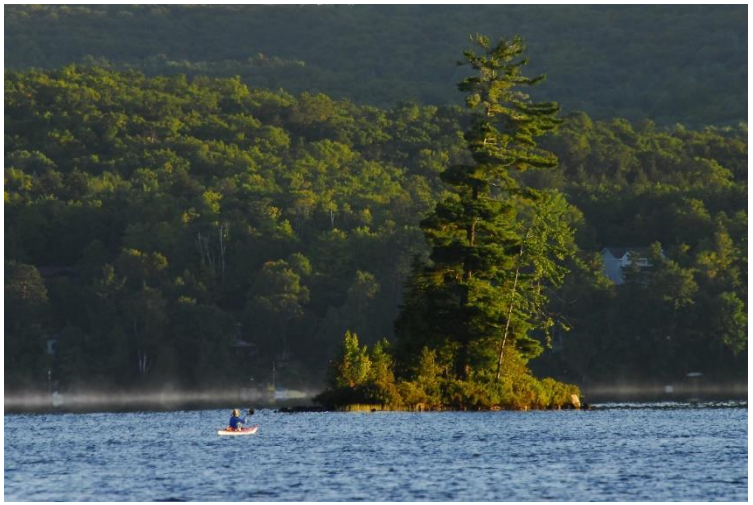
BEST MANAGED COMPANIES Platinum member

www.jlrichards.ca



Trout Lake Study and Management Plan

Presented by:
Greg Kirton, Jason Ferrigan and Brent Parsons
Date: January 16, 2024
JLR No.: 31162-000

NORTH BAY ONTARIO · CANADA

East Ferris MUNICIPALITY · MUNICIPALITÉ

NORTH BAY - MATTAWA CONSERVATION AUTHORITY 1972-2022 | 50 Years of Conservation

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

Hutchinson ENVIRONMENTAL SCIENCES LTD.

Scientific Questions - Modelling

MECP approach vs our approach

- MECP utilized the Lakeshore Capacity Model and assumed that 100% of the phosphorus from every septic system within 300 m of Trout Lake or inflowing tributaries ended up in Trout Lake. MECP overpredicted the concentration of phosphorus in Trout Lake and therefore the model couldn't be used to determine development capacity.
- We reduced the amount of phosphorus coming from septic systems by 86% (discussed in more detail later) which caused the model to be more accurate. We also looked extensively at lake health and other capacity measurements to help inform recommendations.

Scientific Questions - Modelling

Trout Lake vs Lake Nosbonsing

- The two lakes are very different in depth, nutrients, oxygen, algae blooms, and so are the watersheds.
- The lakeshore capacity model for Nosbonsing underpredicted measured phosphorus concentrations so the model was altered to better account for internal loading of nutrients and agricultural runoff.
- Both studies included evaluation of recreational capacity.
- Capacity for development on the West and Main Basins of Nosbonsing, Astorville basin determined to be at capacity for all criteria.

Scientific Questions - Modelling

Water Quality Objectives

- There are provincial and more conservative municipal water quality objectives for phosphorus and dissolved oxygen. The most conservative values (i.e., lowest for phosphorus and highest for oxygen) were always used for water quality analysis, or to determine capacity.
- Spring phosphorus is often used to depict whole-lake conditions after turnover if data are limited but we used ice-free average values because lots of data were available.
- The assessment included data up until 2019 as more recent data were not available when data assessment was completed. An update to the assessment could be completed but would require a new scope of work.

Scientific Questions – Septic Systems

- The phosphorus load from septics was reduced by 86% in the model which is the same as the average reduction monitored in the Eastview Estates Development. This value was conservative as discussed in Section 5.3.1 because:

a. The model was most accurate at 90 – 100%
b. Peer-reviewed scientific studies indicate phosphorus retention is typically >90%
c. Soil mapping indicated that conditions in the watershed support phosphorus retention
d. Phosphorus retention in the shoreline buffer wasn't considered in peer-reviewed literature or local monitoring

Scientific Questions – Recommendations

- 15 recommendations developed to improve

a. water quality monitoring and reporting
b. septic system monitoring
c. site evaluation reports
d. best management practices
e. future water quality assessment and management

Policy Questions – Lot development

Why is new lot development being proposed?

Ontario's land use planning framework requires that water quality be protected, improved or restored and prohibits development and site alteration in fish habitat, unless in accordance with federal and provincial requirements

The model results indicate that a limited amount of new development can be accommodated in the Trout Lake Influence Overlay Area while protecting water quality and fish habitat in accordance with provincial requirements, provided best management practices are followed

Land use planning recommendations build upon the direction in the Official Plan and Zoning By-law.

Policy Questions – Lot development

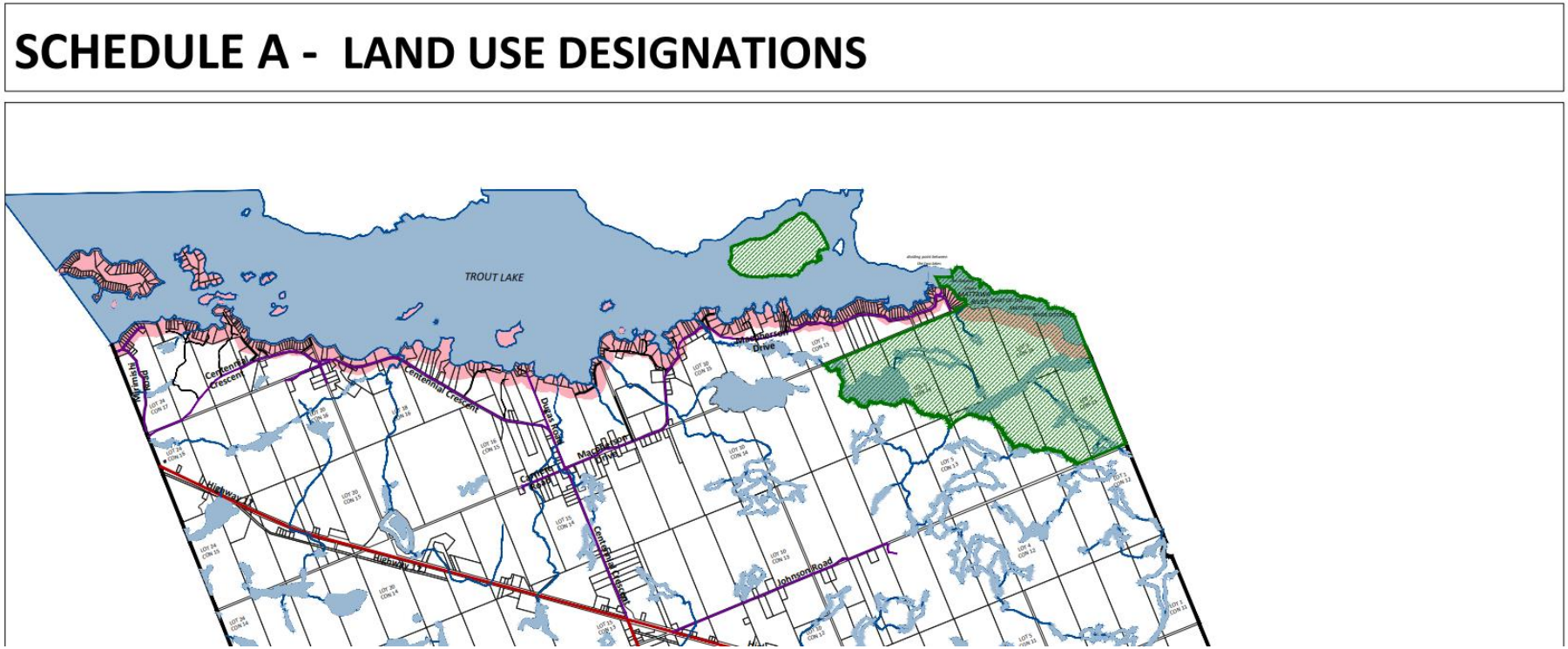
How was the number of lots arrived at?

	Main Basin	Four Mile Bay
Existing Land Use Characteristic		
# of permanent residential lots	772	249
# of seasonal residential lots	110	76
# of existing, vacant, legal lots of record	151	49
Modelled TP[1] Concentrations and PWQO		
Modelled Background TP (µg/L)	3.76	5.18
PWQO Background + 50 percent (µg/L)	**5.64**	**7.77**
Modelled TP – Conversions and Existing Lots (µg/L)[2]	5.13	6.63
Modelled TP – New Lots, Full Development (µg/L)[3]	5.63	7.76
Modelled Spring Overturn TP and Predicted MVWHDO		
Modelled Spring Overturn TP – Conversions and Existing Lots (µg/L)	5.74	7.25
Predicted MWVDO[4] (mg/L)	10.9	8.78

1. TP = Total Phosphorous
2. Assumes all existing seasonal residences are converted to permanent residences, all existing vacant legal lots of record are developed, and all future on-site septic systems achieve 86 percent retention of septic-related total phosphorous.
3. In addition to Assumption 2 above, assumes 414 new lots are created in the Main Basin and 254 lots are created in Four Mile Bay. This level of development is not recommended but presented for information purposes only. As discussed below, this report recommends that the existing MWQO of 7.0 µg/L for Four Mile Bay be maintained. If this approach is approved, this would create the potential for up to 80 lots to be created in Four Mile Bay.
4. Demonstrates potential impact of modelled TP concentrations on dissolved oxygen concentrations. For information purposes only.

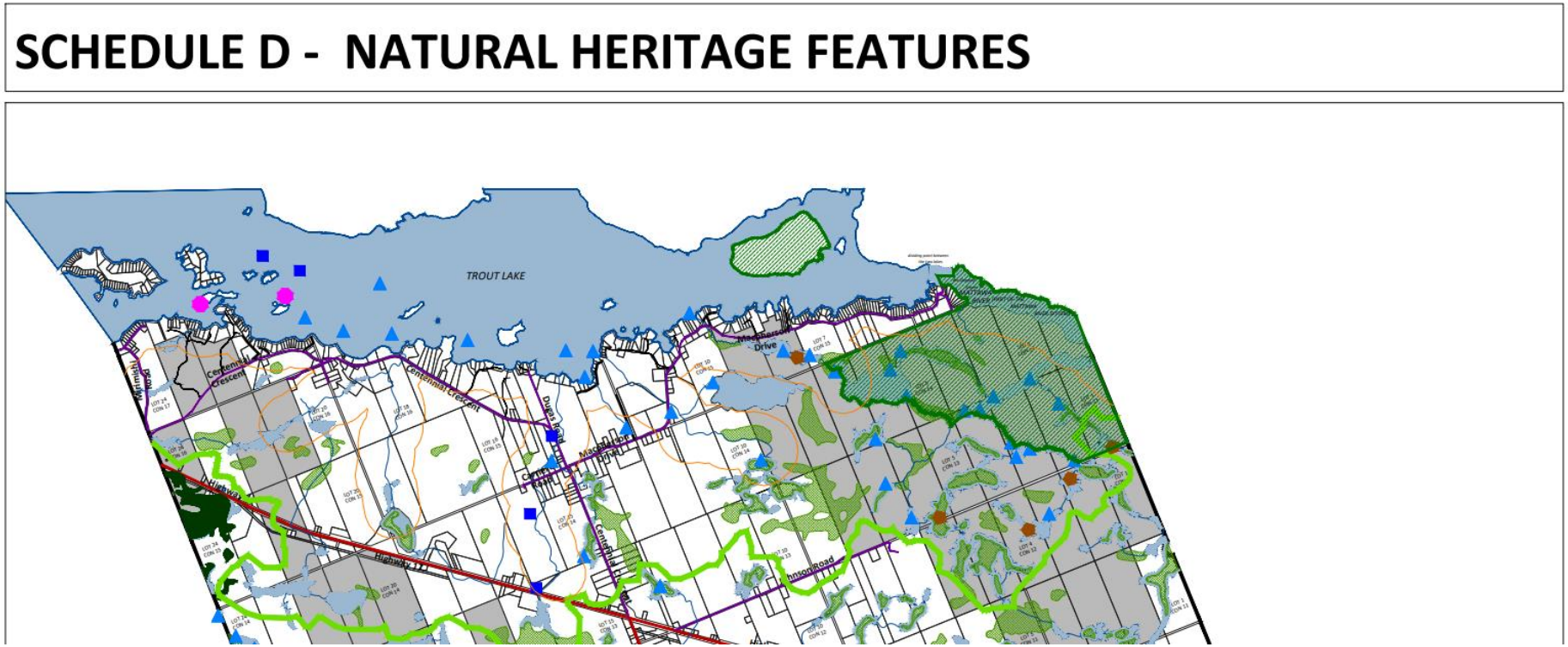
Policy Questions – Lake BMPs

What does the Trout Lake Influence Area Overlay Represent?



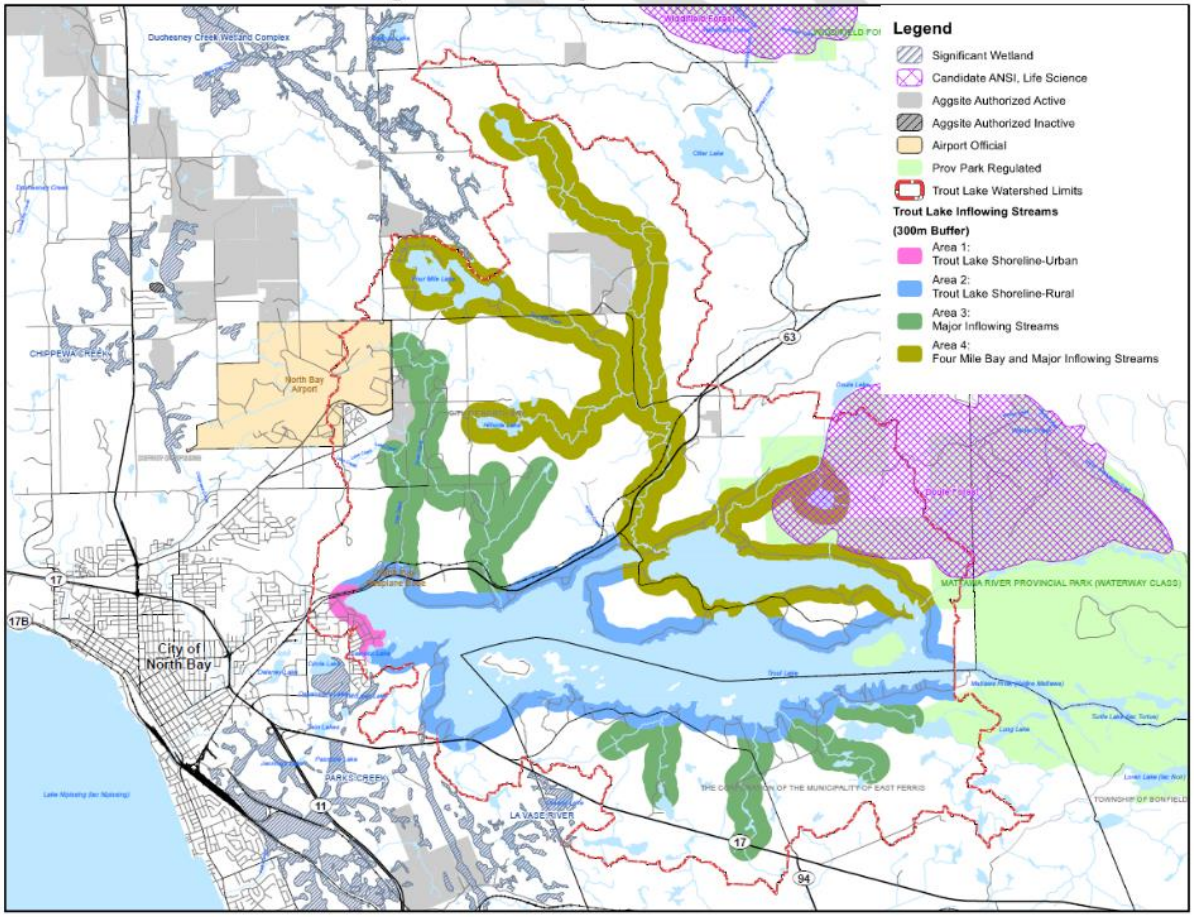
Policy Questions – Lake BMPs

What does the Trout Lake Influence Area Overlay Represent?



Policy Questions – Lake BMPs

What does the Trout Lake Influence Area Overlay Represent?



Policy Questions – Lake BMPs

How do Best Management Practices (BMPs) address community concerns

East Ferris collaborates with the Federal Government, Provincial Government, North-Bay Mattawa Conservation Authority and City of North Bay to protect the lake

A “multi-barrier approach” to protecting water quality and fish habitat:

1. Source-water protection
2. Official Plan policies
3. Zoning By-law
4. Site Plan Control
5. Septic system approval, voluntary monitoring and mandatory pump outs
6. By-law enforcement
7. Lake water quality monitoring
8. Regular and periodic lake model updates

Policy Questions – GIS Review

Review of the East Ferris Study Area completed manually with CGIS:

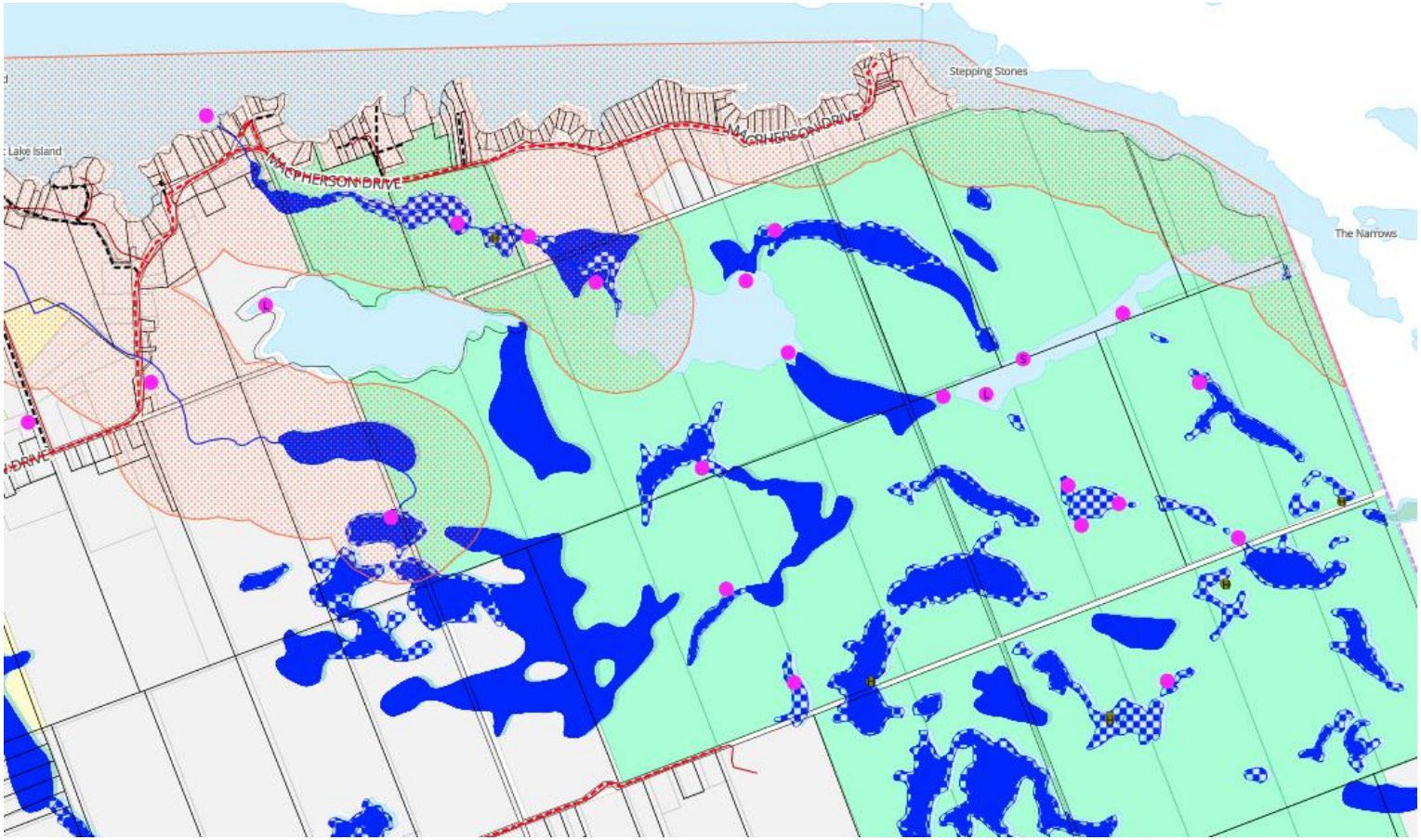
Proposed 33 lot capacity in East Ferris would be split between lots located on the shoreline of Trout Lake and lots located adjacent to inflowing streams.

Staff identified 4 potential candidate lots for severance on the shoreline of Trout Lake. This was identified through a high level review looking at lot frontage, lot area and access considerations primarily.

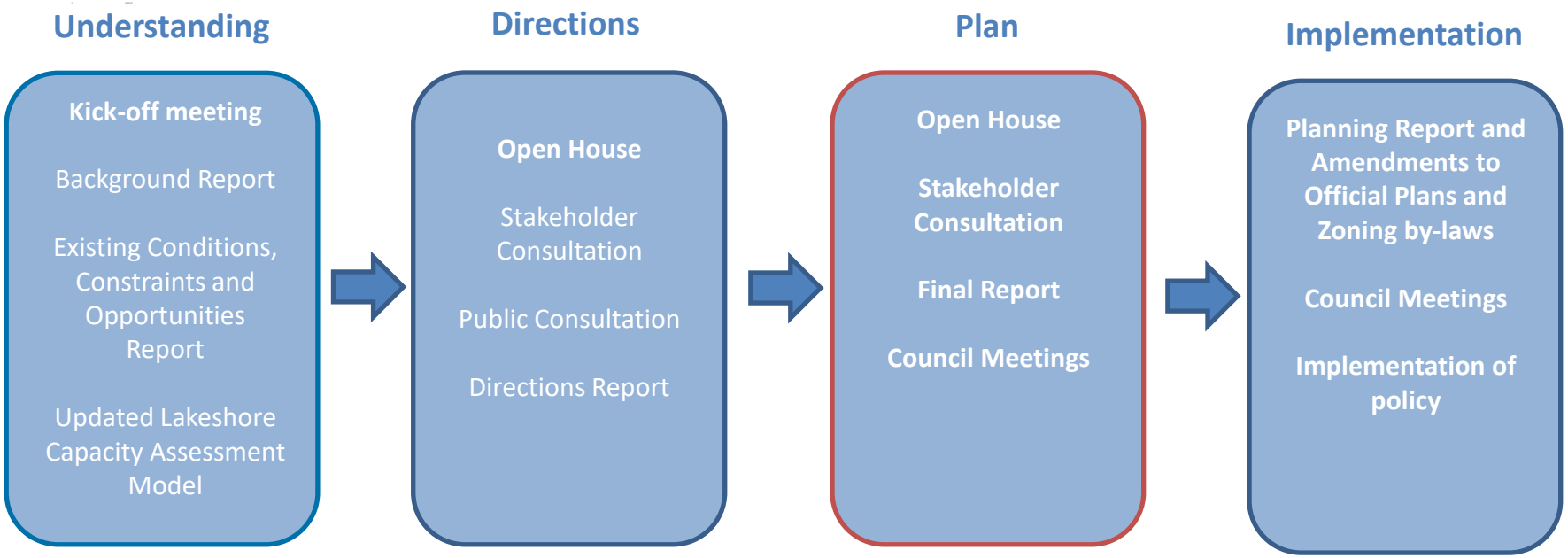
All other lot development would take place adjacent to inflowing streams. There are many candidate sites so it is not possible to outline where these development locations may take place.

Policy Questions – Algonquin Land Claim

Effects of these policies on the Algonquin Land Claim?

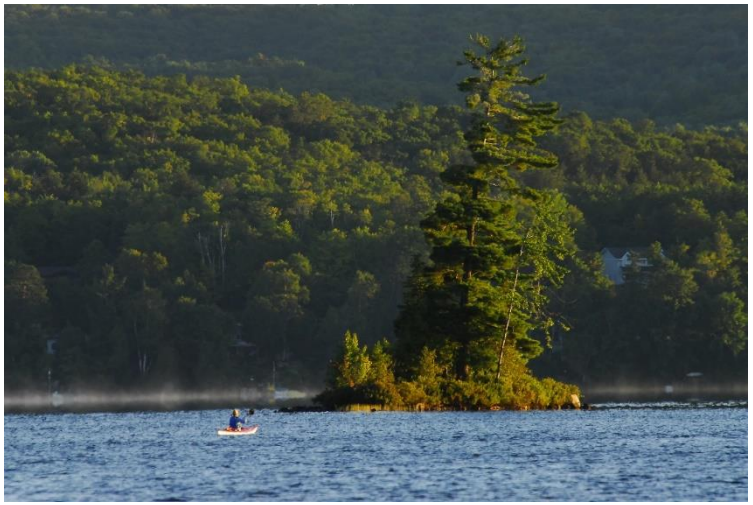


Public Engagement



BEST MANAGED COMPANIES Platinum member

www.jlrichards.ca



Trout Lake Study and Management Plan

Presented by:
Greg Kirton, Jason Ferrigan and Brent Parsons
Date: January 16, 2024
JLR No.: 31162-000

NORTH BAY ONTARIO · CANADA

East Ferris MUNICIPALITY · MUNICIPALITÉ

NORTH BAY - MATTAWA CONSERVATION AUTHORITY 1972-2022 | 50 Years of Conservation

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

Hutchinson ENVIRONMENTAL SCIENCES LTD.