Registration Pursuant To The

Environmental Assessment Regulations 2003

under the

Environmental Protection Act

For The Proposed

Rattling Brook Upgrades

November 16th, 2020

EXECUTIVE SUMMARY

Newfoundland Power is proposing modifications and upgrades to the Rattling Brook hydroelectric development, located in Norris Arm, NL (the Project). Proposed works include:

- Modifications and expansion of the substation;
- Construction of the 136L and 137L Transmission Line extensions;
- Relocation and replacement of the garage;
- Repairs to the surge tower; and
- Generator unit refurbishment.

The Project is located within 200 m of Rattling Brook, which is a scheduled salmon river under the *Fisheries Act* below the powerhouse. Project components will be completed concurrently during 2021. An assessment of the sources of pollution and environmental impacts from the Project was completed. With the implementation of various mitigation measures, the Project is not expected to have any significant impacts on key environmental features or receptors.

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1.0 INTRODUCTION

Newfoundland Power (the Proponent) is proposing modifications and upgrades to the Rattling Brook hydroelectric development (the Project) located in Norris Arm, in central Newfoundland (Drawing 1, Appendix A). Proposed works include:

- Modifications and expansion of the substation;
- Construction of the 136L and 137L Transmission Line extensions;
- Relocation and replacement of the garage;
- Repairs to the surge tower; and
- Generator unit refurbishment.

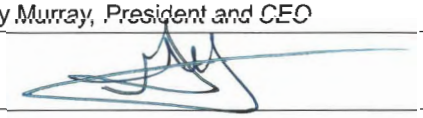
The Project site located within 200 m of a scheduled salmon river under the *Fisheries Act*. Therefore, the Project requires registration under Section 28 of the *Environmental Assessment Regulations, 2003*.

1.1 Proponent Information

Newfoundland Power operates an integrated electricity generation, transmission, and distribution system throughout the island portion of Newfoundland and Labrador. As the primary distributor of electricity on the island, they operate 12,500 km of transmission and distribution lines on the island, providing service to over 269,000 customers. They have 23 hydroelectric plants that provide energy to the Island Interconnected System, of which Rattling Brook is the largest.

Proponent and consultant contact information is provided in Table 1.1.

Table 1.1. Proponent Information

PROPONENT	
Name	Newfoundland Power Inc. A Fortis Company
Address	55 Kenmount Rd, PO Box 8910 St. John's, NL A1B 4P2
CEO	Gary Murray, President and CEO
Signature	
Website	https://www.newfoundlandpower.com
PRINCIPAL PROPONENT CONTACT	
Name	Jason Dalton
Official Title	Environmental Specialist Safety and Environment
Address	55 Kenmount Rd, PO Box 8910 St. John's, NL A1B 4P2
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Email	jdalton@newfoundlandpower.com

ENVIRONMENTAL CONSULTANT CONTACT		
Name	Shawn Duncan	Heather Mosher
Title	Vice-President	Environmental Specialist
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1.2 The Undertaking

Name of the Undertaking: Rattling Brook Upgrades (the Project)
Location of the Undertaking: Norris Arm, Newfoundland

1.3 Description of the Undertaking

The Rattling Brook hydroelectric development was constructed in 1959 and is a 2-unit plant with a rated capacity of 14.8 MW. Newfoundland Power is proposing upgrades to the development (the Project). Upgrades include replacement of a garage, refurbishments to the substation, construction of a new transmission line, upgrades to the surge tower, and refurbishment of a generator unit. These upgrades are the final stages of a system wide upgrade from 66 kV to 138 kV.

136L Transmission Line

Two new 138 kV lines will be built as extensions from the 136L and 137L Transmission Lines to the Rattling Brook substation (Drawing 2, Appendix A). The transmission line extensions will travel approximately 1.3 km from the substation to the intersection of the existing 136L and 137L Transmission Lines. The transmission line extensions will be built in new right-of-ways (ROW) adjacent to the existing distribution line. The new ROWs will be approximately 18 m wide and the transmission lines will consist of single poles with spacing typically ranging from 70-100 m depending on terrain.

Rattling Brook Substation

In order to accommodate the new 138 kV transmission line infrastructure, modifications must be made to expand the Rattling Brook substation (Drawing 2, Appendix A). An extension to the existing substation is required to connect the 138 kV 136L Transmission Line into the substation (Drawing 2, Appendix A). A new 138 kV to 66 kV, 25 MVA power transformer RBK-T3 will be installed to connect the 138 kV transmission lines to the existing 66kV substation. A new spill containment foundation will be constructed for the RBK-T3 to protect against environmental damage in the event of an oil spill from the unit.

Garage Replacement

The Rattling Brook development has a garage adjacent to the substation which requires replacement (Drawing 3, Appendix A). Built in 1959, it is original to the facility and has received only minor repairs since its construction. The garage comprises a 115 m^2 building with a steel frame construction with an additional wood frame extension, added after it was originally built, a concrete

slab floor on grade, and asphalt shingles. The building exterior is sheeted with galvanized steel panels with access provided by a personnel door and 2 overhead loading doors.

The garage is used for the storage of materials and equipment, including spare parts for the Rattling Brook and Sandy Brook hydroelectric plants, spill cleanup material, maintenance equipment, bearing oil, and grounds equipment (e.g. lawn mower and snow blower). In order to accommodate the 138 kV bus, power transformer and transmission line breakers associated with the new 136L Transmission Line, the existing garage must be moved and, as the garage is constructed in two different structural systems, it is not practical or economical to salvage it (Drawing 2, Appendix A). Therefore, the garage will be required to be rebuilt elsewhere at the substation site. The new garage may include washroom facilities as well as storage facilities. The location for the new garage will be determined upon final detailed design.

Rattling Brook Surge Tower

The hydroelectric plant has a 93 m surge tank that is used to control pressure increases in the penstock during full load rejections (Drawing 3, Appendix A). When one or both of the generators trip offline due to the operation of protective devices, the turbine control gates close to stop unit rotation. The water flowing in the penstock is diverted into the surge tank to prevent a significant increase in pressure. Unmitigated, a significant increase in pressure could cause failure of the penstock.

In 2019, an inspection of the surge tank identified issues that require attention. The inspection found significant wear on the column cross braces, with grooves worn in to the braces and one of the braces bent. The braces between the columns are used to stabilize the long, slender columns holding the tank. Without them, the columns may become unstable and result in failure under high wind conditions. Additionally, the inspection determined the fall protection system on the surge tank access ladder was damaged beyond repair and will need to be replaced.

Generator Unit Refurbishment

While the remainder of the work is being completed at the Project site, one of the two generator units located within the powerhouse will be offline for refurbishment. Unit 2 is an 8500 HP turbine generator and refurbishment includes reinsulating the rotor and turbine overhaul. The rotor is original to the unit and has reached the end of its lifespan, and the turbine requires the replacement of wear parts. The unit will be dismantled within the powerhouse and refurbished on or off-site, as some components cannot be removed from the site. Following refurbishment, the rotor will be returned to the site by truck and reinstalled in the unit. All work on the generator unit will be completed either within the powerhouse garage or off-site.

2.0 PROJECT DESCRIPTION

2.1 Project Location

The Project site is located approximately 1.1 km southeast of the town of Norris Arm (Drawing 1, Appendix A). The substation, garage, surge tower, and powerhouse housing the generator unit are located at the Rattling Brook substation site (the Project site), which is located adjacent to Ratting

Brook, approximately 1.2 km upstream from where the brook empties into the Bay of Exploits (Drawing 3, Appendix A). Access to the site is achieved from Newfoundland Highway 351.

The 136L and 137L extensions will be built in a new ROWs running parallel with an existing feeder line from the substation south approximately 1.3 km before intersecting the existing 136L and 137L Transmission Lines (Drawing 2, Appendix A). Each ROW will be approximately 18 m wide and they verge slightly away from each other as they approach the existing 136L and 137L Transmission Lines.

2.2 Physical Features

2.2.1 Key Environment Features

Newfoundland is part of the Boreal Shield Ecozone which covers much of Canada. Boreal forests are characterized by stands of Black spruce (*Picea mariana*), White spruce (*Picea glauca*), Jack pine (*Pinus banksiana*), and Balsam fir (*Abies balsamea*) mixed with bogs and other wetlands. As a result of glacial scouring, areas of bare rocky outcrops support lichen and low shrubs. The Project is located within the Central Newfoundland Ecoregion of the Boreal Shield Ecozone. Its forests are dominated by closed, intermediate to low stands of Balsam fir and Black spruce on steep, moist, upland slopes. White birch (*Betula papyrifera*), aspen (*Populus* sp.), and Black spruce are typical of disturbed sites and exposed nutrient poor sites are characterized by Black spruce, ericaceous shrubs, such as Lambkill (*Kalmia angustifolia*) and Labrador tea (*Rhododendron groenlandicum*), and lichens. Open stands of dwarfed Black spruce and Eastern larch (*Larix laricina*) with ericaceous shrubs are found on raised dome bogs.

Undeveloped areas within the Project area comprises mixedwood forest with some areas of wetland habitat. Wetlands in the area consist mainly of bogs and treed swamps, dominated by Black spruce, ericaceous shrubs, and herbaceous species that thrive in nutrient poor and acidic conditions. Much of the transmission line is located adjacent to the existing transmission line under which vegetation has been controlled and within close proximity to an access road.

The Atlantic Canada Conservation Data Centre (ACCDC) has observation records for two flora species and no fauna species of conservational interest (SOCI) within 5 km of the Project area (ACCDC, 2020). These species are listed in Table 2.1.

Table 2.1. Flora Species of Conservational Interest within 5 km of the Project

Common Name	Scientific Name	SARA[1]	COSEWIC[2]	NL ESA[3]	S-Rank[4]
Longstalk Sedge	*Carex pedunculata*	Not Listed	Not Listed	Not Listed	S3
A Sedge	*Carex houghtoniana*	Not Listed	Not Listed	Not Listed	S1

Source: ACCDC, 2020

[1]*Species at Risk Act*

[2]Committee on the Status of Endangered Wildlife in Canada

[3]Newfoundland and Labrador *Endangered Species Act*

[4]Subnational Rarity Rankings

2.2.1.1 Scheduled Waters Within 200 metres of Project Site

All Project components are located within 200 m of Rattling Brook which is a scheduled salmon bearing river downstream of the powerhouse (Schedule 1, *Newfoundland and Labrador Fishery Regulations* SOR/78-443). During the construction of the hydroelectric development in the 1950's, the brook and tributary streams were largely modified, including the construction of dams at Amy's Lake, Rattling Lake, and Goulding Pond. The development did not include mechanism for fish passage and Atlantic salmon above the powerhouse were captured and moved to the nearby Big Rattling Brook.

In 2011, installation of mechanisms for fish passage within Rattling Brook were commenced (ASF, 2020). Upstream migration is facilitated by a cage to capture Atlantic salmon below the powerhouse where they are transported upstream by truck and released into Amy's Lake. Downstream migration is facilitated by a fish bypass at Gouldings Spillway in Goulding Pond which outflows into Rattling Brook upstream of the powerhouse (Drawing 4, Appendix A). To restock the river, adult Atlantic salmon from Big Rattling Brook were captured and placed into Rattling Brook annually for 5 years. Annual fish counts exceeded 1000 returning salmon to Rattling Brook in 2020 (ASF, 2020).

The Project site, including the substation, garage, powerhouse, and surge tower, is within 200 m of Rattling Brook downstream of the powerhouse. The new transmission line ROWs run within 1.3 km of Ratting Brook upstream of the Project site. The new ROWs cross one tributary stream which drains from a small pond into Rattling Brook upstream of the powerhouse.

2.3 Construction

Construction will begin in April 2021 and continue until December 2021. Construction on Project components will be completed concurrently.

Construction of the substation expansion will involve the following:

- Relocation of the existing garage and adjacent shed;
- Removal of existing street light pole;
- Excavation to flatten adjacent land for expansion of yard;
- Extension of steel fence;
- Partial excavation of existing yard to extend ground grid;
- Excavation for concrete footings and foundations;
- Installation of new oil-filled power transformer;
- Steel erection for new steel bus structure;
- Excavation for underground trench from new steel bus structure to existing generation plant building; and
- Filling the transformer with approximately 18,900 litres of oil.

The new garage will be constructed at a new location on the Project property to be determined upon final design. Excavations for the substation and garage replacement will be restricted to the upper 2 m of the soil surface.

Repairs to the surge tower will involve the replacement of necessary structures but will not involve any ground excavation. During works to the surge tank, both generator units will be required to be turned off. In order to maintain the minimum water flow through the tailrace as required by DFO, water will flow from fish bypass at Goulding's Spillway during generator shutdown periods.

The generator unit refurbishment will be completed within the powerhouse garage or off-site. The unit will be dismantled within the powerhouse, with necessary components removed off-site for refurbishment. All associated work will be completed within the powerhouse or off-site and will not involve any ground excavation.

Construction of the transmission line extensions will begin in Spring 2021 with brush clearing along the new ROW. Following brush clearing, construction of the transmission line will involve the installation of poles and anchors, frame structures, string sag, armour and clip in the new conductor, and install vibration dampers. There is one small tributary stream that will be forded during construction activities.

2.3.1 Potential Sources of Pollution

Potential sources of pollutants that may result from construction of the Project include:

- Sedimentation and siltation from soil disturbance;
- Sedimentation and siltation in small watercourse due to fording;
- Accidental spills from construction equipment;
- Accidental leak from the generator unit during dismantling and removal from the site; and
- Disturbance of wildlife and vegetation.

Construction activities associated with the Project will involve brush clearing and soil disturbance within the 200 m buffer of Rattling Brook which may cause sedimentation and siltation into the river, negatively affecting water quality. Additionally, accidental release of deleterious substances, including fuel and lubricants, from construction machinery may also negatively impact water quality. Newfoundland Power has operating procedures in place to guide employees on how to implement emergency containment booms in the event of spill into waterbodies (OPR113.22 – Spill Containment Booms).

There are no in-water works proposed in the scheduled salmon river of Rattling Brook, however, a small tributary watercourse may be forded during construction of the transmission line extensions. Fording may result in alteration to the watercourse substrate as well as the release of fine sediments from the substrate and shoreline which may negatively impact water quality.

Vegetation clearing and construction activities may also disrupt wildlife within the vicinity of the transmission line. Disruption may occur from vegetation clearing, as well as the noise and activity associated with construction equipment. Refuse left on site may also attract wildlife to the site. Newfoundland Power has operating procedures in place to guide employees if wildlife is encountered on the job site (OPR600.04 – Wildlife). Vegetative management during migratory bird season will be completed in accordance with Newfoundland Power's migratory bird operating procedure (OPR200.38 – Migratory Birds).

Newfoundland Power will implement a project specific Environmental Protection Plan (EPP) prior to construction, including an erosion and sedimentation control plan (ESCP), wildlife management plan, spill prevention plan, and contingency plan (as necessary). Following the completion of construction activities, the areas adversely affected by this project must be restored to a state that resembles natural conditions. Additionally, the environmental management measures outlined in Section 2.7.1 will be implemented to minimize the risk of release of sediment.

2.3.2 Environmental Management Measures

Mitigative measures to minimize the environmental effects of the Project include:

- Implementation of the EPP, including the ESCP, spill prevention plan, and contingency plans (as necessary prior to construction);
- ESC structures will be maintained and inspected regularly with particular emphasis before and after forecasted heavy rain events, and with consideration of the timing and types of activities involved;
- Where necessary, ESC measures will remain in place after work is completed until areas have stabilized and natural re-vegetation occurs;
- All overburden will be removed during the excavation phase and will be stored according to provincial regulations and best practice guidelines;
- Exposed soils and stockpiles capable of producing sediment laden-runoff will continue to be stabilized and/or will be covered;
- Stream banks at fording sites that contain loose or erodible material must be adequately stabilized before crossing to minimize any siltation of the stream;
- Fording will be carried out during periods of low water levels;
- The natural course of the stream will not be altered during fording;
- Fording site will be located at sections of the channel where there is a low approach grade and the channel consists of stable substrate;
- Fording sites, including the banks, will be restored to their original condition once construction is complete;
- A complete oil spill clean-up kit must be on site at all times when gasoline or fuel powered equipment is being used or refuelled;
- Refuelling will not be completed within 30 m of a watercourse or waterbody edge; and
- Disturbed soils will be re-vegetated after construction is completed.

2.4 Operation

The Project will be constructed with structures and equipment intended for a minimum operating life of 60 years. Operation of the substation and transmission line will require minimal daily activities. Work at the substation site will consist of emergency repair and routine maintenance, including oil samples, inspection of spill containment structures, and breaker maintenance. Work along the transmission line will consist of emergency repair, and annual maintenance and monitoring. Vegetation management below the transmission line will be completed manually and will not involve the use of herbicides. Annual monitoring of the lines will be completed during the winter months by snowmobile and a ground survey of the line will be completed every 5 years.

2.4.1 Potential Sources of Pollutants

Potential sources of pollutants into environmental features that may result from operation of the Project include:

- Accidental spills from maintenance vehicles and equipment; and
- Accidental leak from the substation.

Operations of the substation and transmission line are expected to have minor impacts on the surrounding environment. It is possible that accidental spills may occur from the substation, storage facilities at the substation, or from maintenance vehicles. Newfoundland Power will ensure that an emergency spill kit is located at the substation and that staff are trained in its use. The substation expansion will also include a newly built containment foundation to prevent any contamination into the surrounding environment. In the event of a leak, the foundation is designed to contain 110% of the oil within the substation transformer. Additionally, the substation has an alarm to alert Newfoundland Power in the event of a leak on the transformer. Newfoundland Power has emergency preparedness and response procedures in place in the event of a hazardous material spill or fire (EPR 100.02) and procedures for the implementation of containment booms into water bodies (OPR113.22 – Spill Containment Booms), as well detailed site access procedures to guide emergency responders to the site (EPR 100.17).

2.5 Local Receptors

The Project is located in a largely rural area. There is an industrial development located adjacent to the site to the northeast. The nearest residential properties are located in the town of Norris Arm, approximately 1.1 km northeast of the Project site, and the Norris Arm Municipal Park is located 400 m downstream along Rattling Brook.

Construction activities have the potential to cause minor disturbances to the community, adjacent property owner, and visitors at the municipal park through creation of noise and dust from construction equipment, as well as increased traffic on nearby roads. Newfoundland Power has operating procedures in place to guide employees in terms of limiting disturbance during vegetation management (OPR101.24 – Vegetation Management) and vehicular disruptions (OPR112.14 – Traffic Control). In addition, Newfoundland Power will minimize the impact of Project activities on local receptors through the implementation of the following mitigation measures:

- Implementing a Project specific EPP, including detailed identification of impacts to receptors and management plans for noise and air quality;
- Construction activities will be completed during regular daylight working hours;
- Vehicular traffic coming to and from the site will kept at a required minimum;
- Maintain equipment in good working order and properly muffled; and
- Minimize idling of equipment and vehicles.

2.6 Occupations

Construction of the Project will require the following occupations (with NOC code breakdown) from both Newfoundland Power and Contractor staff:

- Engineering Technicians
    - 2212 Geological and Mineral Technologists and Technicians
    - 2231 Civil Engineering Technologists and Technicians
    - 2241 Electrical and Electronics Engineering Technologists and Technicians
    - 2253 Drafting Technologists and Technicians
    - 2254 Land Survey Technologists and Technicians
- Heavy Equipment Operators
    - 7312 Heavy-Duty Equipment Mechanics
    - 7412 Heavy Equipment Operators
- Line Workers
    - 7212 Contractors and Supervisors, Electrical Trades and Telecommunications Occupations
    - 7244 Electrical Power Line and Cable Workers
- Ground Workers
    - 0711 Construction Managers
    - 7217 Contractors and Supervisors, Heavy Construction Equipment Crews
    - 7611 Construction Trades Helpers and Labourers
    - 7612 Other Trades Helpers and Labourers
- Electricians
    - 7242 Industrial Electricians
    - 7243 Power System Electricians
    - 7202 Contractors and Supervisors
- Millwrights
    - 7301 Contractors and Supervisors
    - 7311 Construction Millwrights and Industrial Mechanics

Project construction will primarily be completed by contractors except for the generator refurbishment which will be completed internally by Newfoundland Power. A Newfoundland Power site supervisor will be present on site.

3.0 APPROVAL OF THE UNDERTAKING

Permits and authorization required for the Project are listed in Table 3.1.

Table 3.1. Permits and authorizations required for the Project

Permit	Responsible Authority
Release of the Undertaking under the Environmental Assessment Regulations	Department of Environment, Climate Change and Municipalities
DFO Blanket Permit	Fisheries and Oceans Canada
Municipal Construction Permit	The Town of Norris Arm

4.0 SCHEDULE

The proposed start date for construction of the Project is April 2021 with a proposed construction completion and commissioning date of December 2021. Construction of each of the Project components will be completed concurrently.

5.0 FUNDING

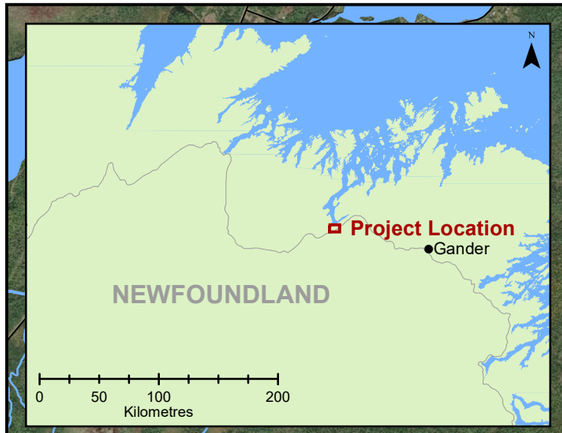
The Project does not depend on third party funding.

6.0 REFERENCES

ACCDC. 2020. Atlantic Canada Conservation Data Centre. Data Request RQ0812.

ASF (Atlantic Salmon Federation). 2020. *Will the end of summer bring more Atlantic salmon?* ASF Rivernotes 28 Aug 2020. Retrieved from: https://www.asf.ca/news-and-magazine/river-notes/asf-rivernotes-28-aug-2020

APPENDIX A
DRAWINGS



Old Wharf

Upper Sandy Point

Peterview

Wigwam Point

High Point

Alderburn

Norris Arm

Eel Brook

Little Eel Lake

Exploits River

Beatons Point

Norris Arm

Rattling Brook

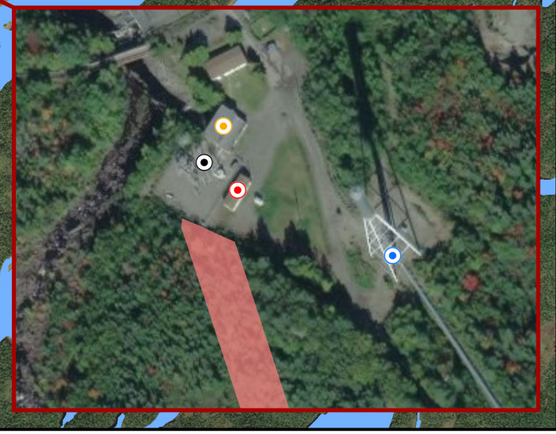
Sun Pond

Mill Lake

Gouldings Pond

Stump Pond

Amy's Lake



N

0 0.75 1.5 2.25 3 km

Notes:

1. Data Sources: GeoScience Atlas of NFLD
2. Projection: NAD83 UTM Zone 21 North.

Legend:

- Garage
- Powerhouse
- Rattling Brook Substation
- Surge Tower
- Proposed Right-Of-Way
- Lakes and Rivers
- Road
- Watercourse
- Penstock

Rattling Brook Project Overview

NEWFOUNDLAND POWER
A FORTIS COMPANY

Strum CONSULTING
*Engineering * Surveying * Environmental*
*Bedford * Antigonish * Moncton * St. John's*

Oct. 2020	Project #: 20-7506
1:40,000	Drawing #: 1
M. Savelle	
H. Mosher	

Notes:

1. Data Sources: GeoScience Atlas of NFLD
2. Projection: NAD83 UTM Zone 21 North.

Legend:

- Garage
- Powerhouse
- Rattling Brook Substation
- Surge Tower
- Proposed Right-Of-Way
- Watercourse
- Penstock

Rattling Brook 136L and 137L Transmission Line Extension

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Oct. 2020	Project #: 20-7506
1:5,000	Drawing #: 2
M. Savelle	
H. Mosher	

Notes:

1. Data Sources: GeoScience Atlas of NFLD
2. Projection: NAD83 UTM Zone 21 North.

Legend:

Proposed Right-Of-Way

Rattling Brook Substation Expansion

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Oct. 2020	Project #: 20-7506
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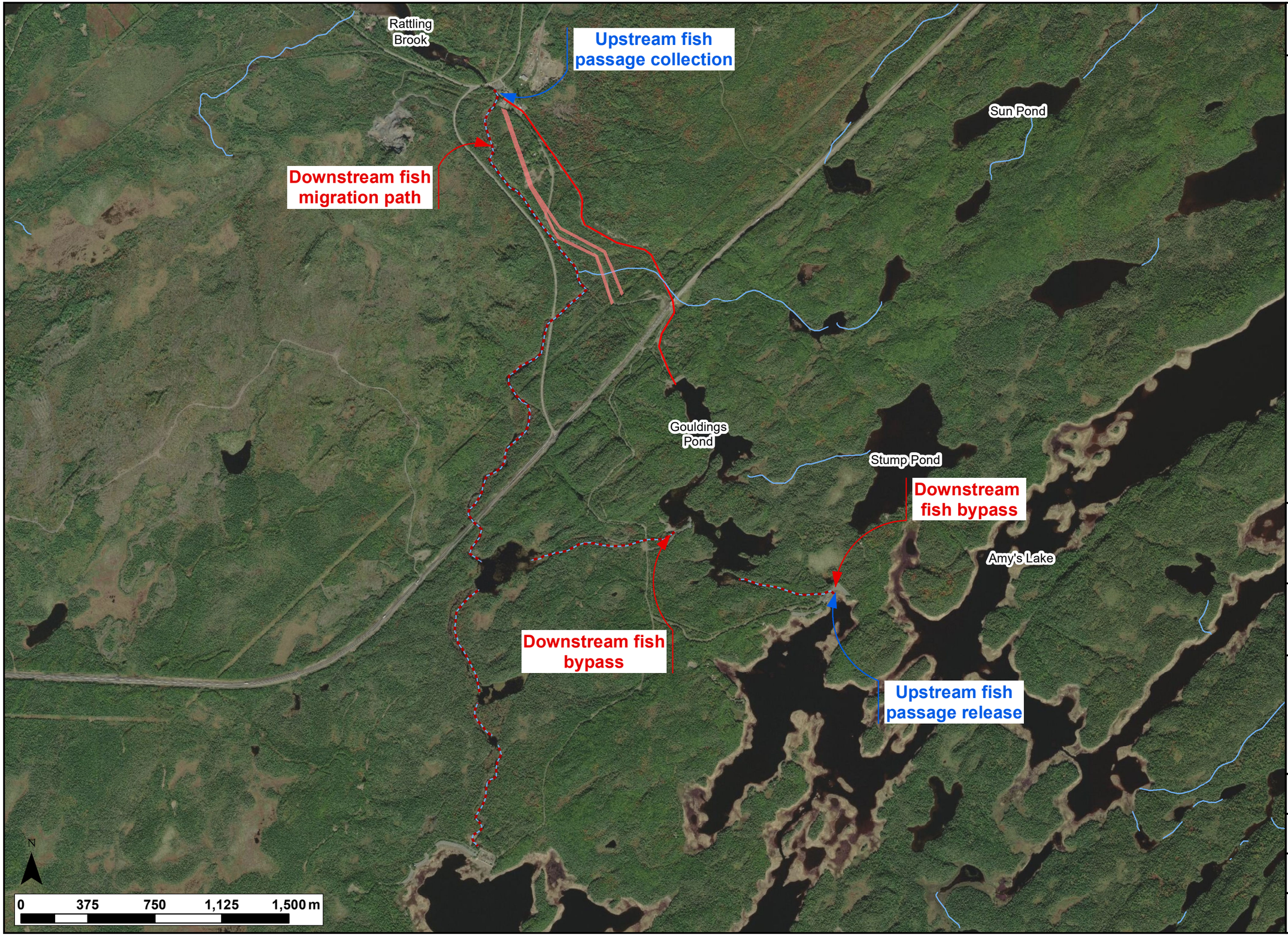
M. Savelle	
H. Mosher	



Notes:

1. Data Sources: GeoScience Atlas of NFLD
2. Projection: NAD83 UTM Zone 21 North.

Legend:

- Proposed Right-Of-Way
- Downstream Migration
- Watercourse
- Penstock

Rattling Brook Fish Passage

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Oct. 2020	Project #: 20-7506
1:20,000	Drawing #: 4
M. Savelle	
H. Mosher	