ECS Lunch and Learn

Supporting internal knowledge transfer within TRCA

September 21, 2020

Toronto and Region Conservation Authority

Watersheds and Ecosystems Reporting

Draft Web Application

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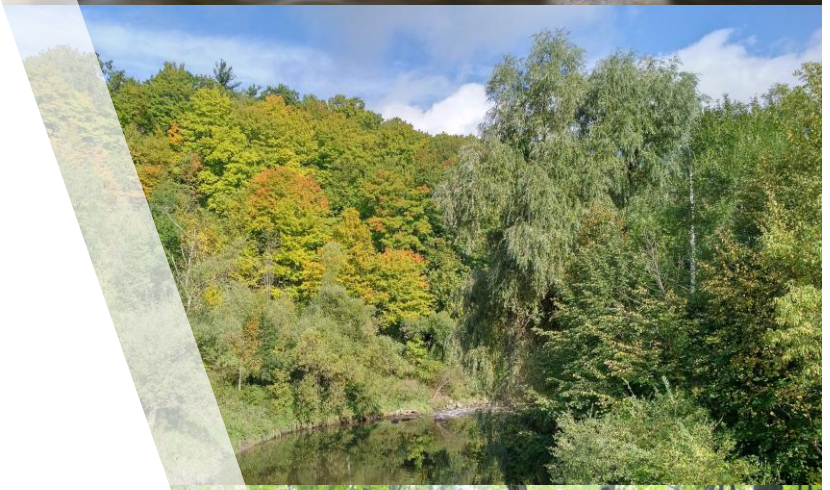
September 21, 2020

Toronto and Region Conservation Authority

Background

- TRCA issues the Living City Report Card (LCRC) and Conservation Ontario Watershed Report Cards every 5 years.
- Desire from TRCA's BOD and partners for more frequent and less technical reporting.
- TRCA is developing an online reporting platform, which will be the modern version of the LCRC (April 22, 2021 launch [Earth Day]).



Benefits

The web application will:

- Enable continuous updates to watershed and waterfront condition reporting.
- Enable tracking of progress against watershed plan implementation.
- Be interactive to allow users to view data at various scales e.g. municipal data.
- Provide users with plain language orientation to the results of a broad array of TRCA monitoring data.
- Provide useful information to TRCA staff for their own projects, plan review, etc.

Objectives for Today

1. Raise corporate awareness of the development of the App
2. Demonstrate draft content and capabilities
3. Gather input from staff and answer questions

Draft Content & Indicators

Climate Change

1. Future Temperatures
2. Future Precipitation

Land Use

1. Low Impact Development Implementation

Natural Hazards

1. Riverine Flooding
2. Shoreline Flooding
3. Riverine Erosion
4. Shoreline Erosion

Water Resources System

1. Fish Communities in Streams
2. Benthic Communities in Streams
3. Fish Communities in Lake Ontario
4. Groundwater Levels

Natural Heritage System

1. Natural Cover Quality
2. Natural Cover Quantity
3. Urban Forest Cover
4. Forest Vegetation
5. Forest Birds
6. Wetland Vegetation
7. Wetland Birds
8. Frogs and Toads
9. Meadow Birds

Water Quality

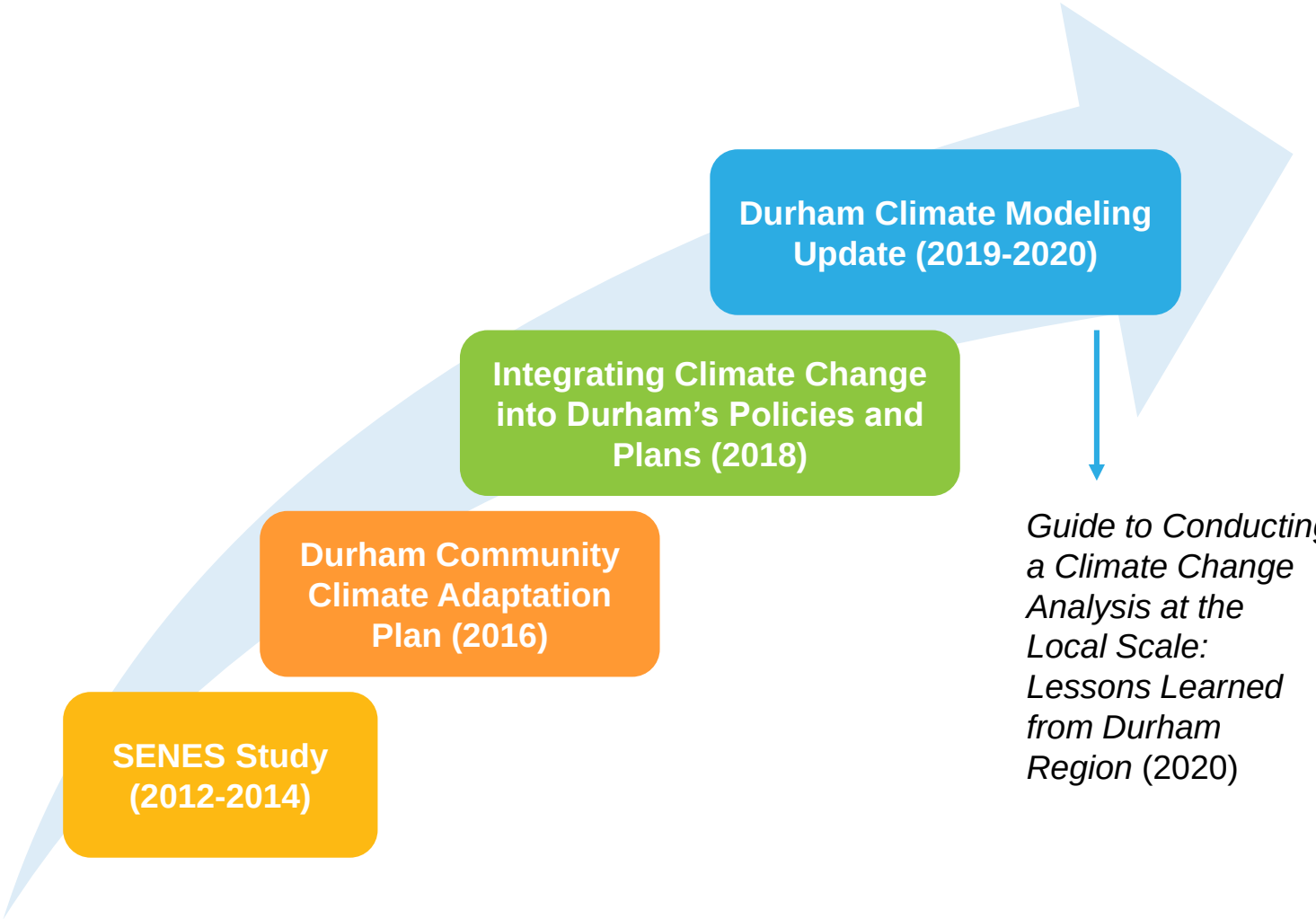
1. Water Quality Index in Streams
2. Phosphorus in Streams
3. Chlorides in Streams
4. Total Suspended Solids in Streams
5. Bacteria in Streams
6. Chlorides in Groundwater
7. Nitrates in Groundwater
8. Nearshore Phosphorus
9. Nearshore Bacteria

Each Section Contains:

- Context
- Reporting Indicators
  - **Targets:** Where do we want to be?
  - **Current Conditions:** Where are we now?
  - **Trends:** How are conditions changing?
  - **Dashboards:** Dynamic visualization of the data
  - **Reporting Key:** Scoring details

TRCA Climate Modeling Update

Purpose and Context



Guide to Conducting a Climate Change Analysis at the Local Scale: Lessons Learned from Durham Region (2020)

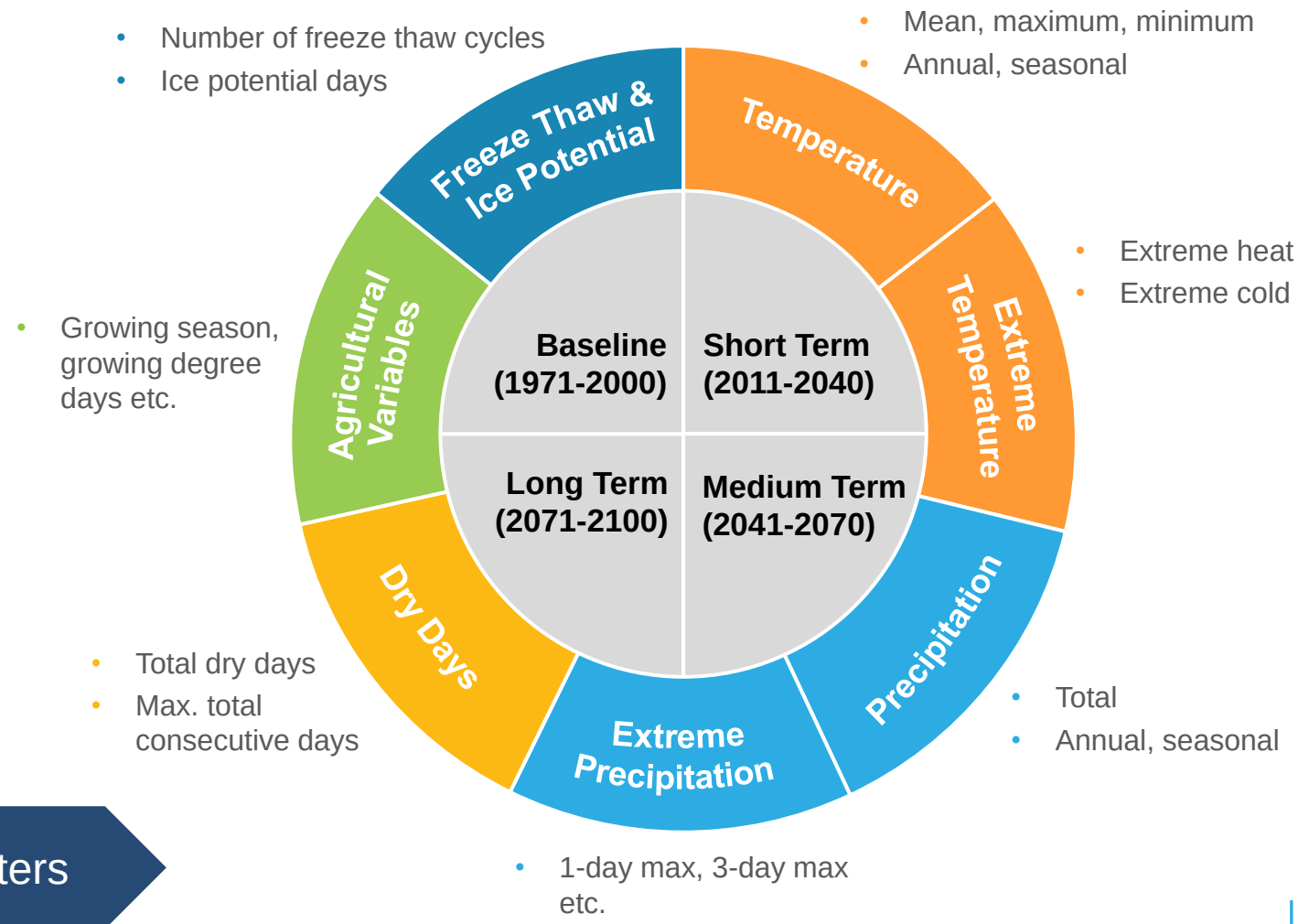
Updated TRCA Climate Projections (2020)

This includes:

- TRCA-wide climate change projections
- Climate data for individual watersheds
- Updates to the TRCA Watersheds and Ecosystems Reporting platform

TRCA Climate Modeling Update

- NA-CORDEX
- Resolution: 25km by 25km
- Ensemble approach: 16 model runs
- 2 climate scenarios: RCP 8.5 and 4.5 – representing a high and moderate emissions scenario, respectively
- 52 climate parameters



Summary of Climate Parameters

Approach

- Confirm Study Area
- Collect Historical Data
- Future time-series for each grid cell
- Quality Control & Infilling Gaps

Obtain Data

Historical Characterization

- Use baseline (1971-2000)
- Spatial, seasonal, long term temporal trend analyses

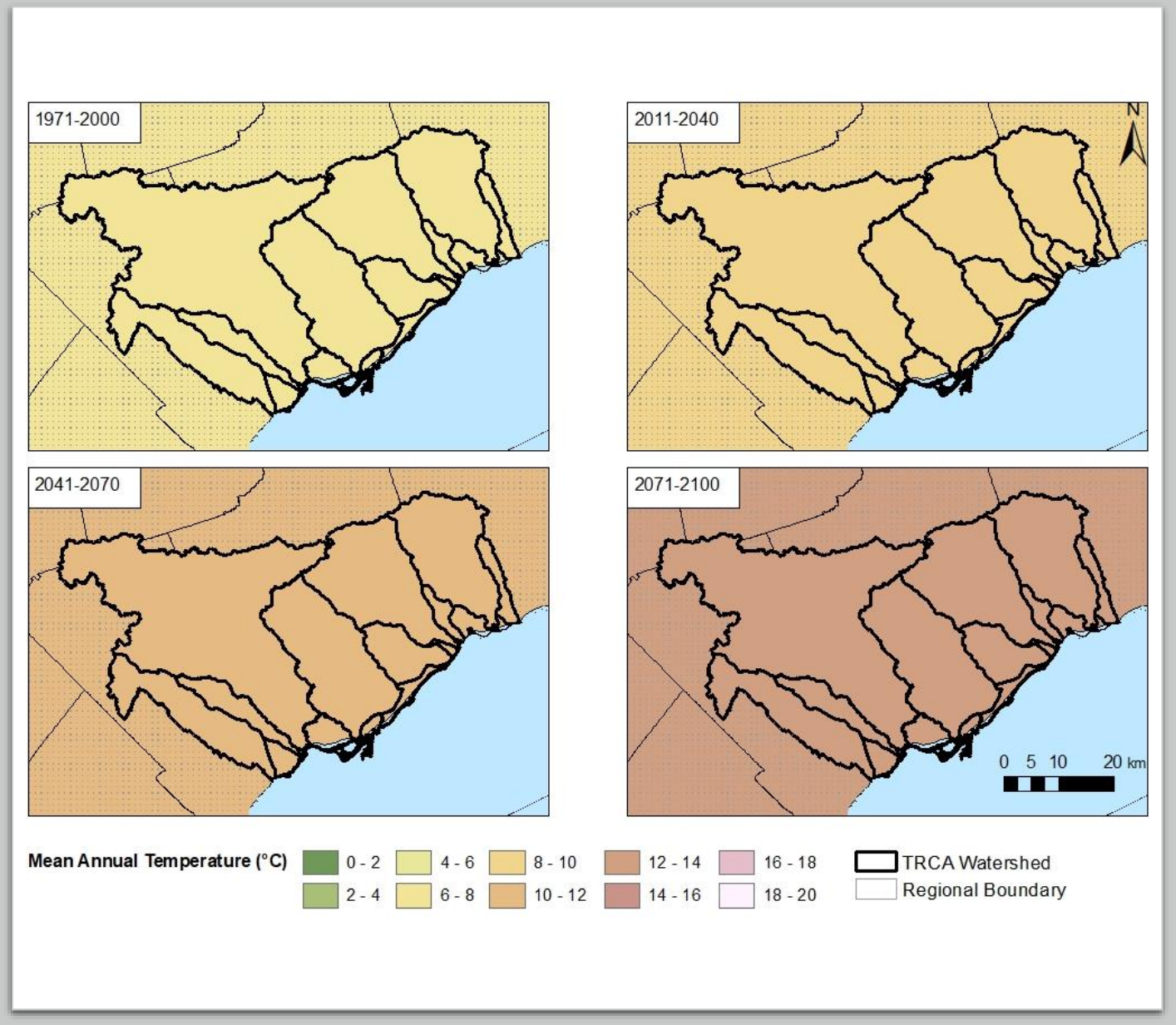
- Bias Correction
- Determine anomalies
- Spatial, seasonal, long term temporal trend analyses

Future Analysis

Summary of Results

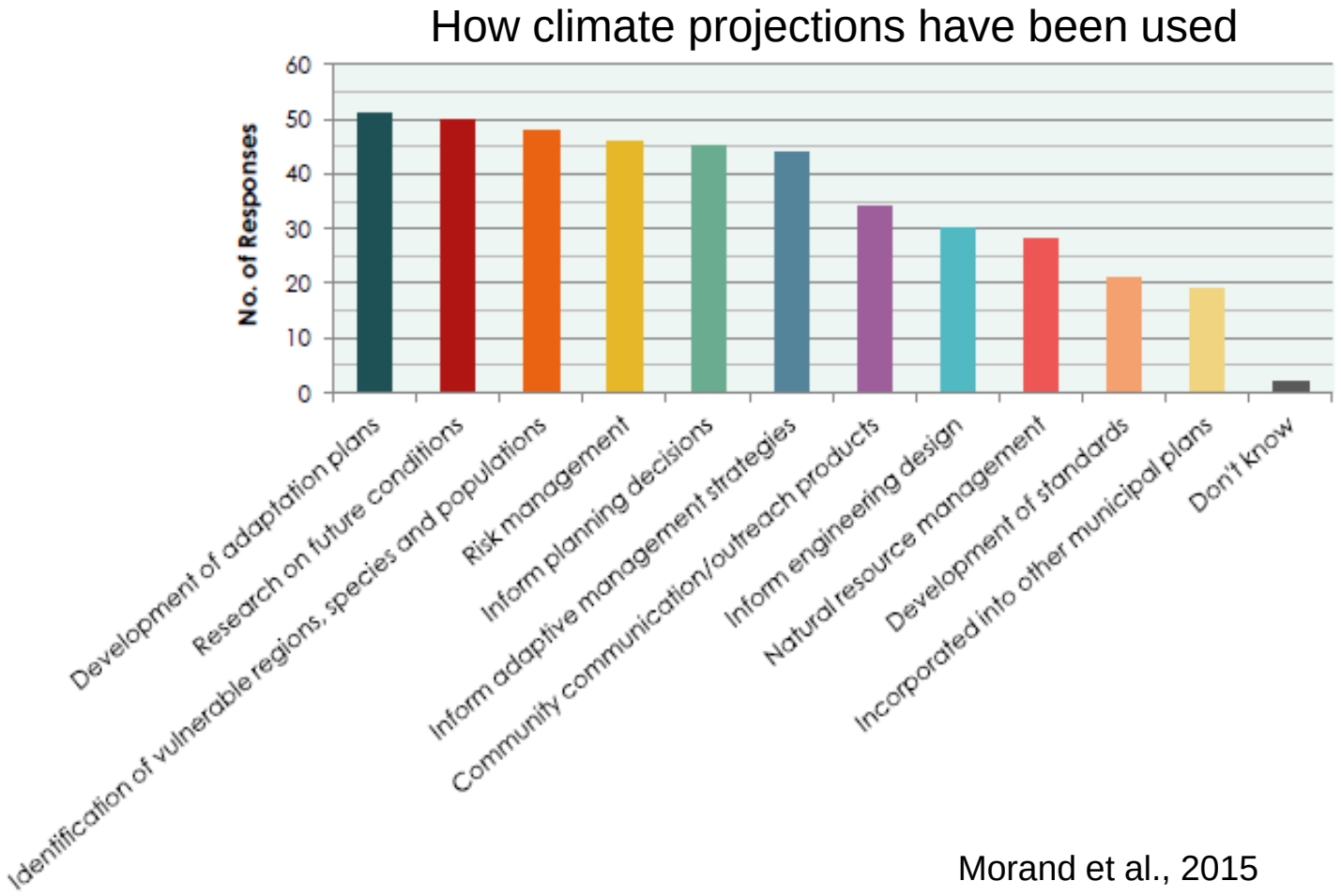
It can be expected by the 2050s, if we continue to emit business as usual (without global mitigation measures), that TRCA will be:

- Warmer (~3˚C increase)
- Wetter (~15-20% increase)
- More intense storms (~83% increase in 1-day maximum precipitation)
- Increasing trends in freeze-thaw cycles
- Less ice potential
- Opportunities for agricultural crops to thrive, however, pests are at greater risk



Practical Uses and Transferability

- Impact modeling (e.g., hydrogeological, water quality, hydrological, etc.)
- Climate change vulnerability and risk assessments
- Updating policies, design standards and guidelines
- Informing restoration, infrastructure and adaptation projects
- Supporting climate change communication through education, training or outreach products



Morand et al., 2015

Web Application Demo

Upcoming Lunch and Learns

Mid-October (TBC)

Floodplain Mapping Updates

By Engineering Services Staff

Tuesday, November 17
11:30am-12:30pm

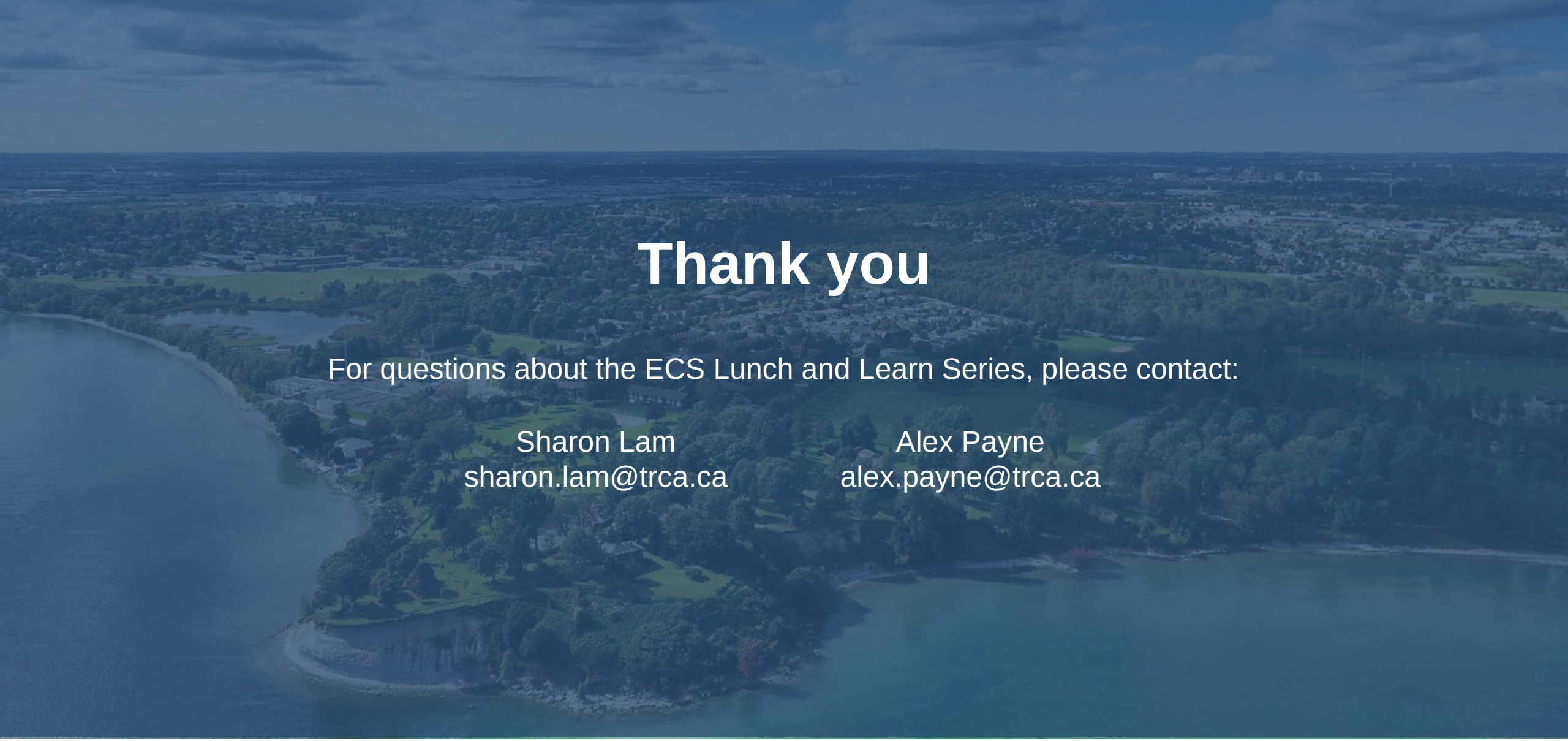
Working with Indigenous Communities

By Tony Morris

Tuesday, December 8
11:00am-12:00pm

Green Infrastructure Asset Management

By Michelle Sawka and Tracy Timmins



Thank you

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

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