



PUBLIC SAFETY AND AWARENESS PLAN

**JACKFISH LAKE
GENERATING FACILITY, NWT
PLANT #120
YELLOWKNIFE, NORTHWEST TERRITORIES**



February 2019

DOCUMENT MAINTENANCE AND CONTROL

The Director, Health, Safety & Environment is responsible for the distribution, maintenance and updating of the Public Safety and Awareness Plan. This document will be reviewed annually and changes in phone numbers, names of individuals, etc. that do not affect the intent of the plan are to be made as required. Additional copies can be provided by the Director, Health, Safety & Environment.

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TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 SITE	1
3.0 PUBLIC SAFETY AND AWARENESS CONSIDERATIONS	5
3.1 Facility Interactions	5
3.2 Potential Hazards	6
4.0 PUBLIC SAFETY AND AWARENESS CONSIDERATIONS	7
4.1 High Voltage Risk in Substation	7
4.2 Danger Ice around Outlets.....	9
5.0 CONTACTS	14

LIST OF FIGURES

Figure 1: Regional Location of Jackfish Lake Generating Facility	2
Figure 2: Location of Jackfish Lake Generating Facility.....	3
Figure 3: Jackfish Lake Generating Facility	4
Figure 4: Facility Access Point	5
Figure 5: Jackfish Lake Generating Facility	7
Figure 6: High Voltage Warning Signs	8
Figure 7: New “Danger – High Voltage” Signs	8
Figure 8: Danger Ice.....	9
Figure 9: Danger Signs Frozen into Ice.....	10
Figure 10: News Release for Yellowknife Radio Stations	11
Figure 11: Public Notice in Yellowknife and NTPC Social Media	12
Figure 12: Danger Ice Winter Warning Sign.....	12
Figure 13: Snowmobile trails and boat launch	13

1.0 INTRODUCTION

This Public Safety and Awareness Plan has been created to present the methods the Northwest Territories Power Corporation (NTPC) will take to inform the public of potential hazards and restricted access in the vicinity of the Jackfish Lake Generating Facility to minimize the possibility of personal injury to members of the public.

This report summarizes the results of NTPC's signage, mitigation measures and communication for public safety management at the Jackfish Lake Generating Facility.

2.0 SITE

The Jackfish Lake Generating Facility is located on the northeast shore of Jackfish Lake (also known as Stock Lake) in Yellowknife, Northwest Territories.

While the North Slave communities of Yellowknife, Ndilo and Dettah primarily use electricity generated at NTPC's Snare and Bluefish hydroelectric sites, the Jackfish Facility provides a critical source of backup power to the electrical system in events of peak power demand, during hydro maintenance shutdowns or in outage situations with the loss of the transmission line to the Snare Hydro. There are three distinct generation plants within the Jackfish Facility: the CAT plant (built in 1993), the EMD plant (built in 1974) and the K plant (built in 1969). Each plant has a cooling system for the generators that utilizes water from Jackfish Lake. The Facility is surrounded by chain-link fence and is presented in Figures 1, 2 and 3.

The arrangement of buildings from east to west along the south side of the property is as follows: the administration building, the Cat Plant, the EMD Plant, the K-Plant (the three plants are joined by covered walkways), the warehouse, and the line shop. There is a water pump house located south of the K-Plant, a fuel pump house north of the K-Plant, and a storage shed northeast of the line shop. On the north side of the property from east to west is the substation, three modular generating units (G20, G22 and G23), a 90,000 L horizontal fuel tank, the Ruston Plant (used for material storage), a drum storage berm, the tank farm, and the line yard. Pole storage is located outside the fence north of the Ruston Plant.

Figure 1: Regional Location of Jackfish Lake Generating Facility

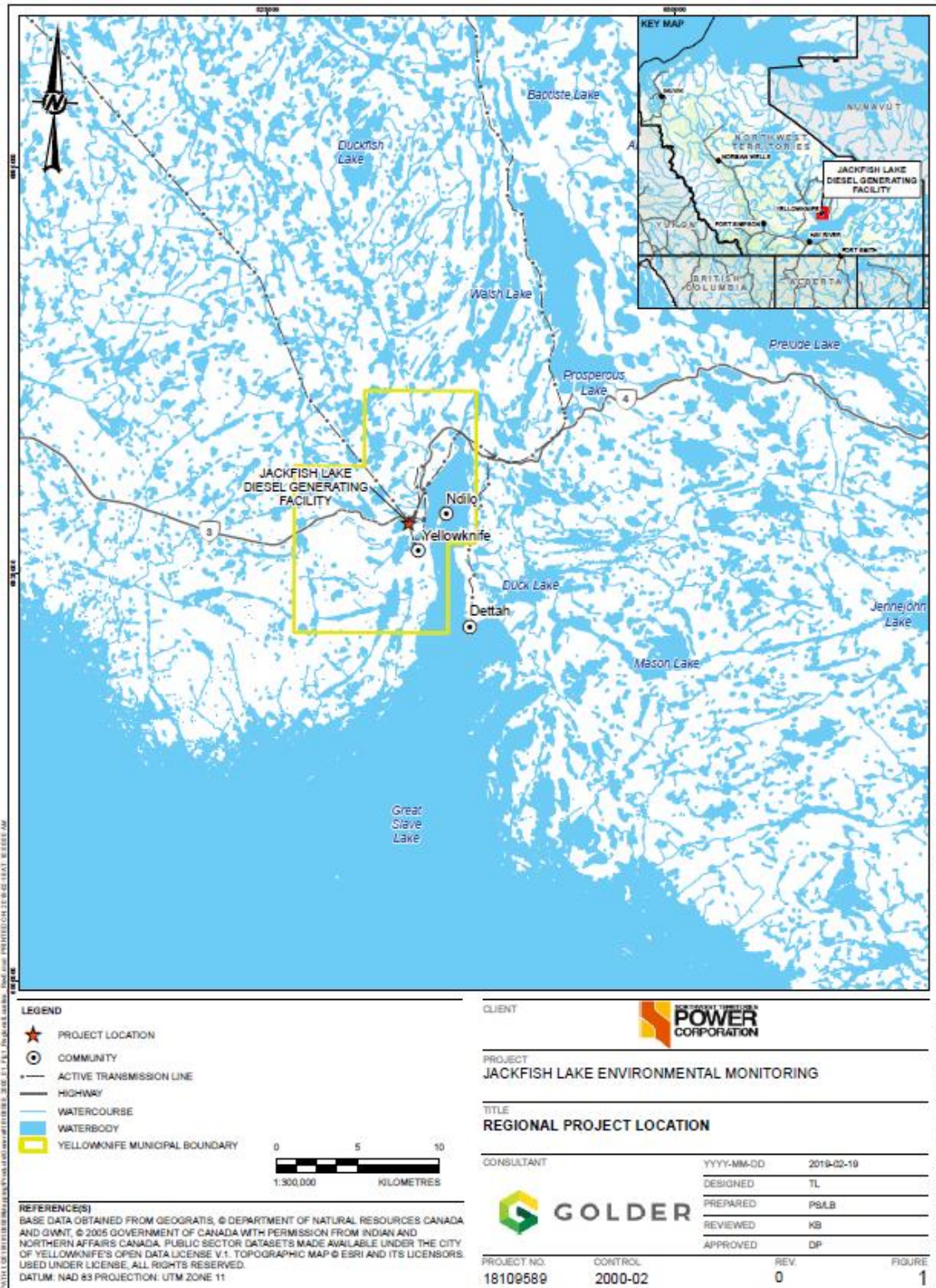


Figure 2: Location of Jackfish Lake Generating Facility

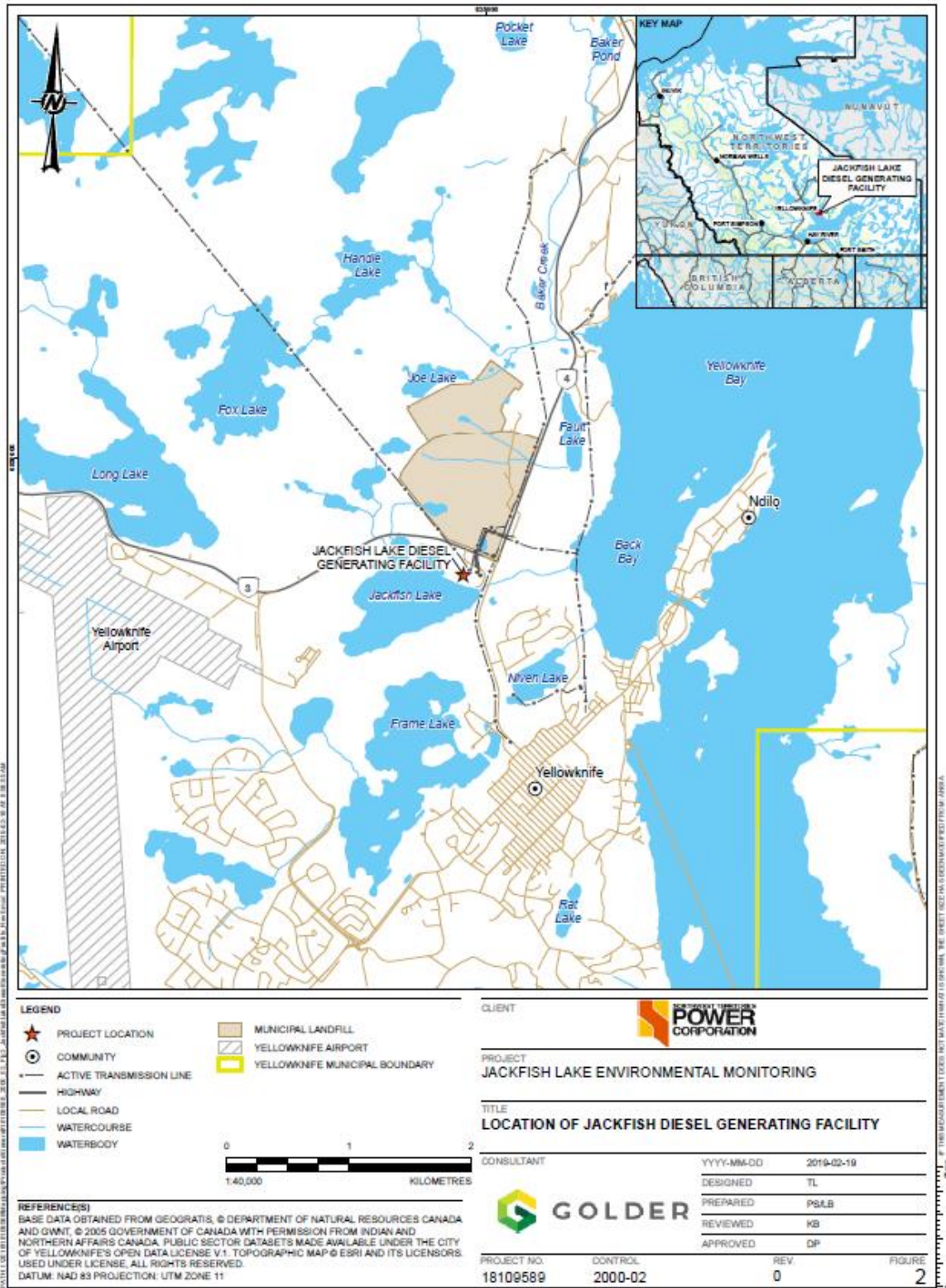


Figure 3: Jackfish Lake Generating Facility



3.0 PUBLIC SAFETY AND AWARENESS CONSIDERATIONS

3.1 FACILITY INTERACTIONS

The Jackfish Lake Generating Facility is located on the north end of Yellowknife on the northeast shore of Jackfish Lake (also known as Stock Lake). It is located near the intersection of Highway 3 and 48 Street/Highway 4 within the municipal limits of the City of Yellowknife. The location of the Jackfish facility is presented in Figures 1, 2 and 3

The Facility is accessed by a laneway turnoff from Highway 3 roughly 200m west of the Highway 3 and 48 Street/Highway 4 intersection. This laneway leads down to the parking lot and front of the administration building, which are the only parts of the Facility that are not surrounded by chain-link fence. There is a small area at the front of the administration building that the public can access to pay power bills during normal business hours.

The rest of the Facility is surrounded by chain link fence. The main access for the Facility is a man gate and a controlled automatic vehicle gate in the southeast corner of the property which can only be accessed by employees and contractors. There is also secondary access through a double gate located on the north side of the property near the Ruston Plant and a man gate and a double gate on the west side of the property, all of which are kept closed and locked.

Although the Facility is within the municipal limits of the City of Yellowknife it is isolated due to geography – it is bordered by Jackfish Lake on the south and west, by a steep rock cliff face to the north and by a steep roadside embankment on the east. On top of this the Facility is surrounded by chain-link fence with barbed wire around the top. The only way to access the Facility easily is through the laneway that turns off of Highway 3, which has several signs directing visitors to the administration office (see Figure 4). The only reason the public have to access the site is for bill payment, and this is done solely via the laneway off of Highway 3. It should also be noted that the majority of customers pay bills remotely and do not enter the site.

Figure 4: Facility Access Point



3.2 POTENTIAL HAZARDS

Given the isolated nature of the Facility, hazards to the public are limited:

- High voltage risk in substation
 - Persons entering the substation are at risk of electrocution by high voltage equipment.

- Danger ice around outlets
 - The ice is not safe in the area immediately around the outlets due to warmer water temperatures preventing proper ice formation.
 - The major hazard to the public occurs on the lake itself during winter months.
 - Persons snowmobiling or walking on Jackfish Lake ice near the outlets for the three generator cooling systems are at risk of breaking through the ice.

4.0 PUBLIC SAFETY AND AWARENESS CONSIDERATIONS

The following hazard awareness and mitigation measures have been developed to mitigate the potential hazards outlined in Section 3.2.

4.1 HIGH VOLTAGE RISK IN SUBSTATION

The primary measure to protect the public from high voltage hazards in the substation is restricting access to the Facility. This is done by the chain link fence crowned with barbwire that surrounds the entire facility. The main access gate is controlled and is for workers only, while secondary gates are kept locked. The substation itself is separated from the rest of the Facility by a chain link fence crowned with barbwire (see Figure 5). Gates to the substation are kept locked at all times. Fences are six feet high with an additional 1.5 feet of barbed wire around the top to prevent anyone from climbing over.

Figure 5: Jackfish Lake Generating Facility



The second mitigation measure to warn of the hazards within the substation is the signs that have been installed around the outside of the substation that warn of danger from high voltage (see Figure 6).

Figure 6: High Voltage Warning Signs



As part of the water licence renewal new, larger 18"x24" "DANGER – HIGH VOLTAGE" signs will be ordered and installed around the substation (see Figure 7).

Figure 7: New "Danger – High Voltage" Signs



4.2 DANGER ICE AROUND OUTLETS

The cooling systems for the three plants are always circulating water throughout the systems to avoid blockages and freezing. This results in a constant flow of water at the three outlets which prevents the formation of ice in the area immediately around the outlets (see Figure 8).

Figure 8: Danger Ice



The following mitigation measures are in place to warn the public of the danger ice hazard:

4.2.1 Barrier Around Danger Ice

NTPC has employed various barriers in the water and ice around the outlets for the cooling systems in Jackfish Lake. Since the facility has been in operation the following barriers have been employed:

- Dam safety buoys linked together to form full barrier
 - Was not an effective approach as buoys and connecting chain repeatedly broke due to ice shifting, high winds and weather and were not in proper place
 - Buoys also become covered in snow in winter and less visible
- Single warning buoys
 - Required less maintenance than full dam safety barrier but did not provide full barrier around danger ice.
- Danger signs frozen into the ice 10m apart around edge of danger ice
 - Method that was employed historically and revisited in 2018-2019.
 - Qualified contractor is hired to place 3' high "DANGER: UNSAFE ICE" signs around danger ice that are frozen into the ice. Refer to Figure 9.
 - New, larger 18"x24" signs will be employed in 2019-2020.
 - Preferred method that will be employed moving forward; clearly marks danger ice in a visible manner and stays in place.
 - Will be combined with additional signage outlined in Section 4.2.3.

Figure 9: Danger Signs Frozen into Ice



4.2.2 Public Notice

The following mitigation measures are in place to warn the public of the danger ice hazard around the outlets on Jackfish Lake:

- New release (see Figure 10) run on Yellowknife radio stations CJCD, CKLB, and Cabin Radio in early winter.
 - Ads will be run in November of each year
- Public notice run in The Yellowknifer newspaper and NTPC social media accounts including Facebook and Twitter (see Figure 11)
 - Ads will be run in November of each year

Figure 10: News Release for Yellowknife Radio Stations



Recreation Enthusiasts Warned About Thin Ice and Open Water on Jackfish and Bluefish Lakes

HAY RIVER, Northwest Territories (December 13, 2018) -- NTPC is warning snowmobilers and others who use bodies of water such as Jackfish Lake for recreation and other activities that thin ice and open water pose a significant risk to their safety. People are advised to stay off Jackfish Lake near NTPC's power plant as well as off Bluefish Lake near the hydro dam.

"We have seen snowmobile tracks in areas close to our facilities that indicate people are placing themselves and their equipment at risk in areas where the ice is very thin," said Colin Steed, Assistant Director of Hydro Operations. *"Although we have posted warning signs in the area, they are either not being seen or are being overlooked by some snowmobilers. There is thin ice and open water near these facilities and should be avoided."*

In addition to signage, NTPC will continue to use its social media channels as well as print and radio advertisements to ensure that this message gets out. Safety is NTPC's top priority, both for its workers and for the general public.

NTPC is a wholly owned subsidiary of NT Hydro, which in turn is 100 percent owned by the Government of the Northwest Territories.

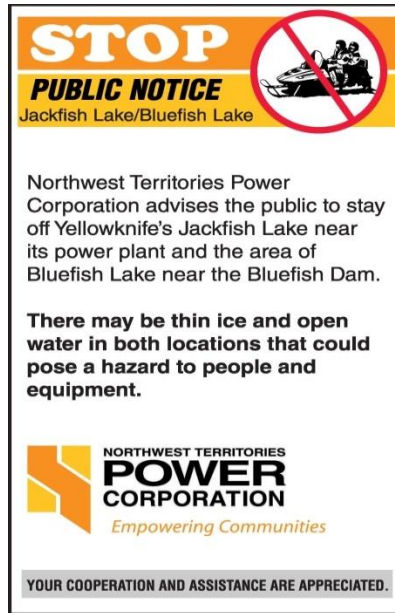
-30-

Media Contact:

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Communications Manager

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Figure 11: Public Notice in Yellowknife and NTPC Social Media



4.2.3 Signage

NTPC has or will have signage posted all around the Jackfish Facility. Existing signage includes:

- A large illuminated sign that states "DANGER- THIN ICE DO NOT PROCEED" that is placed on the ice on the west side of the facility. This large sign is clearly visible from Highway 3 and the west side of the lake.

Figure 12: Danger Ice Winter Warning Sign



New signage that will be installed to increase public awareness of the danger ice and mitigate risks to the public are:

- Warning signs at all pedestrian, boat, and all-terrain vehicle (ATV)/ snowmobile access points to Jackfish Lake including the boat launch, three ATV trails.
 - Signs will state “Danger Ice present at outlets of Jackfish Facility” with simple diagram

Figure 13: Snowmobile trails and boat launch



- Two new 4'x6' Danger sign will be installed at each end of the danger ice and attached to the fence of the Facility.
 - Signs will state “DANGER- Cooling System Outlets- KEEP OUT”

5.0 CONTACTS

Operations Manager Robert Sunderland	867-669 3338
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