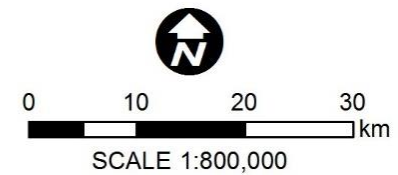
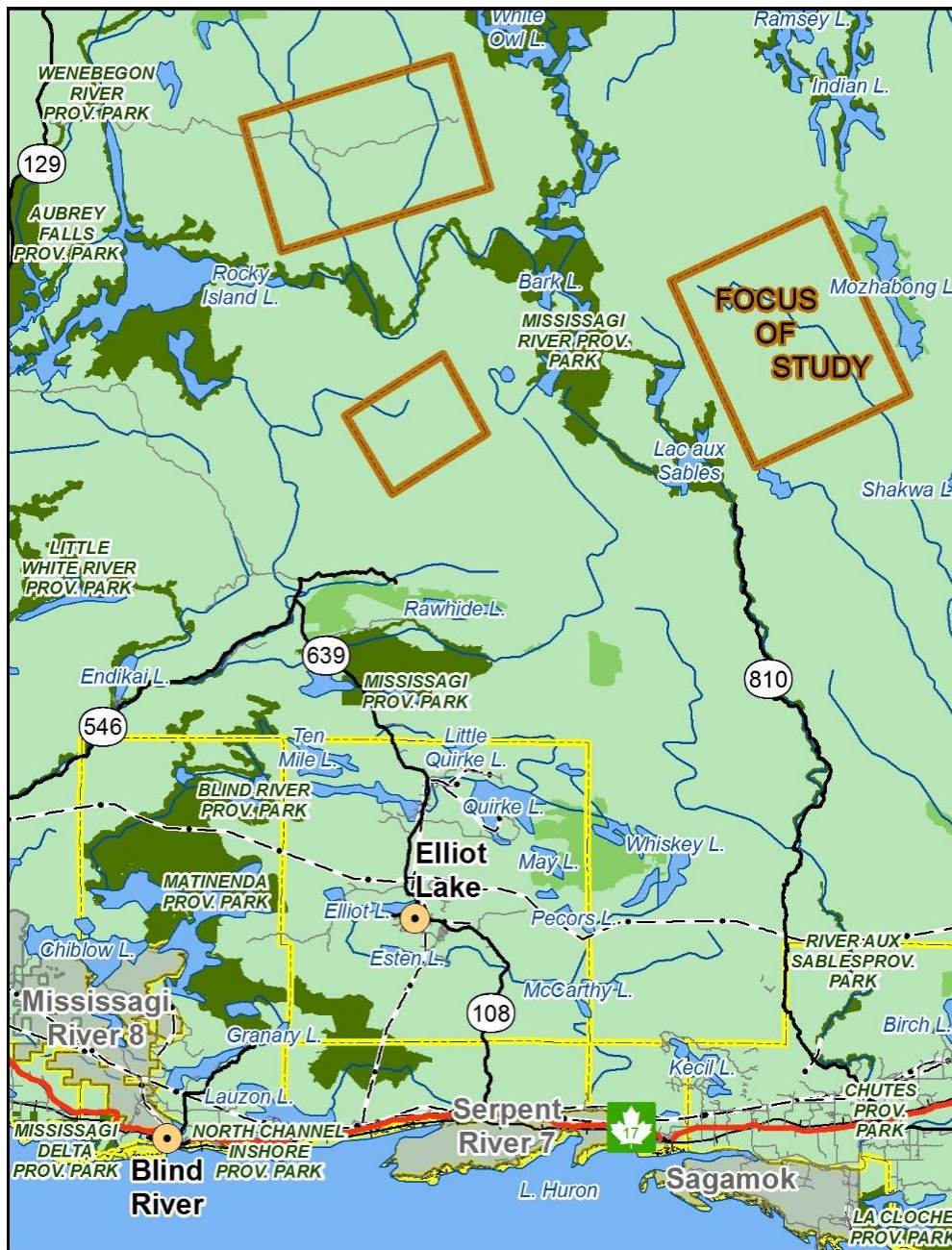




# Update on Phase 2 Initial Field Studies



Approx. Surface Facility Footprint (600x550m)

Approx. Underground Repository Footprint (3x2km)

# Site Evaluation Process

Site evaluation process is driven by community's interest to participate.

## Initial Screening (Few months)



## Preliminary Assessment (Multiple years, 2 phases)



## Detailed Site Characterization (~potentially 3-5 years)

Desktop studies to evaluate the potential suitability of the community and area against a list of initial screening criteria

Technical and Social, economic and cultural assessments to determine whether a site in the area has the potential to meet the detailed requirements for the project:

- **PHASE 1:** Desktop for all communities
- **PHASE 2:** Field Work for a subset of communities

Detailed field investigations at one site to confirm suitability of the site based on detailed site evaluation criteria:

- Technical evaluation (detailed field investigations)
- Continue social, economic and cultural assessment

# Objective of Phase 2 Assessments of Sites

**To develop confidence on selection of a preferred location to take into detailed site characterization**

## **Safety**

Confidence a deep geological repository can be developed with strong safety case at that location

## **Transportation**

Confidence a safe, secure and socially acceptable transportation plan can be developed

## **Partnership**

Confidence a strong partnership can be developed – with interested community, First Nation and Métis communities in the area, and surrounding communities

# Technical Considerations – Safety

- Safety is first
  - **Safe containment and isolation of used nuclear fuel.** Are the characteristics of the rock at the site appropriate to ensuring the long-term containment and isolation of used nuclear fuel?
  - **Long-term resilience to future geological processes and climate change.** Is the rock formation at the siting area geologically stable and likely to remain stable over the very long term?
  - **Safe construction, operation and closure of the repository.** Are conditions at the site suitable for the safe construction, operation and closure of the repository?
  - **Isolation of used fuel from future human activities.** Is human intrusion at the site unlikely, for instance through future exploration or mining?
  - **Amenable to site characterization and data interpretation activities.** Can the geologic conditions at the site be practically studied and described on dimensions that are important for demonstrating long-term safety?

# Phase 2 Preliminary Field Investigations

## Initial Studies



High resolution airborne  
geophysical surveys



Observing geological  
features and detailed  
mapping



## Intensive Field Work



Borehole Drilling  
& Testing

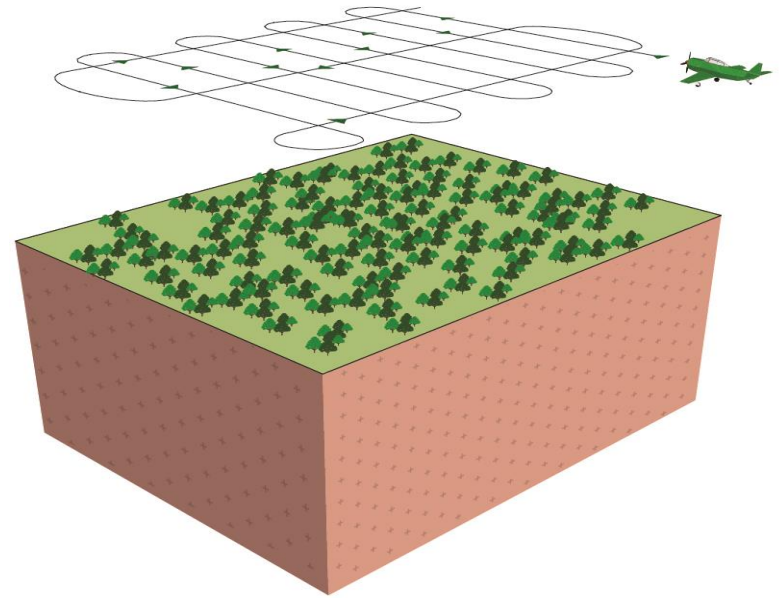


**In Collaboration with Communities**

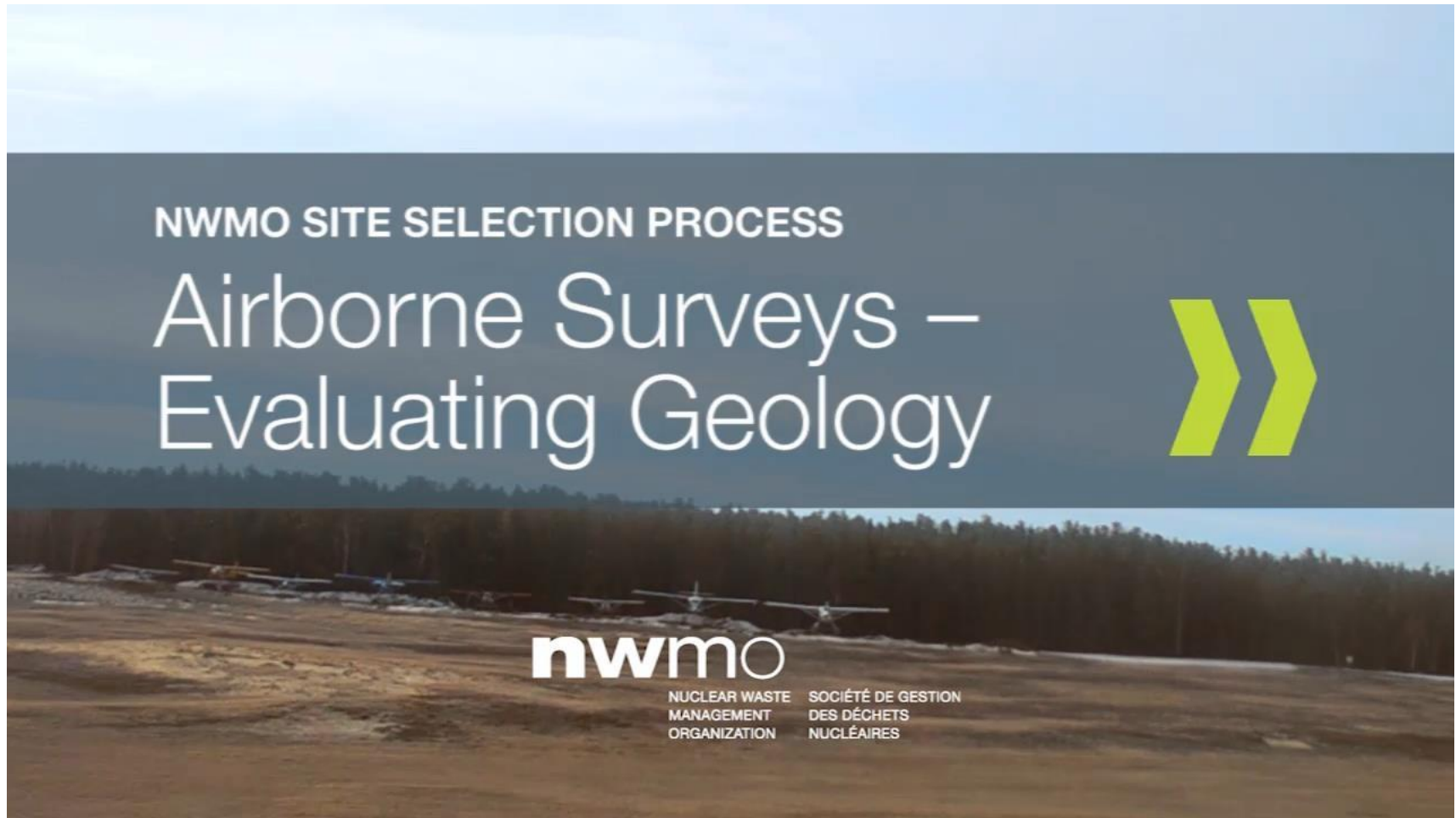


# Airborne geophysics

- High resolution magnetic and gravity surveys
- Survey data will provide information that will help:
  - Identify contrasts in rock types and thicknesses
  - Identify faults and fractures
  - Improve geological maps
  - Support numerical modelling of subsurface geology



# Airborne Surveys – Evaluating Geology





# Looking Ahead - Observing general geological features and detailed geological mapping

- Understand lay of the land and general features
- Detailed mapping of outcrops (rock exposure)
- Ground-truth faults and fractures
- Collect more detail about rock types, structures
- Collect surface information, such as topography and extent of overburden



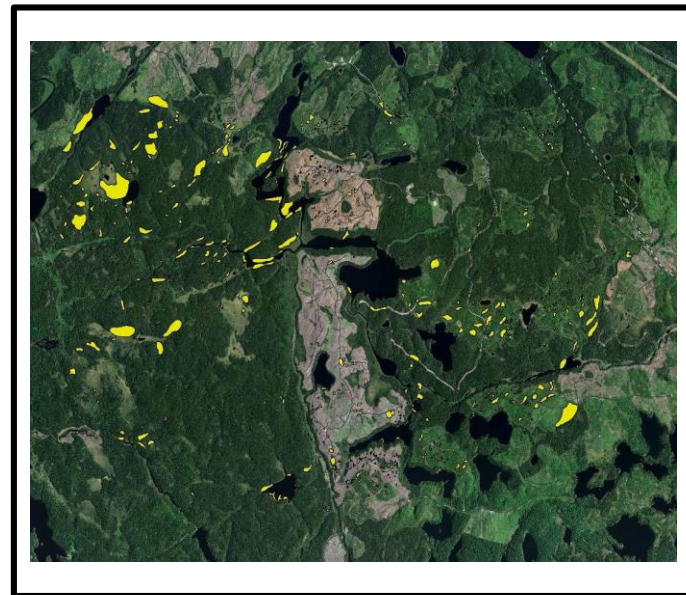
# Looking Ahead - Geological mapping

## Scope

- Map as many rock outcrops as possible for detailed geological mapping

## Approach

- a) Predict location and extent of rock outcrops using high-resolution aerial imagery (desktop) and local knowledge
- b) Identify key features of interest
- c) Conduct brief reconnaissance fly-overs to confirm predicted outcrops
- d) Refine plans and initiate mapping
- e) Non-intrusive activities





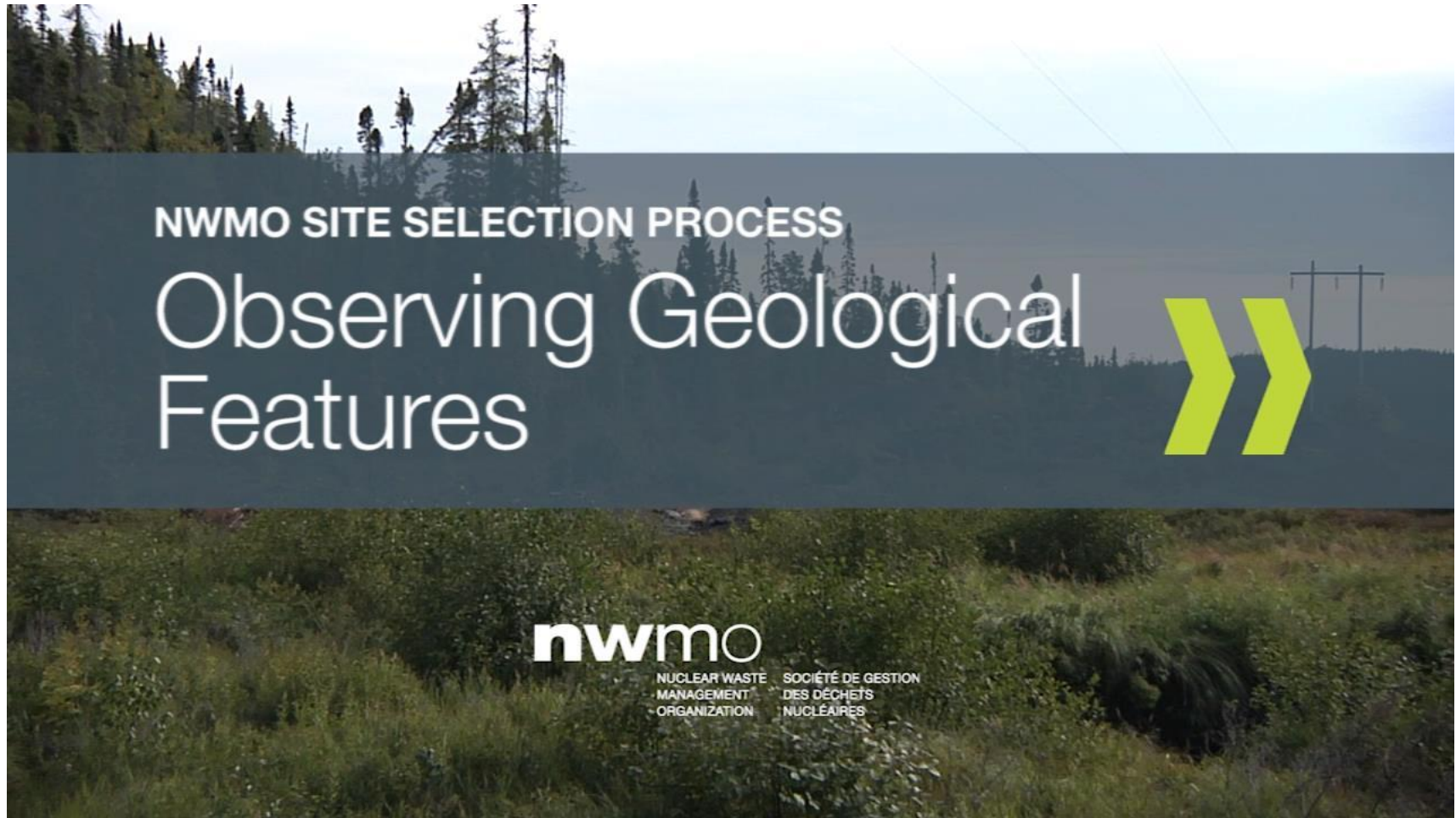
# Methods

- Digital data collection with built-in GPS
- Typical geologists 'tool-kit'
  - Compass
  - Pen/notebook
  - Camera
  - Geology hammer
  - PPE
- Magnetic susceptibility meter
- Portable gamma ray spectrometer





# Observing Geological Features



# Working Together

- All field activities will be planned and implemented in collaboration with people in the area
- Findings will be shared





# For more information, see our brochures:



MARCH 2015

## PRELIMINARY ASSESSMENT OF POTENTIAL SUITABILITY Airborne Geophysical Surveys



MARCH 2015

## PRELIMINARY ASSESSMENTS – PHASE 2 Observing General Geological Features

### Preliminary Assessments: Geology

#### Phase 1 Desktop studies

Identifying broad areas for further studies

#### Phase 2 Geophysical surveys

Observing general geological features from the ground

Geological and environmental mapping

Borehole drilling

Safety is the first consideration in finding a site for a deep geological repository for Canada's used nuclear fuel. Desktop studies began the process of learning about rock characteristics using available geological maps and reports. Preliminary study areas that may contain suitable bodies of rock were identified based on findings from desktop studies. Reports summarizing desktop studies and maps of preliminary study areas are available at NWMO community offices, at [www.nwmo.ca](http://www.nwmo.ca) and on local Community Liaison Committee websites.

Phase 2 activities build on this earlier work.

### Observing general geological features

The purpose of this activity is to visually observe key geological features in the areas being studied. These observations will help build more knowledge about the rock in the area and inform more detailed study in the future.



MAY 2015

## PRELIMINARY ASSESSMENT OF POTENTIAL SUITABILITY Detailed Geological Mapping

Safety is the first consideration in finding a site for a deep geological repository for Canada's used nuclear fuel. Detailed geological mapping (also known as detailed outcrop mapping) is one of a series of technical studies that will help identify a safe and secure location for the repository.

### Why This Study Is Done

The purpose of detailed outcrop mapping is to further advance our understanding of the bedrock geology in the areas being studied. These mapping investigations will help refine our understanding of the rock type. We will study the structural character of the bedrock, especially the size, type and location of fractures. We will also look at the rock's physical characteristics, such as colour and texture.

Detailed outcrop mapping will also help us better understand the distribution and thickness of overburden, which is made up of looser materials like clay, sand or gravel overlying the bedrock. We will also document the accessibility of the areas studied.

**Thank You**