City of Yellowknife

Raw Water Supply Upgrade

Open House

April 16, 2026

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Land Acknowledgement

The City of Yellowknife acknowledges that we are in Chief Drygeese territory. From time immemorial, it has been the traditional land of the Yellowknives Dene First Nation. We respect the histories, languages, and cultures of all other Indigenous Peoples including the North Slave Métis, and all First Nations, Métis, and Inuit whose presence continues to enrich our vibrant community.

Agenda

Welcome + Introductions

- Objectives
- Team

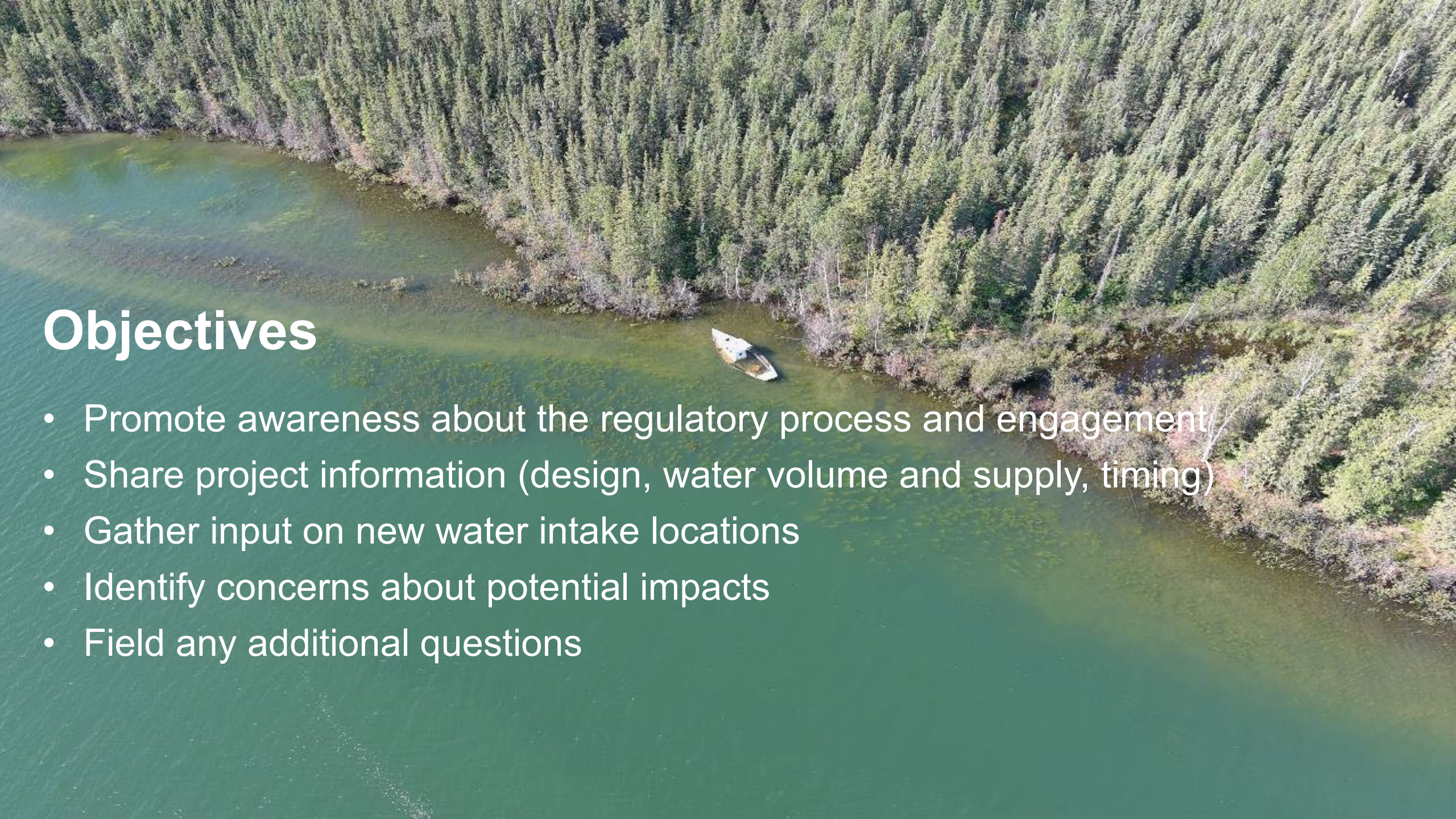
Introducing the Project

- History
- Why We're Here
- Project Schedule

Project Elements

- Existing Raw Water System
- Proposed Pumphouse Upgrades
- Raw Water Supply Intakes
- Regulatory + Engagement

Discussion & Questions



Objectives

- Promote awareness about the regulatory process and engagement
- Share project information (design, water volume and supply, timing)
- Gather input on new water intake locations
- Identify concerns about potential impacts
- Field any additional questions

The Team

CITY OF YELLOWKNIFE

Chris Greencorn
Director, Public Works and Engineering

Wendy Newton
Manager, Engineering

Tim Morton
Manager, Environmental Impact and Regulatory Affairs

AECOM

Ryan King
Project Engineer

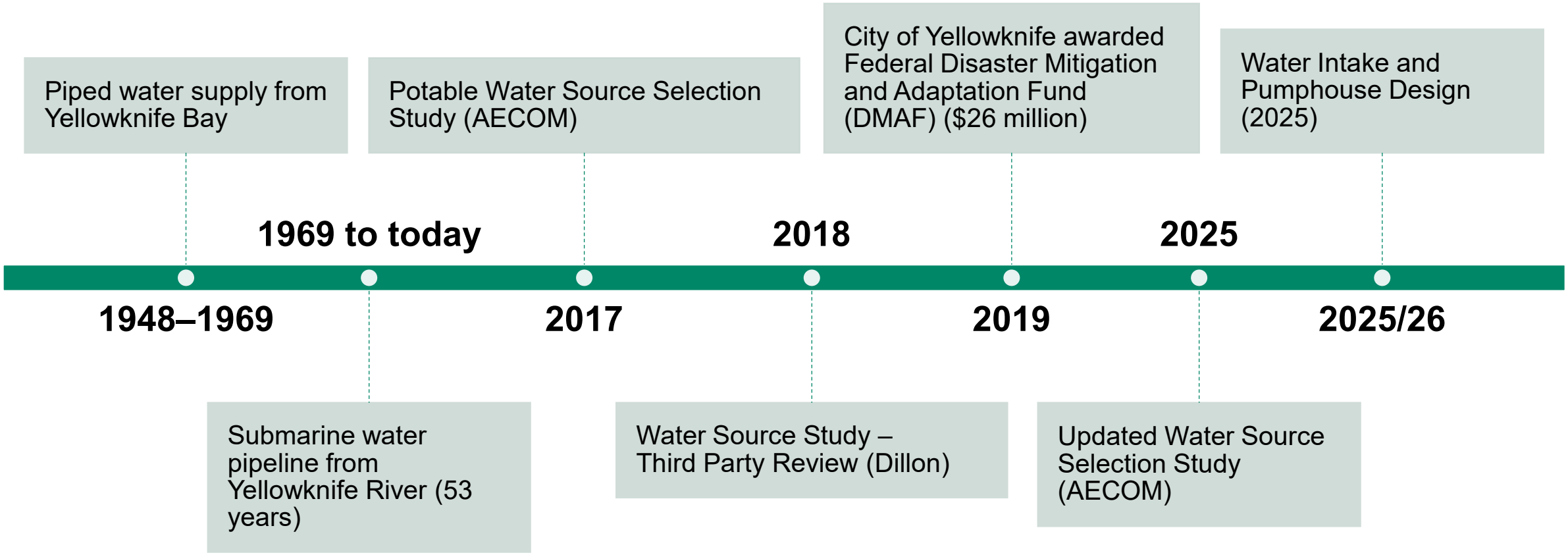
Morag McPherson
Regulatory Lead

Erin Huck
Engagement Lead

Introducing the Project

- History
- Why We’re Here
- Project Schedule

History


Piped water supply from Yellowknife Bay
Potable Water Source Selection Study (AECOM)
City of Yellowknife awarded Federal Disaster Mitigation and Adaptation Fund (DMAF) ($26 million)
Water Intake and Pumphouse Design (2025)
1969 to today
2018
2025
1948–1969
2017
2019
2025/26
Submarine water pipeline from Yellowknife River (53 years)
Water Source Study – Third Party Review (Dillon)
Updated Water Source Selection Study (AECOM)

Why We're Here

- Provide a safe and reliable drinking water supply to the City of Yellowknife.
- Request to increase of water volume intake for the growing community
- Use federal funding to upgrade important infrastructure for drinking (raw) water system
- Ensure City's water licence is compliant to allow water to be drawn from Yellowknife Bay or River.

Why We're Here

Type A Water Licence Amendment (Part D: Water Use)

The City is requesting to:

- Change the purpose of **water use** for Yellowknife Bay from Equipment Maintenance to Drinking Water and
- **Increase maximum quantity** of water for Yellowknife Bay and Yellowknife River from 4,000,000 m3/yr to 8,000,000 cubic metres annually.

Type A Water Licence MV2021L3-0003 (Draft Amendment, Part D: Water Use)

Purpose of Water Use	Name and Type of Water Source	Location	Geographic Coordinates		Proposed Water Use Volume/Rate, including units
			Latitude	Longitude	
Drinking Water*	Yellowknife River Type: River	PH2 intake	62.52138° N	114.31769° W	8,000,000 m^3/year for duration of the Water Licence
Drinking Water*	Yellowknife Bay Type: Lake	PH1 intake	62.45112 °N	114.35188° W	8,000,000 m^3/year for duration of the Water Licence

* The combined annual quantity of water intended for drinking water purposes withdrawn from either Yellowknife River or Yellowknife Bay will not exceed 8,000,000 m^3 per year.

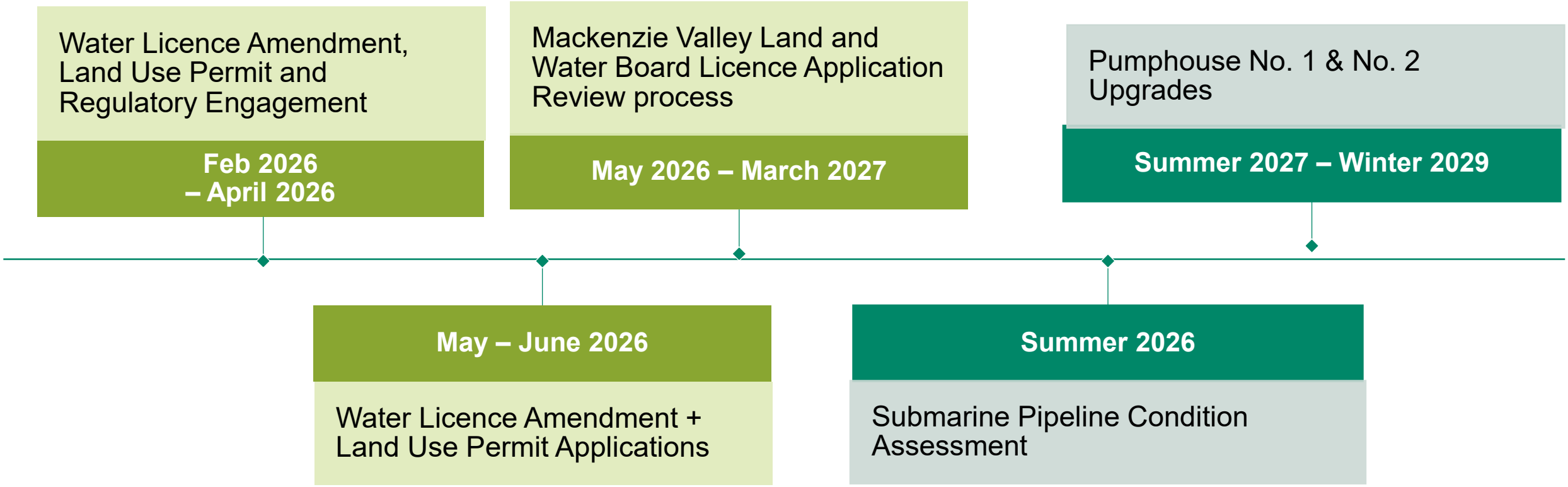
Why We’re Here

Type A Land Use Permit

Pumphouse No.1 upgrades

- New Type A Land Use Permit Application for construction
- Will be subject to Preliminary Environmental Screening under the *Mackenzie Valley Resource Management Act*
- Will required additional regulatory approvals

Project Schedule



** Estimated schedule - to be revised as planning progresses*

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- Proposed Pumphouse Upgrades
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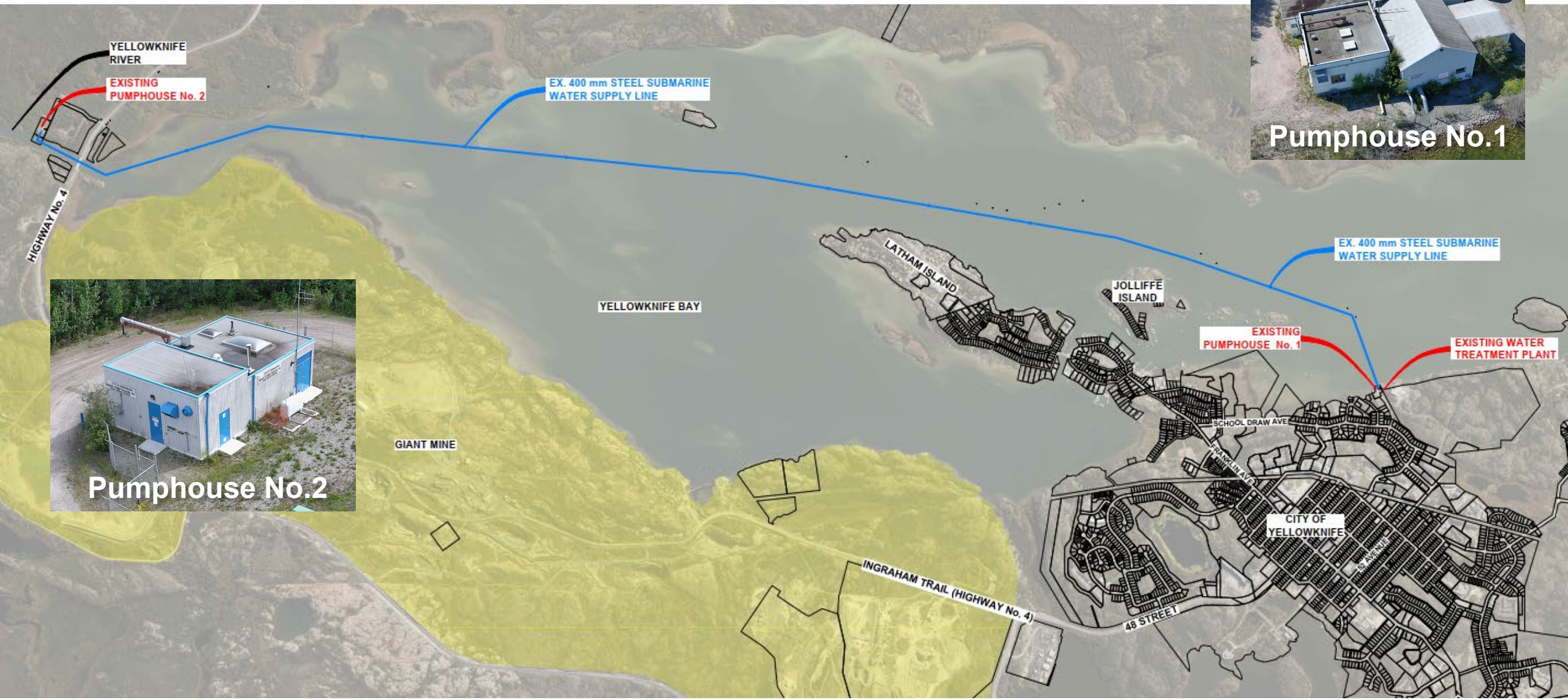
Existing Raw Water System



Existing Raw Water Supply Pipeline

- Lease agreement between City and Northwest Territories
- Existing pipeline will remain in place.
- Limit sediment disturbance to Yellowknife Bay lake bed
- Internal condition assessment on current pipeline upcoming
- Ongoing sediment sampling and water quality monitoring during construction

Pumphouse No. 2 – Proposed Upgrades

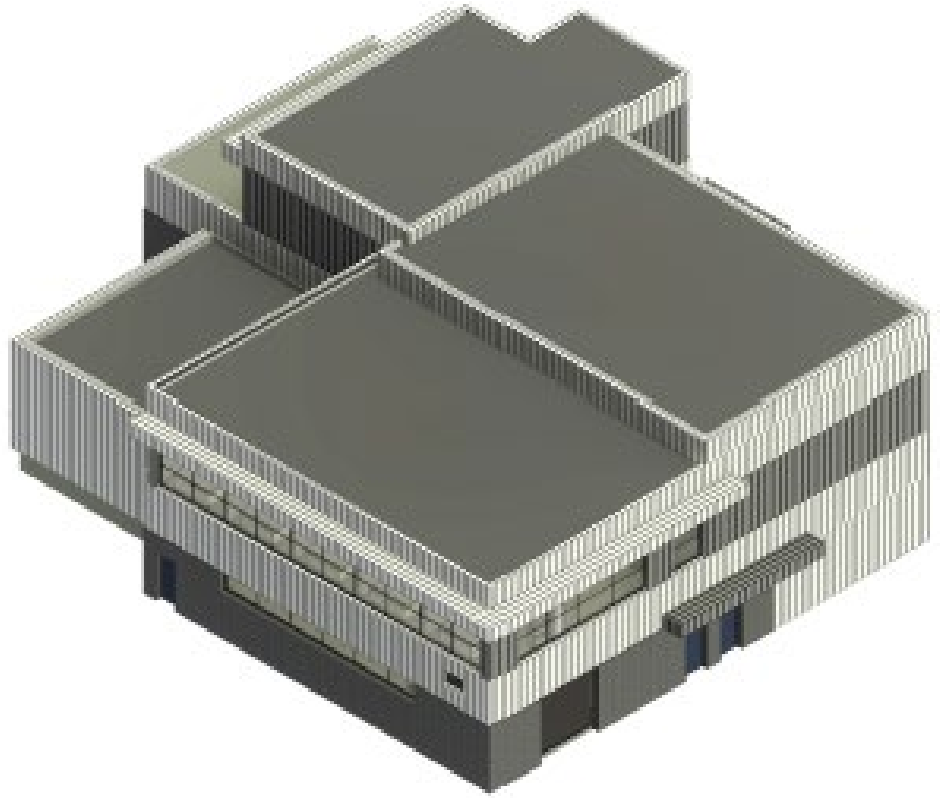
- Modest building upgrades
- Replace pumps and piping
- New ventilation, heating, & cooling
- New exterior generator
- Electrical upgrades (E-House)
- Heating upgrades
- Building and road expansion

Example E-House Design (Schneider Electric)

Proposed Upgrades – Pumphouse No. 2

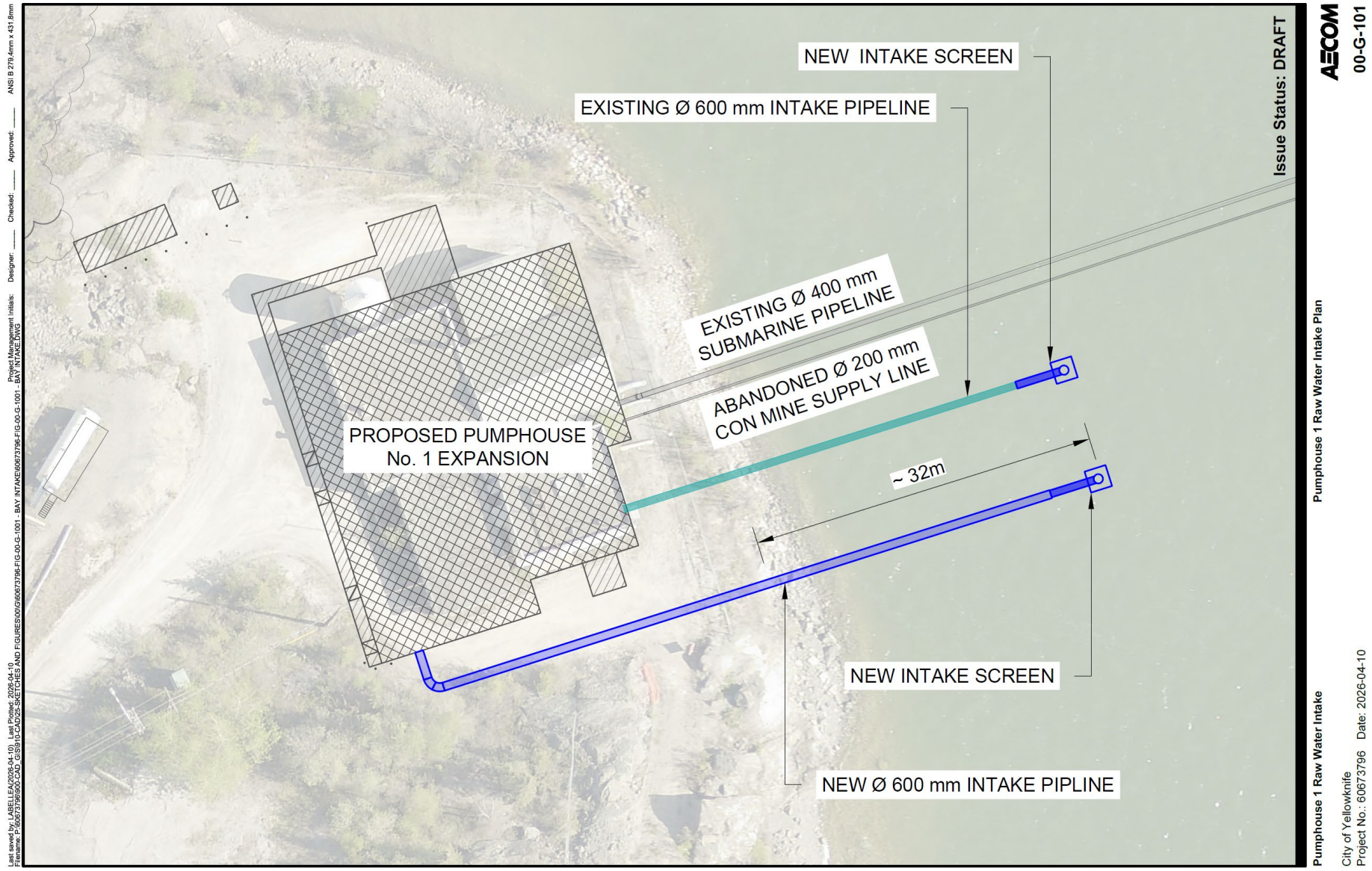
Pumphouse No. 1 – Proposed Upgrades

- 75 year design life for new structure
- Replace entire structure
- Change in pumping philosophy
- New process piping
- New heat, ventilation, cooling
- New generator
- New office space on second floor
- Site grading, parking, water/wastewater



Conceptual Rendering – Pumphouse No. 1

Existing and New Intake Pipeline Locations



Intake Material + Features

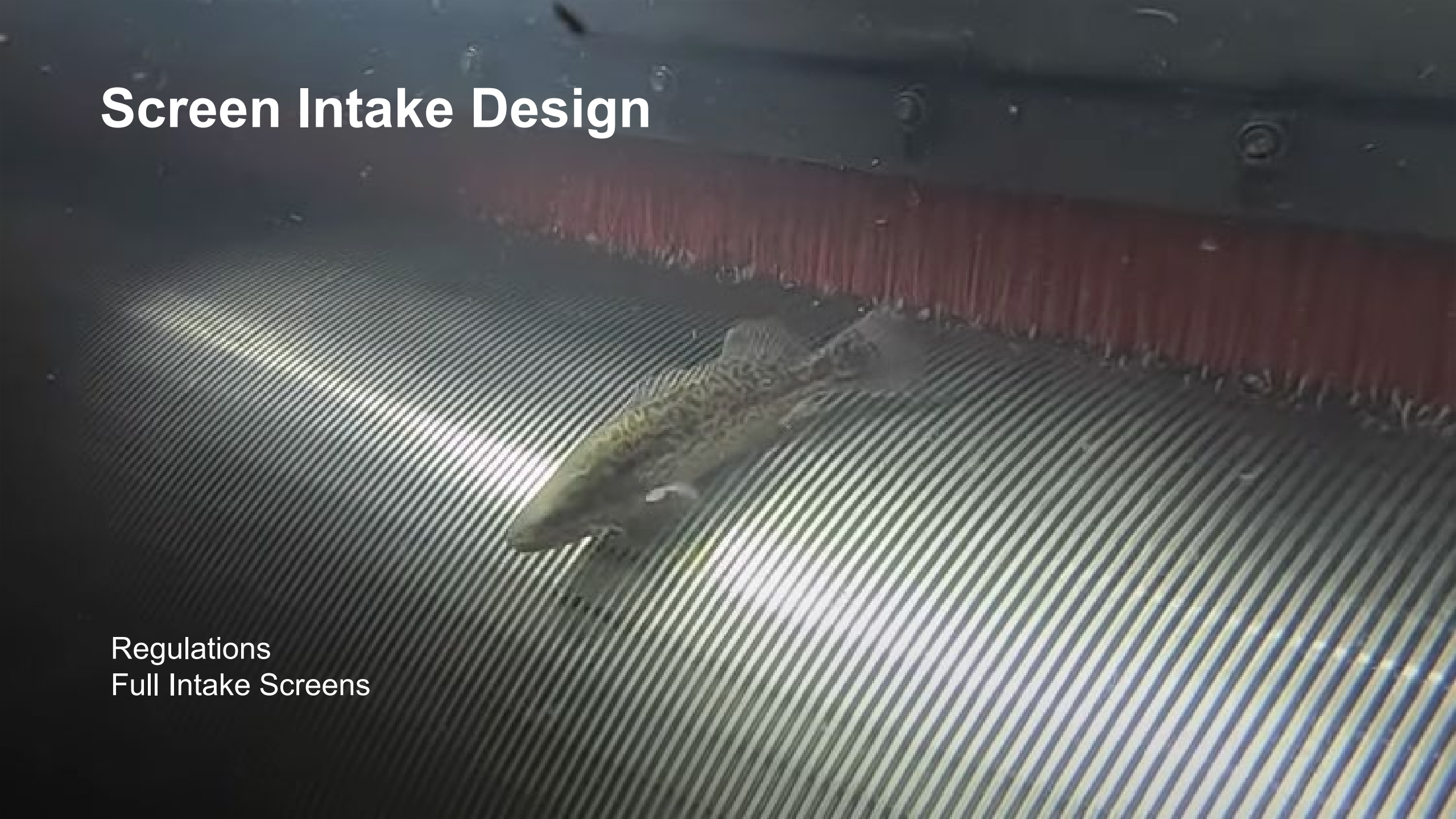
High Density Polyethylene (HDPE)

- Proven in submarine pipeline construction
- Does not corrode
- Relatively light material
- Concrete weights required for submersion where exposed on lakebed

Steel

- Existing lake intake and pipeline material
- Susceptible to corrosion

Screen Intake Design



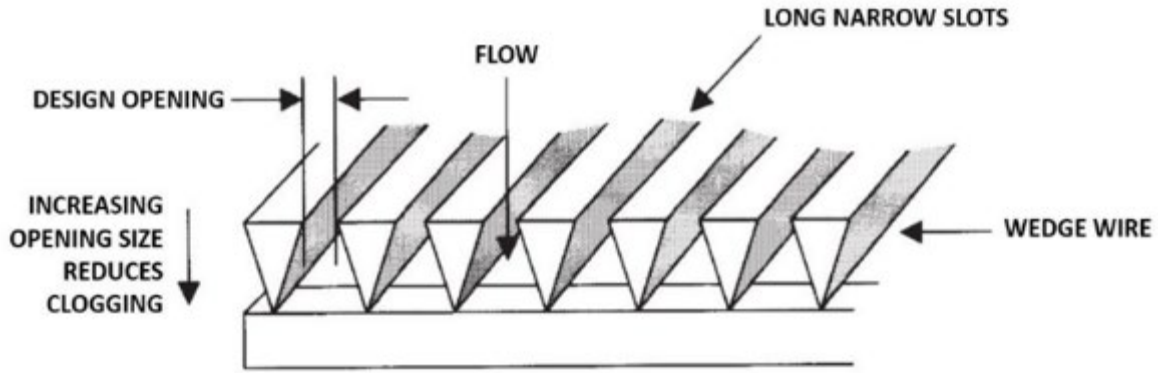
Regulations
Full Intake Screens

Department of Fisheries and Oceans Code of Practice: End-of-Pipe Fish Protection Screens

Key Fish Species in Yellowknife Bay				
Species Group	**Species**	**Wiilideh Name**	**DFO required approach Velocity**	**Photos**
Salmon and Walleye	Inconnu	wıìlıì	0.098 m/s	
	Lake Trout	łıwezǫ		
	Lake Whitefish	łì		
	Cisco	wıìlıìtsòa		
	Arctic Grayling	ts'èt'ìą		
	Walleye	-		
	Longnose Sucker	dohdorı		
	Ninespine Stickleback	-		
	Slimy Sculpin	-		
Pike	Northern Pike	ıḛhdaà	0.055 m/s	
Eel	Burbot	Nǫhkwè	0.035 m/s	

Department of Fisheries and Oceans Code of Practice: Key Design Requirements

- Effective screen area
- Screen material
- Screen shape



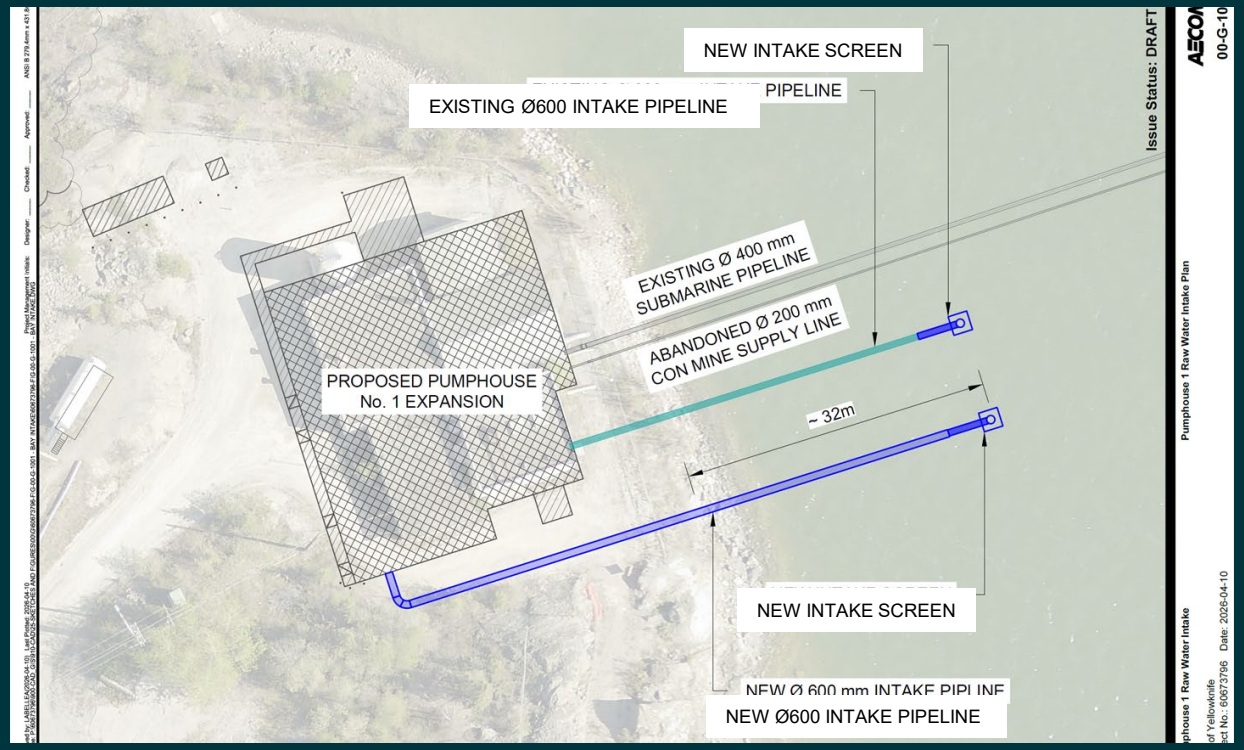

Credit: Paul Vecsei

Yellowknife Bay – Cylindrical Tee Style Screen

- New Tee screen will replace existing 600mm intake pipe
- Ideal for lakes and other locations with abundant depth
- Space efficient and easy to install relative to the half intake style screen
- 0.035 m/s maximum approach velocity at 20-year maximum instantaneous Water Treatment Plant flowrate

Pumphouse No. 1 Intakes

- Existing intake pipeline to get new intake screen
- New intake pipeline to be installed



Regulatory + Engagement

Regulatory

Department of Fisheries and Oceans *Fisheries Act*

- Codes of Practice
- Measures to protect fish and fish habitat
- Request for Review

Transport Canada *Canadian Navigable Waters Act*

Government of the Northwest Territories

- Land tenure updates – Commissioner's Land lease

Others

- Explosives permit
- City permits

Engagement

- Notification of Affected Parties
- Regulator Engagement
- City Web Page

Cisco run at Tartan Rapids, Yellowknife River. Photo: Paul Vecsei

Discussion & Questions

CITY OF YELLOWKNIFE

waterlicence@yellowknife.ca

AECOM

Ryan King
306.280.4471
Ryan.king@aecom.com

AECOM

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