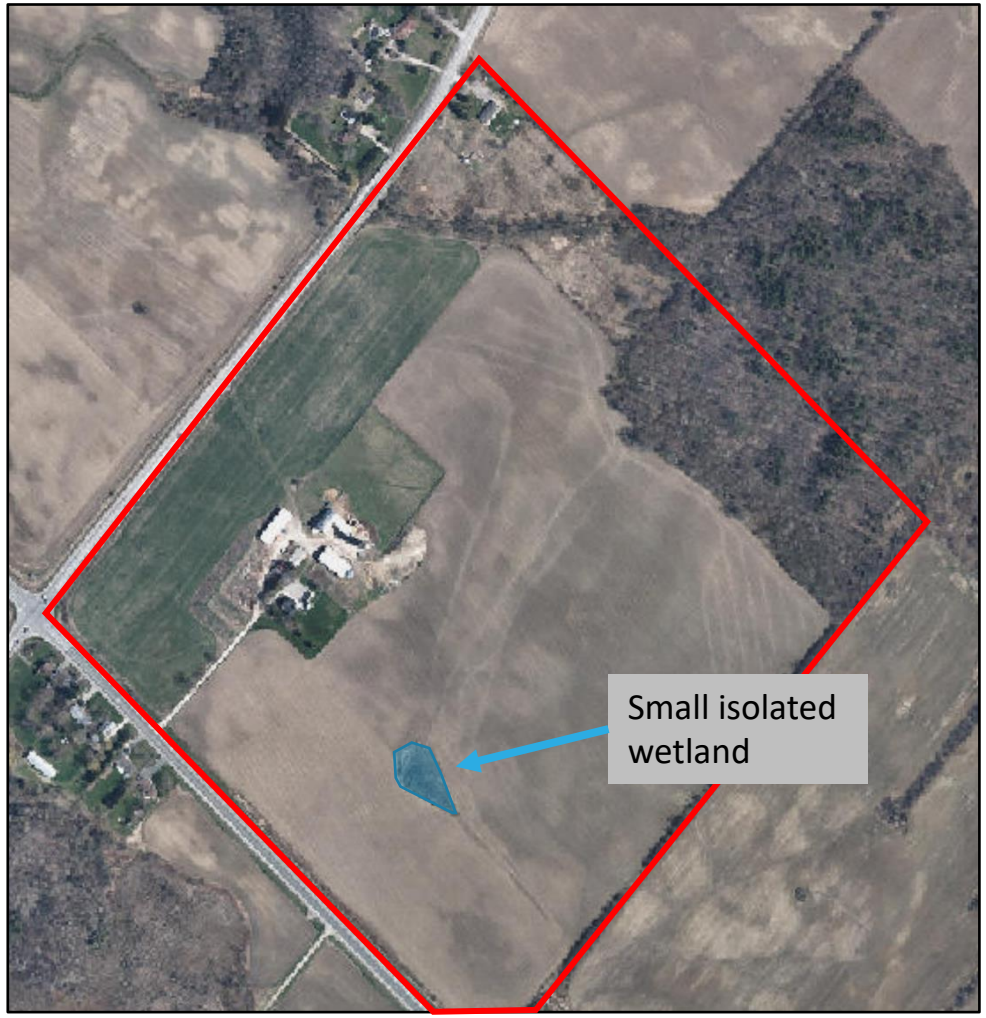
1. Determining when removals with compensation is appropriate
2. Determining how much compensation is required
3. Applying compensation
4. Tracking and reporting compensation outcomes

Municipal road widening



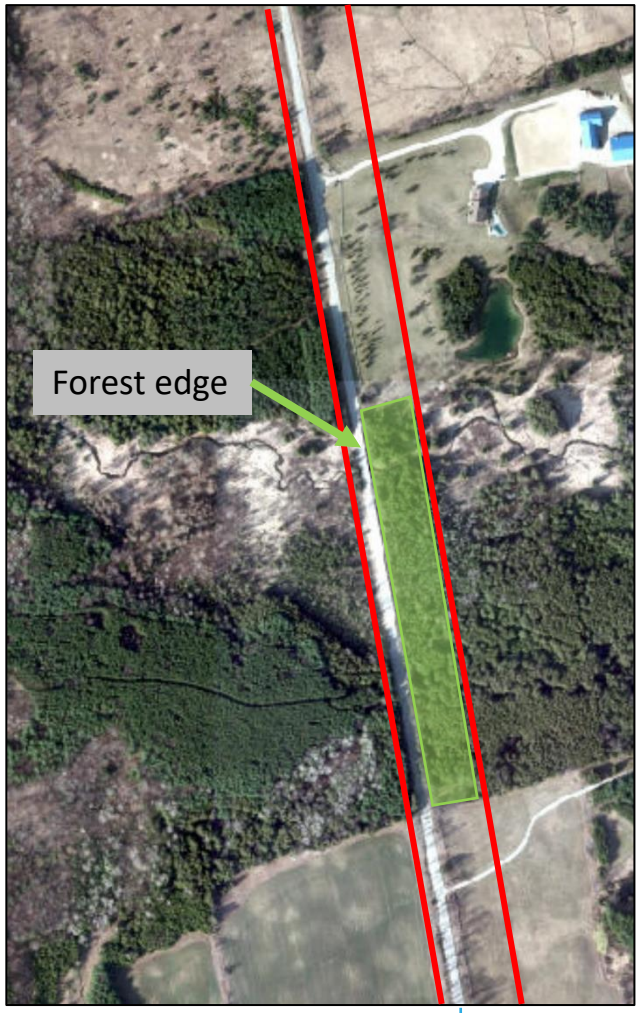
Illustrative Examples

Residential development



1. Determining when removals with compensation is appropriate
2. Determining how much compensation is required
3. Applying compensation
4. Tracking and reporting compensation outcomes

Municipal road widening



Illustrative Examples

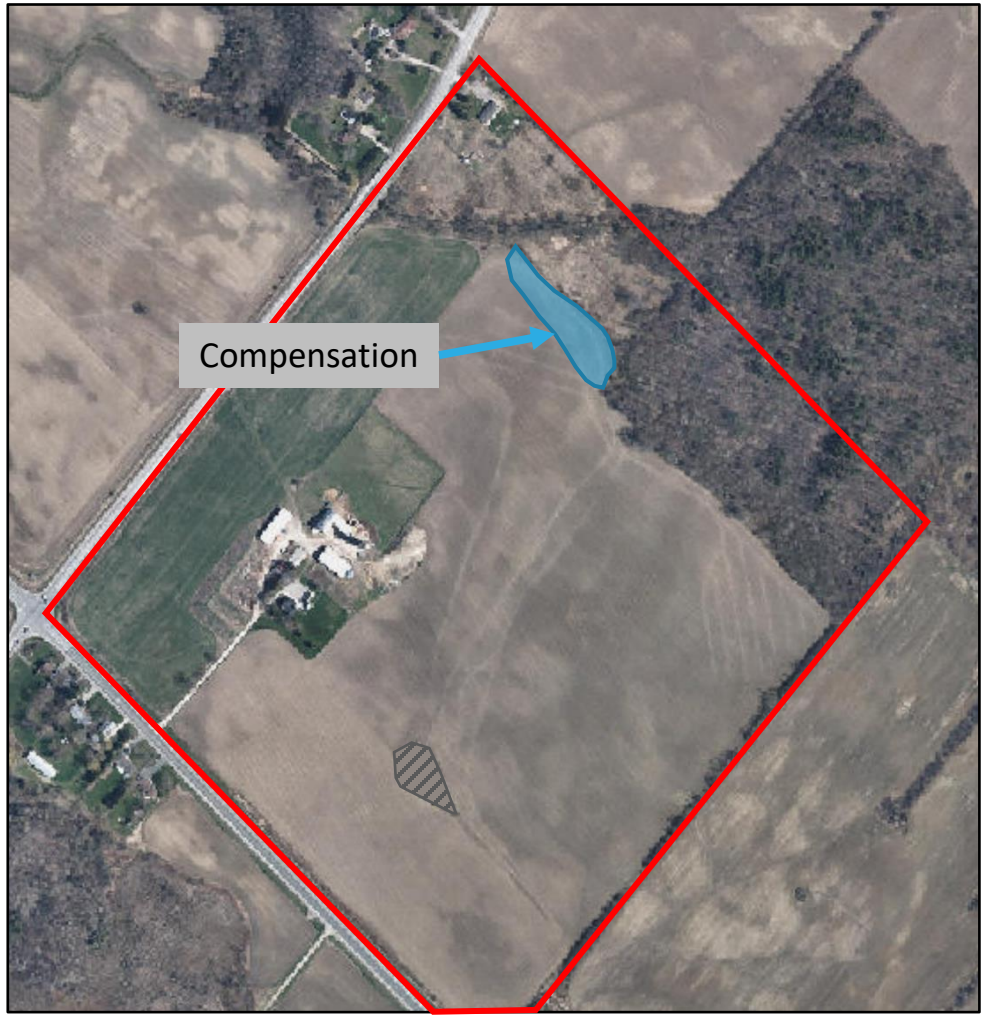
Residential development

1. Determining when removals with compensation is appropriate
2. **Determining how much compensation is required**
3. Applying compensation
4. Tracking and reporting compensation outcomes

Municipal road widening

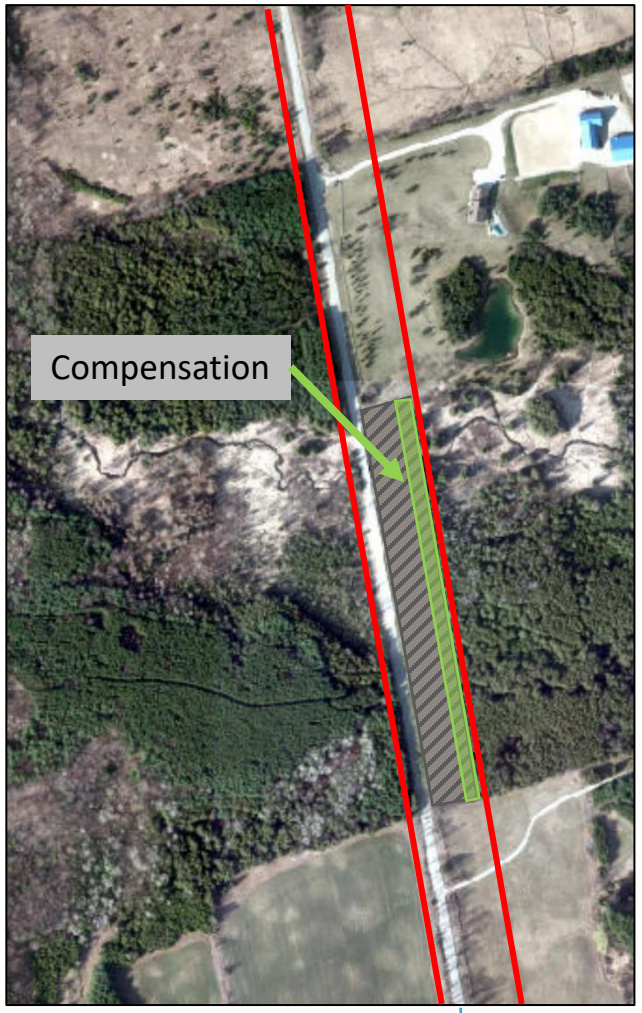
Illustrative Examples

Residential development



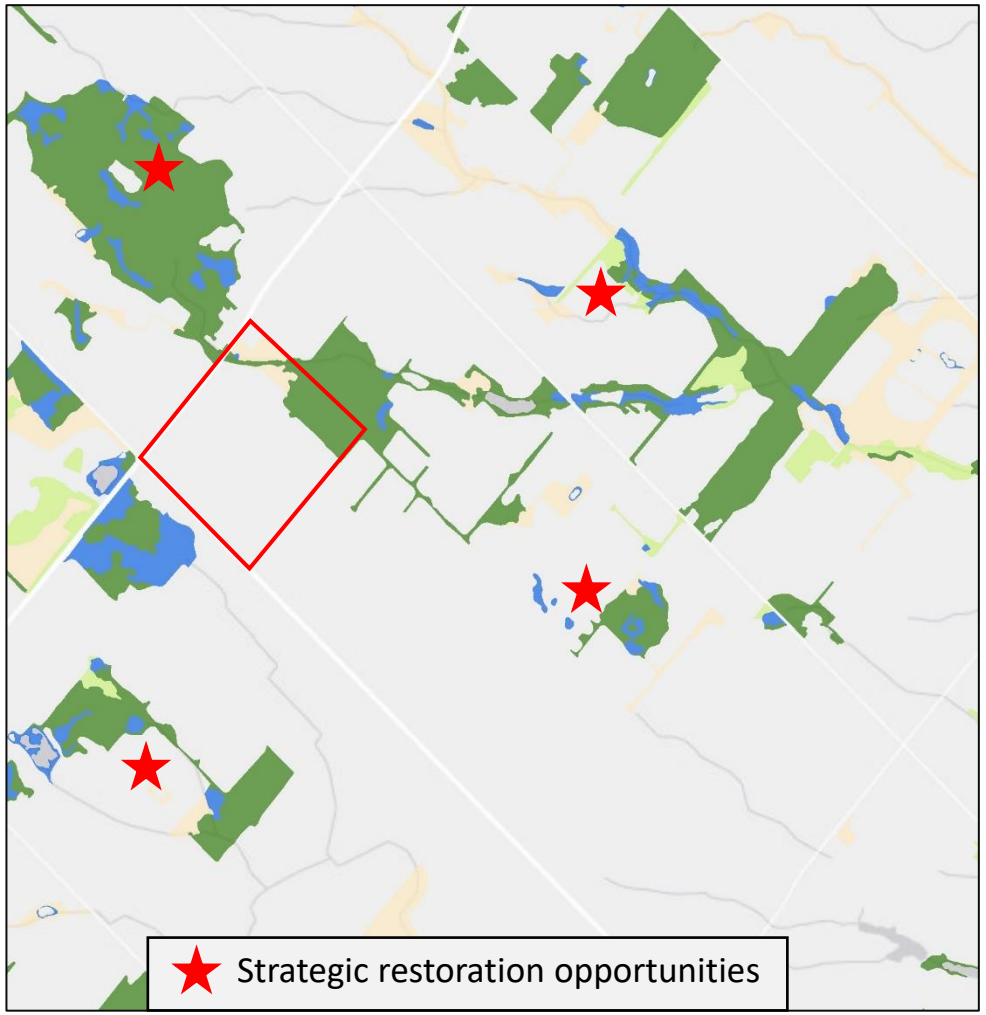
1. Determining when removals with compensation is appropriate
2. Determining how much compensation is required
3. **Applying compensation**
4. Tracking and reporting compensation outcomes

Municipal road widening



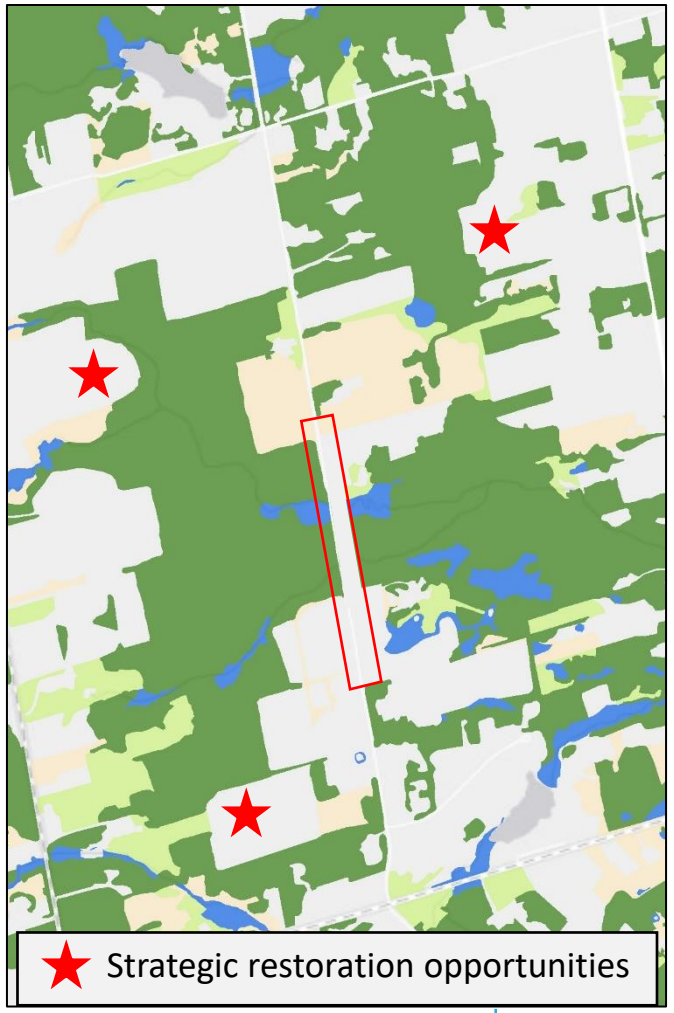
Illustrative Examples

Residential development



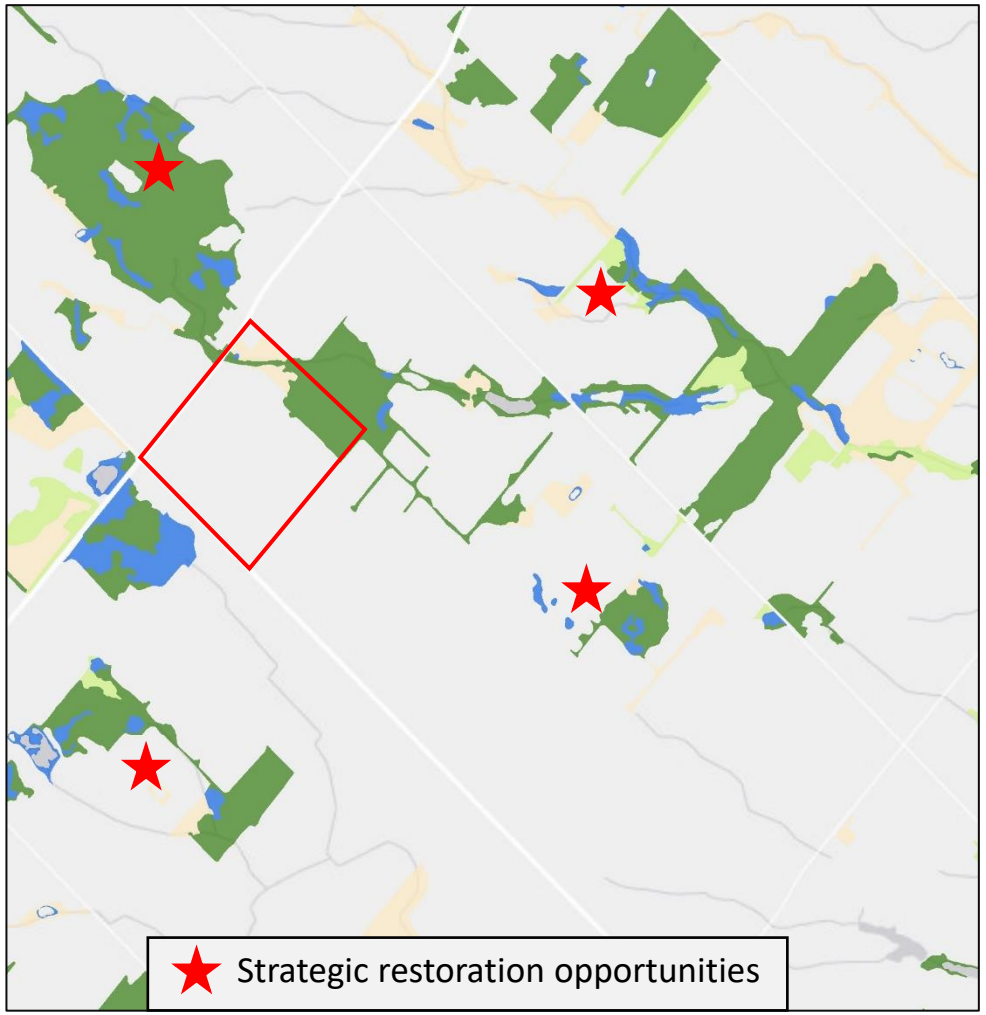
1. Determining when removals with compensation is appropriate
2. Determining how much compensation is required
3. **Applying compensation**
4. Tracking and reporting compensation outcomes

Municipal road widening



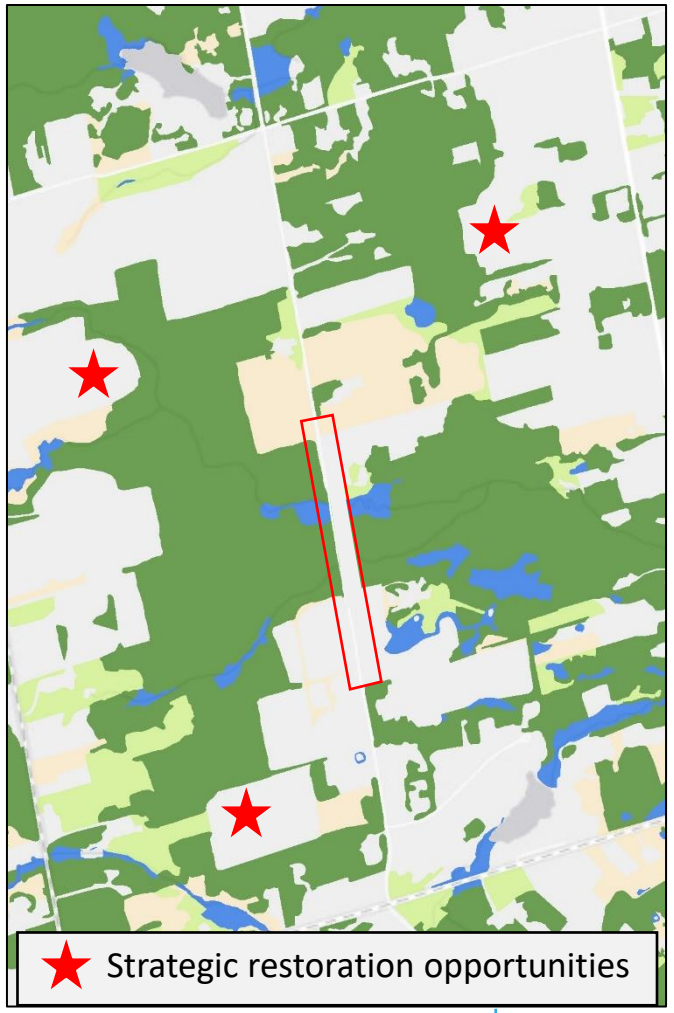
Illustrative Examples

Residential development



1. Determining when removals with compensation is appropriate
2. Determining how much compensation is required
3. Applying compensation
4. Tracking and reporting compensation outcomes

Municipal road widening



TRCA Ecosystem Compensation Program

Lunch and Learn

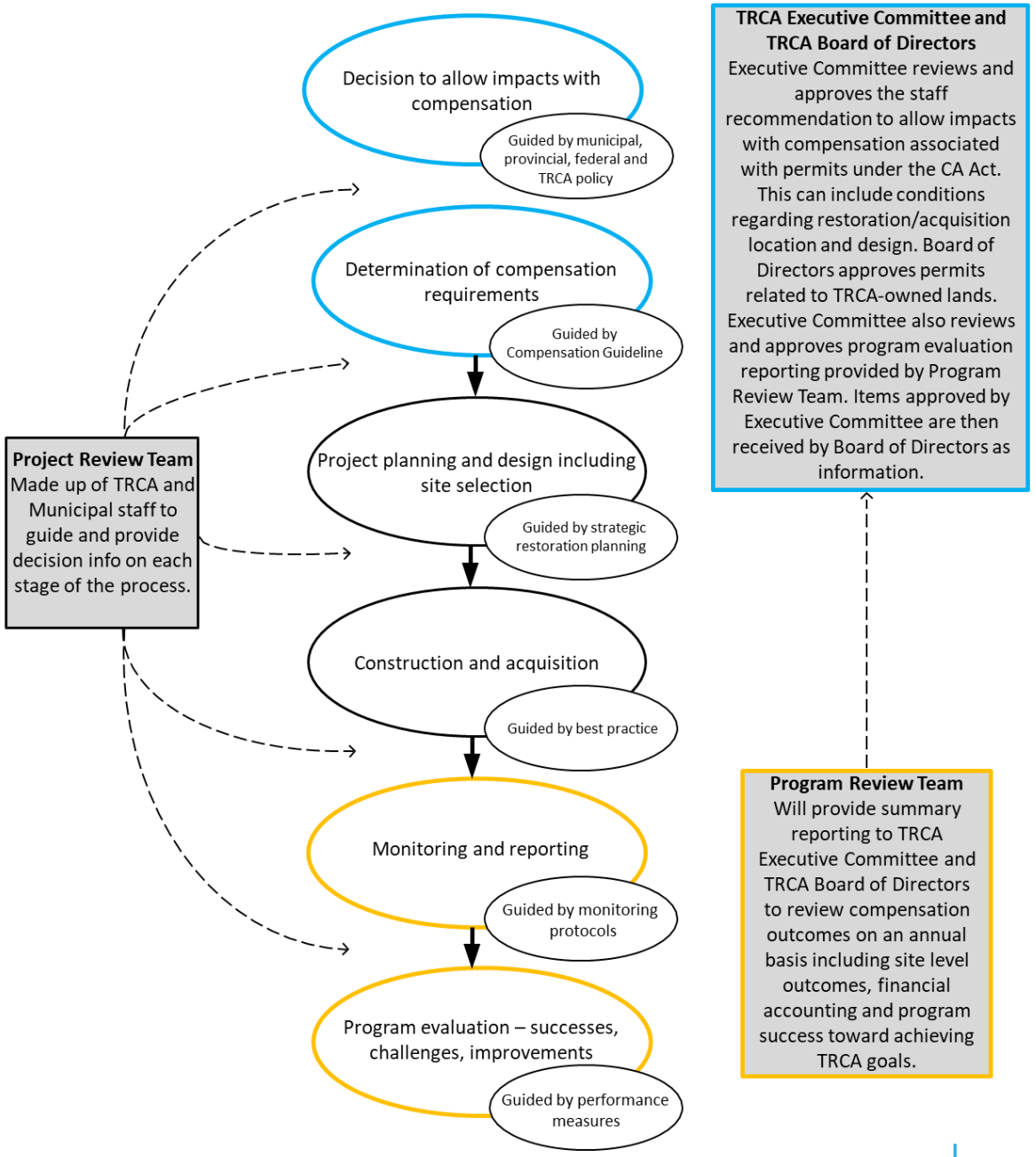
Presented by:
Kelly Jamieson
Senior Project Manager, Restoration and Resource Management

Dec 15, 2021

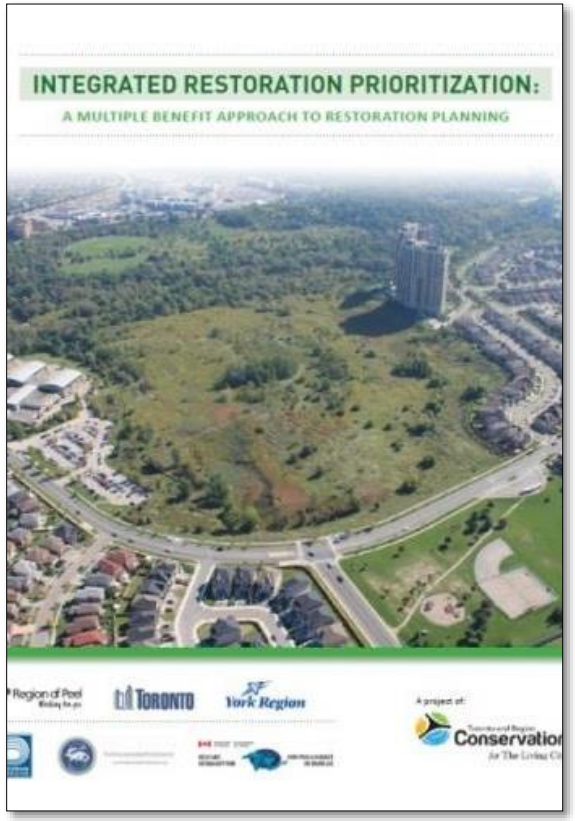
Toronto and Region Conservation Authority

Managing Ecosystem Compensation

Compensation Management Framework



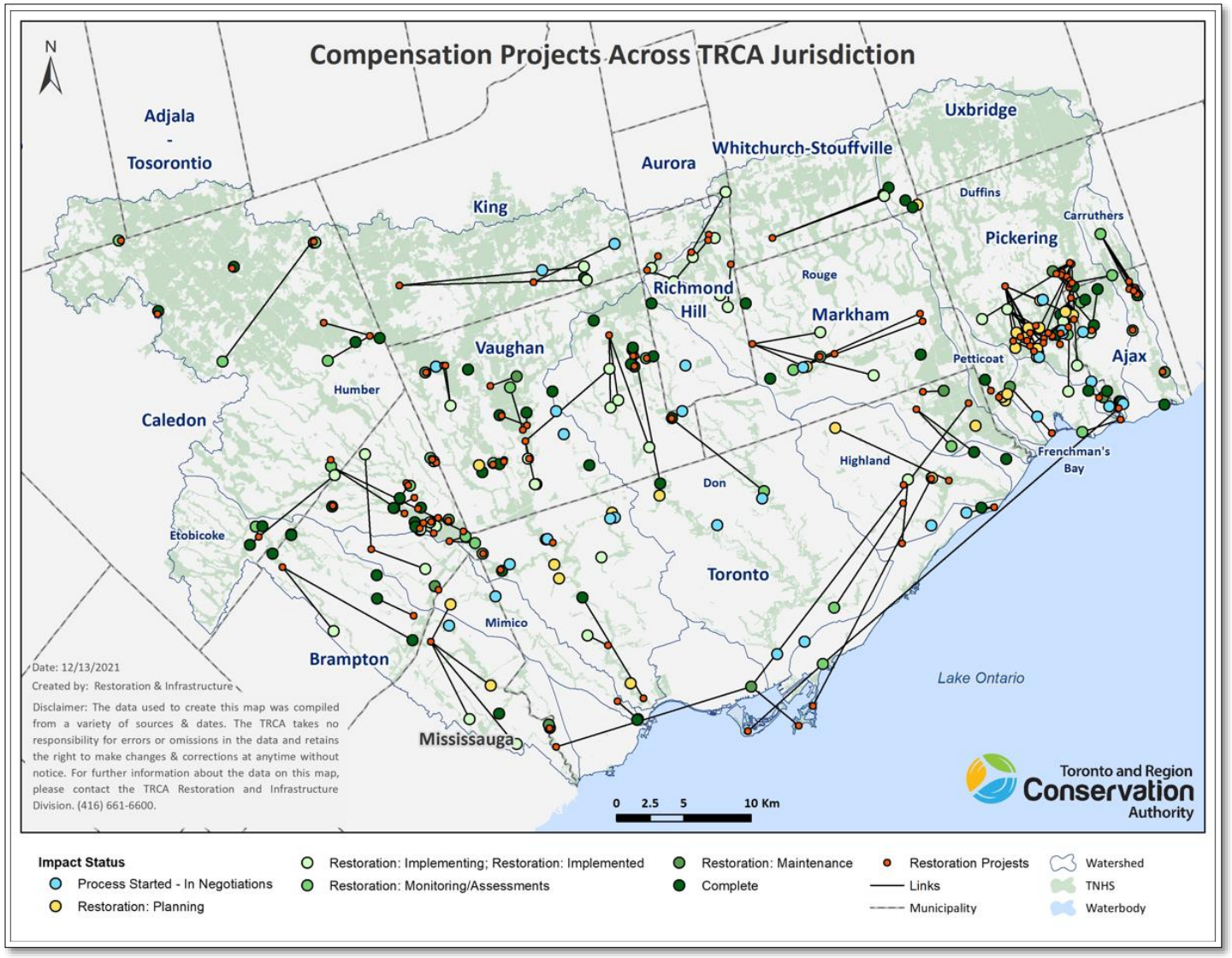
How Strategic Compensation is Implemented

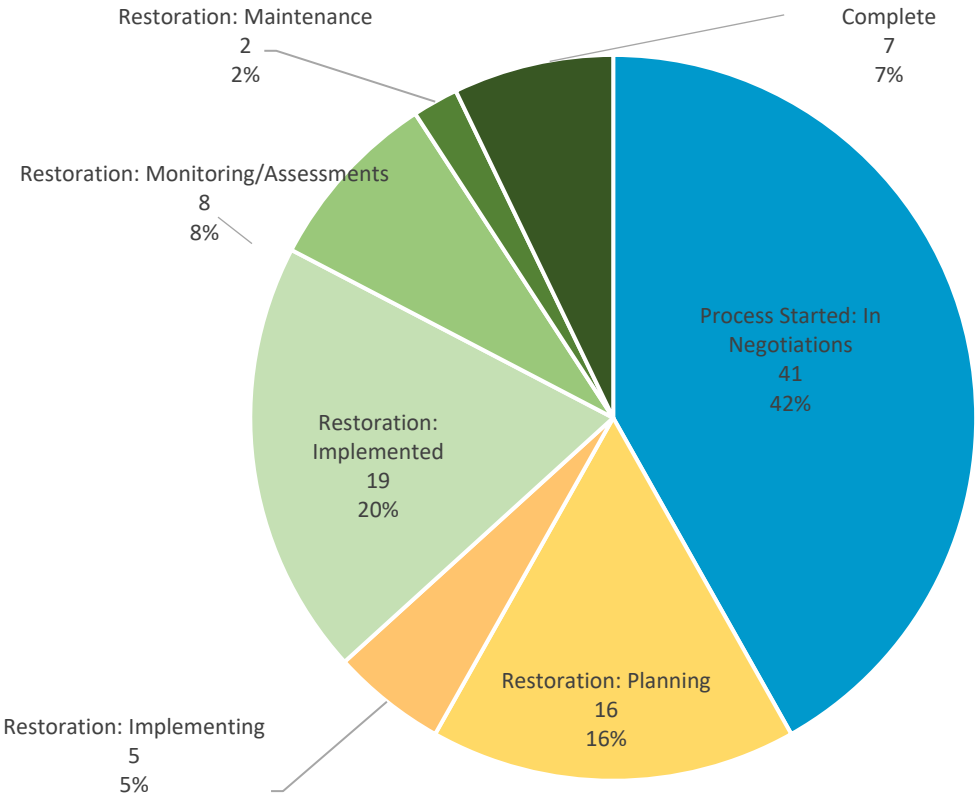


Strategic Restoration Site Selection Tools

- Local Plans / Watershed Plans
- Land Acquisition Priorities
- Restoration Opportunities Planning (ROP)
- Integrated Restoration Prioritization (IRP)
- Restoration Databases (Projects, ROP, Comp)
- Compensation Site Selection Brief
- Compensation Project Completion report
- Annual Reports to TRCA Board

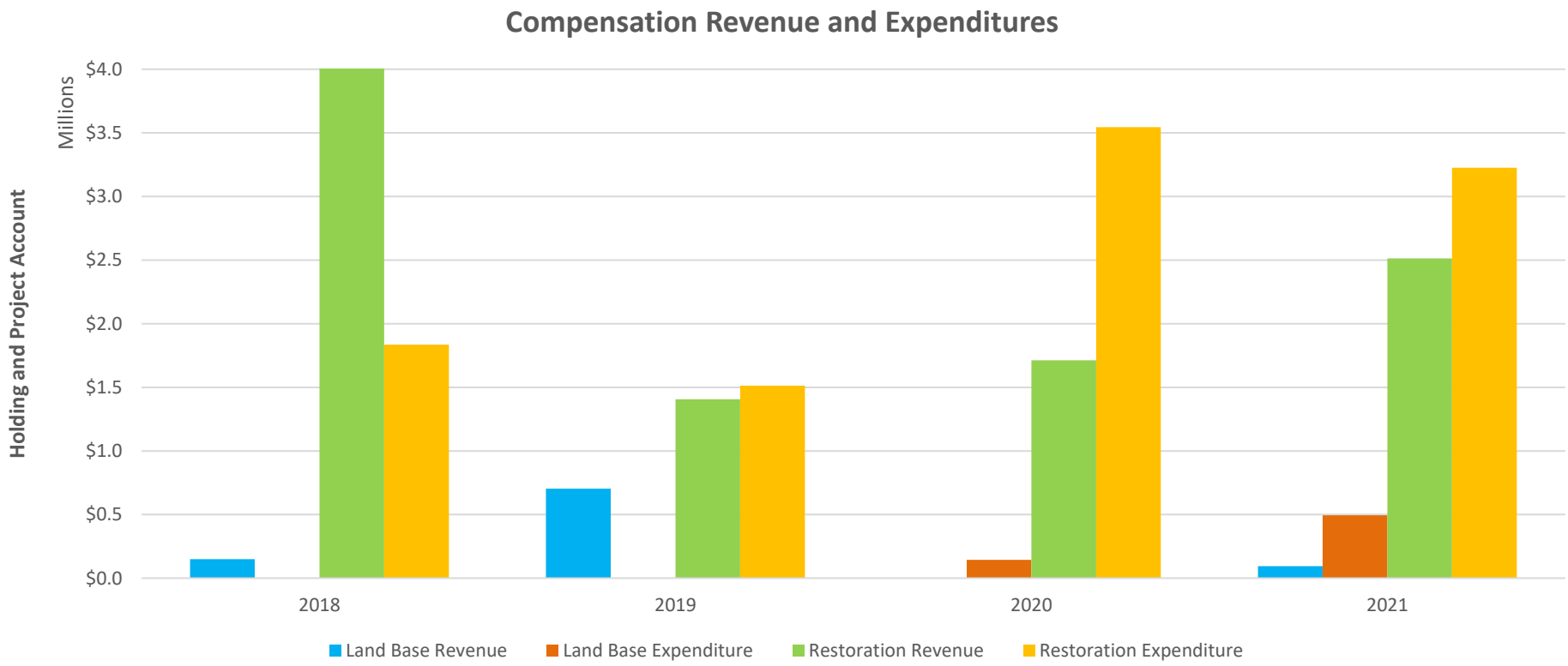
Summary: Compensation Projects by Current Status 2018-2021



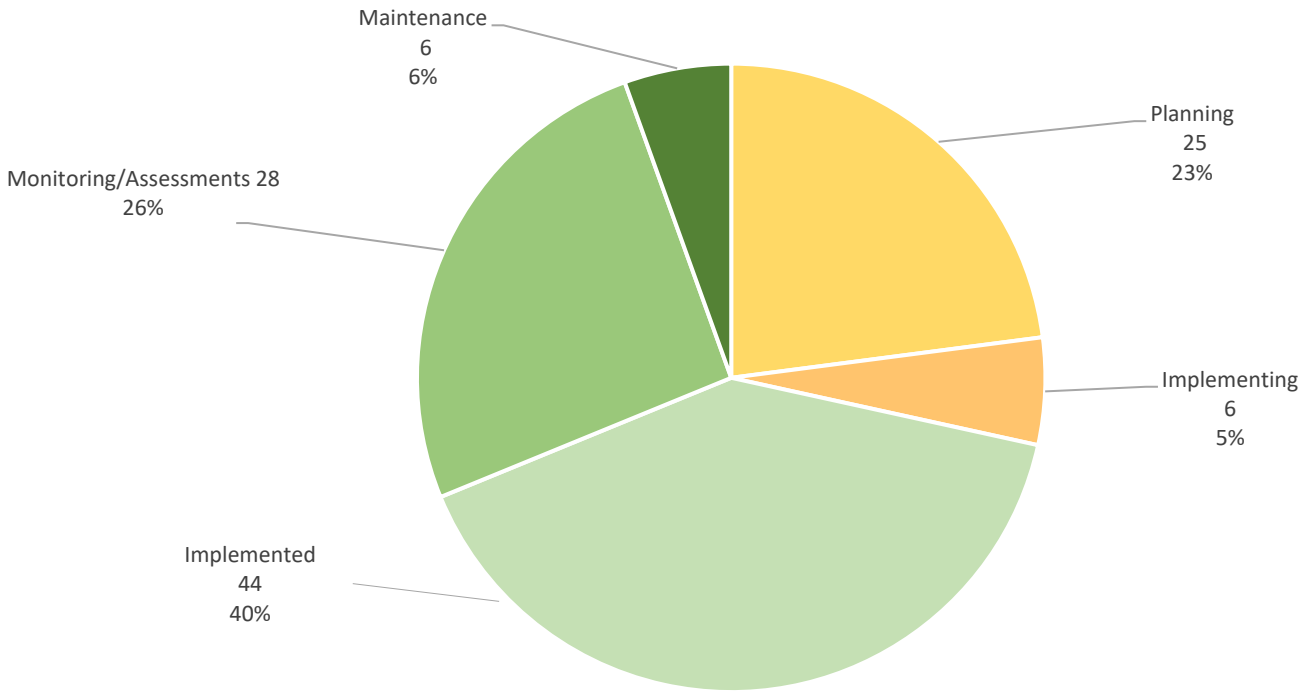


Status of Compensation Projects by Year of Impact from 2018 to 2021

Financial Update



Status of Restoration Projects Using Compensation Funds in 2021



Compensation Net Balances

Terrestrial Natural Features (ha)	Forest	Wetland	Meadow	Total
Restoration Required	13.8	20.0	12.6	**46.4**
Restoration Completed	21.1	17.4	5.4	**43.9**
Future Restoration to be Completed (Based on funds in Account)	4.3	14.1	0.1	**18.5**
Total Restoration Secured Completed + Future	25.5	31.5	5.5	**62.5**
Restoration Balance Total Restoration – Required	**11.7**	**11.4**	**-7.1**	**16.0**

Aquatic Natural Features (m)	Total
Restoration Required	**14.7**
Restoration Completed	160.0
Future Restoration to be Completed (Based on funds in Account)	0.0
Total Restoration Secured Completed + Future	160.0
Restoration Balance Total Restoration – Required	**145.3**

Land base Compensation (ha)	Total
Land base **Required**	**0.7**
Land base **Acquired**	62.6
Future Lands to be Acquired (Based on funds in Account)	$ 551,000.00
Total Lands **Secured** Completed + Future	62.6+
Lands Balance Total Restoration – Required	**61.9+**

2021 Achievements

Review of the **Guideline** began and will be completed in 2022

Internal and External review of the **Basal Area** concept provided additional support

Update of TRCA Restoration Cost Typicals from 2017 to **2021 rates**

Update of the **Framework** - housekeeping and financial processes

Update to the Restoration Project **Completion report**

Review of **TRCA led projects** and how they intersect with compensation

Updating the RRM Restoration Project **Database**

2022
Next Steps

- Minimum cost per hectare
- Data tracking and reporting related to land base compensation (PARES)
- Coordination with Planning Ecology on Guideline to direct staff on how to track compensation triggered by TRCA led projects

Thank You

Questions?

www.trca.ca

Toronto and Region Conservation Authority

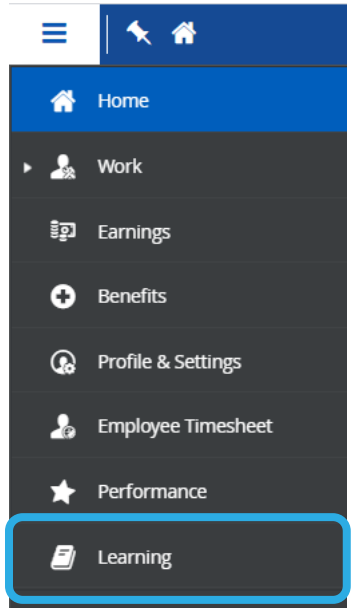
Upcoming ECS Lunch and Learns!

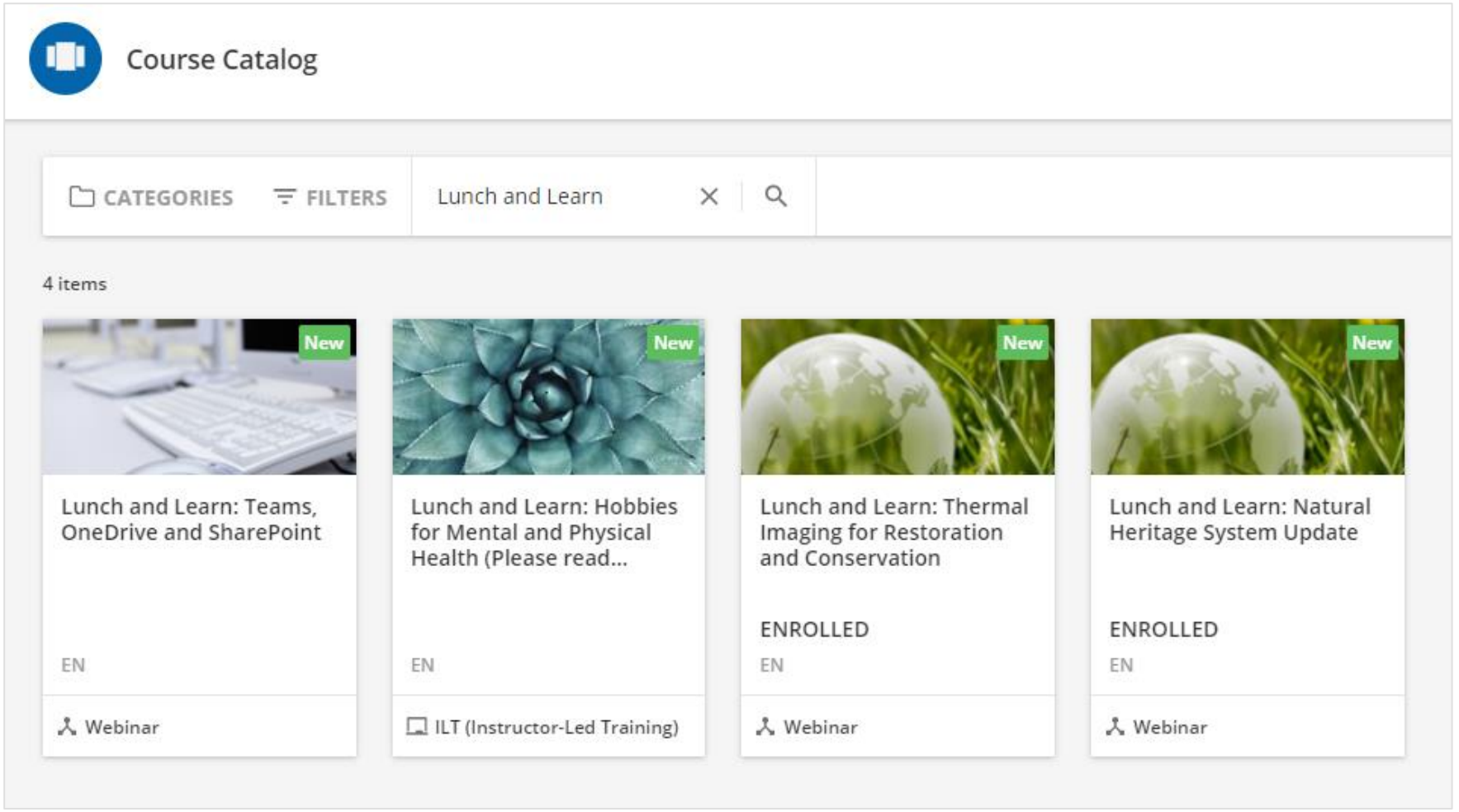
Wednesday, January 26
11:00am-12:00pm

Ontario’s New Excess Soil Regulations

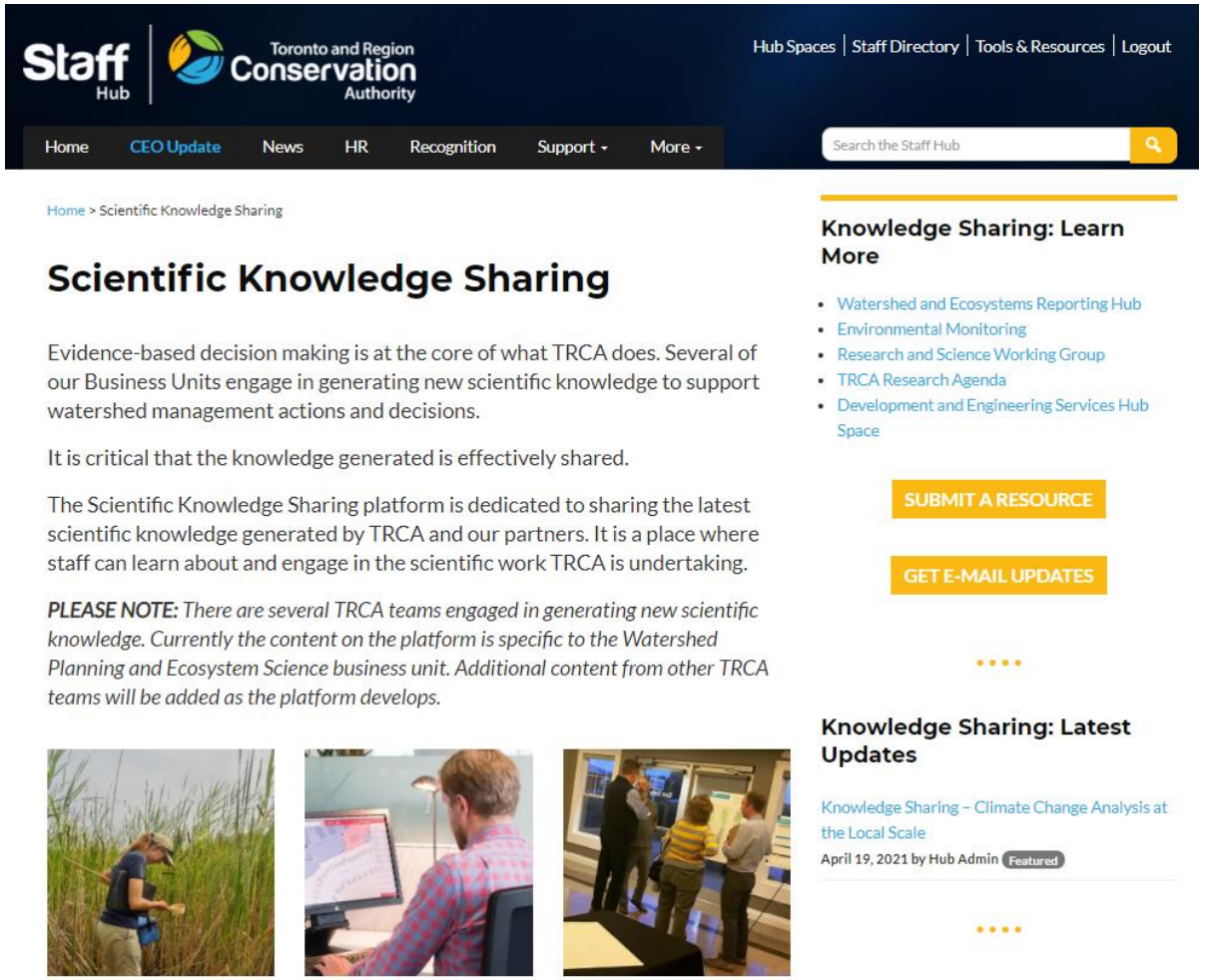
By Don Ford

Learning Management System





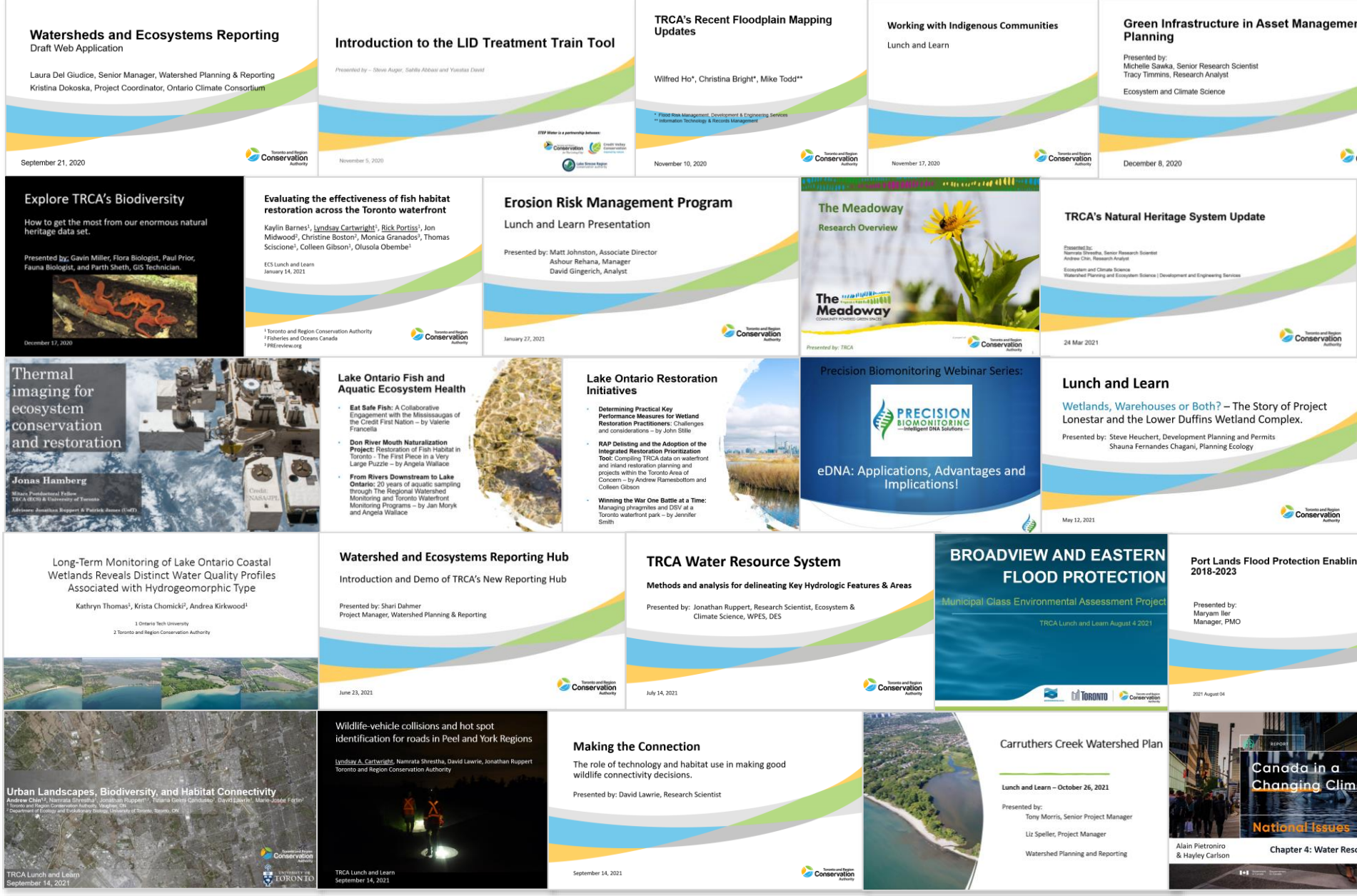
Scientific Knowledge Sharing Hub

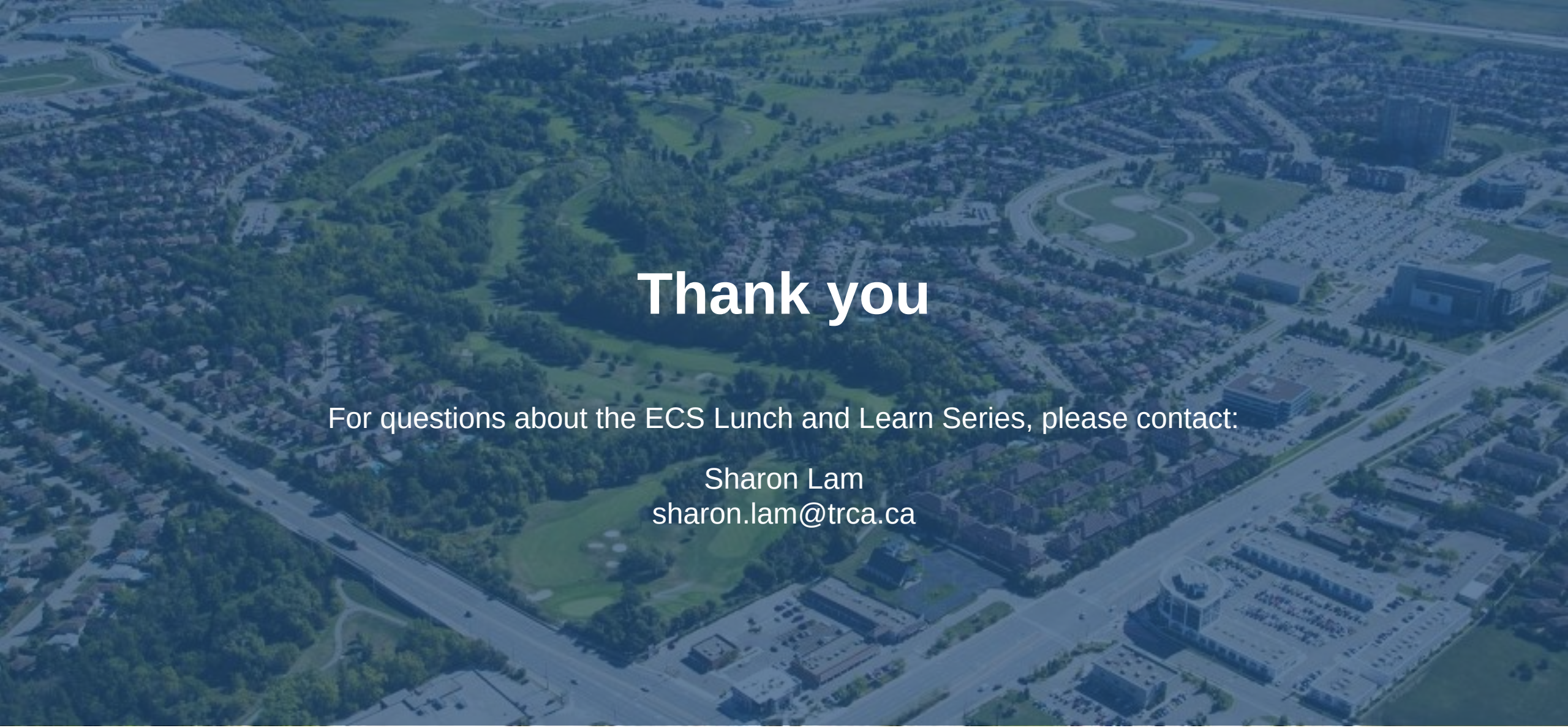


EXPLORE THE RESOURCE LIBRARY

- Newsletters +
- Open Data & Information +
- Plans and Strategies +
- Presentations to Partners +
- Reports and Technical Papers +
- Scientific Papers +
- Technical Protocols & Best Practices +
- Videos +
- Webinars and Lunch & Learns +

Past Recordings





Thank you

For questions about the ECS Lunch and Learn Series, please contact:

Sharon Lam
sharon.lam@trca.ca

Toronto and Region Conservation Authority