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July 30, 2025

Kassandra DeFrancis  
Regulatory Specialist  
Wek'eezhii Land and Water Board  
#1 - 4905 48<sup>th</sup> Street  
Yellowknife, NT X1A 3S3  
via email: [kdefrancis@wlwb.ca](mailto:kdefrancis@wlwb.ca)

Dear Ms. DeFrancis

**Re: Snare Hydro Facilities - Water Licence W2023L4-0001 Reservoir Operations Reports Submission**

Enclosed please find Reservoir Operations Reports for the Snare hydro generating facilities. Reports covering the periods of January-June 2023, January-June 2024, July-December 2024, and January-June 2025 are included in this submission.

I can be reached at (867) 444-1170 or via email at [ehendry@ntpc.com](mailto:ehendry@ntpc.com) if you have any questions or concerns.

Sincerely,

A handwritten signature in cursive script that reads "Eileen Hendry".

Eileen Hendry, C.E.T.  
Hydrology & Business Systems Specialist



## June 2025 Reservoir Operations Report

Northwest Territories Power Corporation  
Snare Hydroelectric Facility

Water Licence No. W2023L4-0001

SUBMITTED TO:

WEK'ÈEZHÌI LAND AND WATER BOARD

JULY 2025



## TABLE OF CONTENTS

SECTION	PAGE NO.
Table of Contents	ii
Conformity Table	iii
1 Introduction	1
2 Summary of Energy Production	2
3 Forecast and Actual Flows for Snare River	3
4 Forecast and actual water levels in Bigspruce Reservoir	4
5 Precipitation	5
6 Water Licence Compliance	6
7 Closure	6
List of Tables	
Table 2-1 Forecast and Actual Average Monthly Energy Production	2
Table 3-1 Forecast and Actual Average Monthly Inflows	3
Table 4-1 Forecast and Actual Average Monthly Reservoir Levels	4
Table 5-1 Snow Survey Results	5
Table 5-2 Precipitation Records	6
List of Figures	
Figure 1-1 Map of Snare Hydro System	1
Figure 2-1 Forecast and Actual Average Monthly Energy Production	2
Figure 3-1: Forecast and Actual Average Monthly Inflows	3
Figure 4-1: Forecast and Actual Average Monthly Reservoir Levels	4

## CONFORMITY TABLE

The following table shows conformity with Water Licence W2023L4-0001, Part F, Condition 10, and Schedule 5, Condition 1.

Water Licence W2023L4-0001	Section in this Report
1. The Reservoir Operations Report referred to in Part F, Condition 10 of this Licence shall:	-
a) be submitted under the following frequency:	-
i. twice per year, reporting on six-month periods (January to June and July to December); and	-
ii. within one month of the end of the six-month period being reported;	-
b) comply with the Canadian Dam Association's Dam Safety Guidelines;	-
c) include, but not be limited to, the following:	-
i. A summary of the Snare Hydroelectric Facilities regulated under the Licence, including the location, serviced communities, means of transmission, access and generators;	1
ii. summaries of power production in both tabulated and graph format, including:	2
(1) actual energy production for the entire Snare Hydroelectric Facility by month for the six-month period being reported;	2
(2) forecasted energy production for the entire Snare Hydroelectric Facility by month for the six-month period being reported;	2
(3) forecasted energy production for the entire Snare Hydroelectric Facility by month for the upcoming six-month period.	2
iii. summaries of Snare River flows in both tabulated and graph format, including:	3
(1) actual Snare River flows by month for the six-month period being reported;	3
(2) forecast Snare River flows by month for the six-month period being reported; and	3
(3) forecast Snare River flows by month for the upcoming six-month period.	3

Water Licence W2023L4-0001	Section in this Report
iv. summaries of the Bigspruce Reservoir levels in both tabulated and graph format including:	4
(1) actual Bigspruce Reservoir water levels by month for the six-month period being reported;	4
(2) forecast Bigspruce Reservoir water levels by month for the six-month period being reported;	4
(3) forecast Bigspruce Reservoir water levels by month for the upcoming six-month period.	4
v. precipitation including snowfall accumulations (snow water equivalent) and expected surface run off for the past six-month period;	5
vi. commentary and rationale on any unusual operations or potential Water Licence non-compliance; and	6
vii. recommendations from the previous Reservoir Operation Report and Dam Safety Reviews and Annual Engineering Inspections related to the Reservoir Operation Report and the actions taken to address the recommendations.	6

# 1 INTRODUCTION

This Reservoir Operations Report has been prepared for submission by NTPC to the WLWB, as part of the requirements of Water Licence W2023L4-0001, Part F, Condition 10, for the Snare Hydroelectric Facility. This report covers the period from June 2025 to December 2025.

The hydroelectric facility is located on the Snare River (Figure 1-1), approximately 140 km northwest of Yellowknife in the Northwest Territories and currently provides electricity to the City of Yellowknife, the communities of Ndilo, Dettah, Behchokò.

The Hydroelectric Facilities consist of three generating facilities:

- Snare Rapids Facility (8.0-MW and 500 kW hydroelectric generators),
- Snare Falls Facility (7.4-MW hydroelectric generator),
- Snare Cascades Facility (4.3 MW hydroelectric generator),
- Snare Forks Facility (two 5 MW hydroelectric generators).

An all-weather road connects all four locations, and air access is available year-round; personnel and freight are also delivered via aircraft on Bigspruce Lake and an all-weather landing strip located near the Snare Falls Facility.

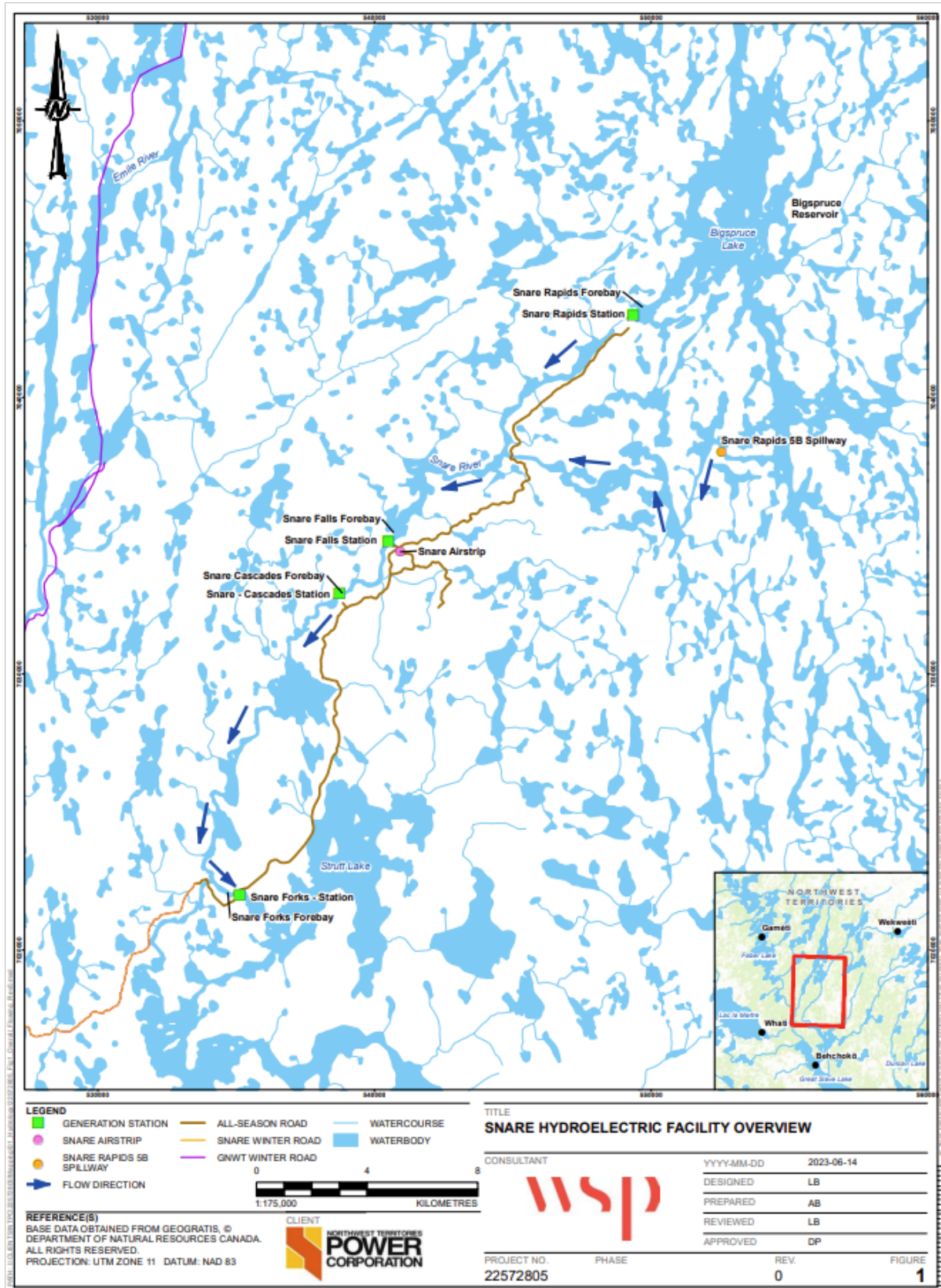


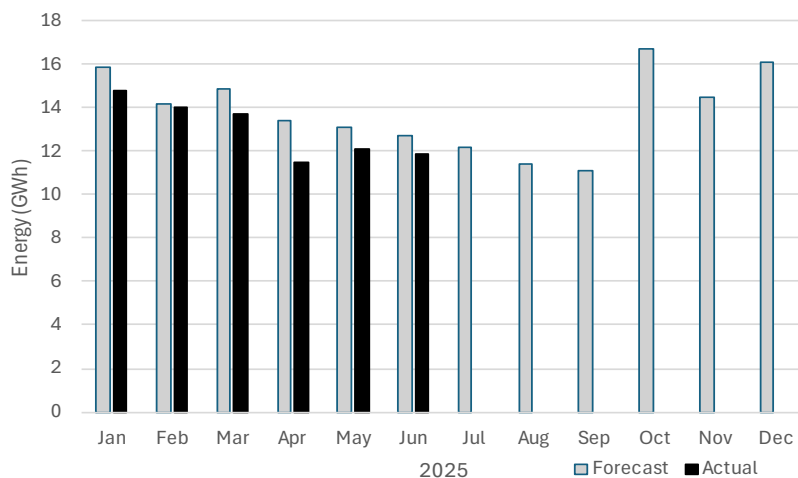
Figure 1-1 Map of Snare Hydro System

## 2 SUMMARY OF ENERGY PRODUCTION

The operational load forecast is developed based on recorded hourly loads from the previous year, with a growth factor applied as necessary to align with financial forecasting. For the 2025-26 fiscal year, a growth factor of 1% (1.01) has been applied to actual recorded values from 2024-25 to produce the operational forecast. Forecast and actual total monthly energy production is provided in Table 2-1 and Figure 2-1.

**Table 2-1 Forecast and Actual Average Monthly Energy Production**

Month (2025)	Snare Hydroelectric Facilities	
	Forecast (GWh)	Actual (GWh)
January	15.8	14.8
February	14.1	14.0
March	14.9	13.7
April	13.4	11.5
May	13.1	12.1
June	12.7	11.9
July	12.2	-
August	11.4	-
September	11.1	-
October	12.7	-
November	14.5	-
December	16.1	-



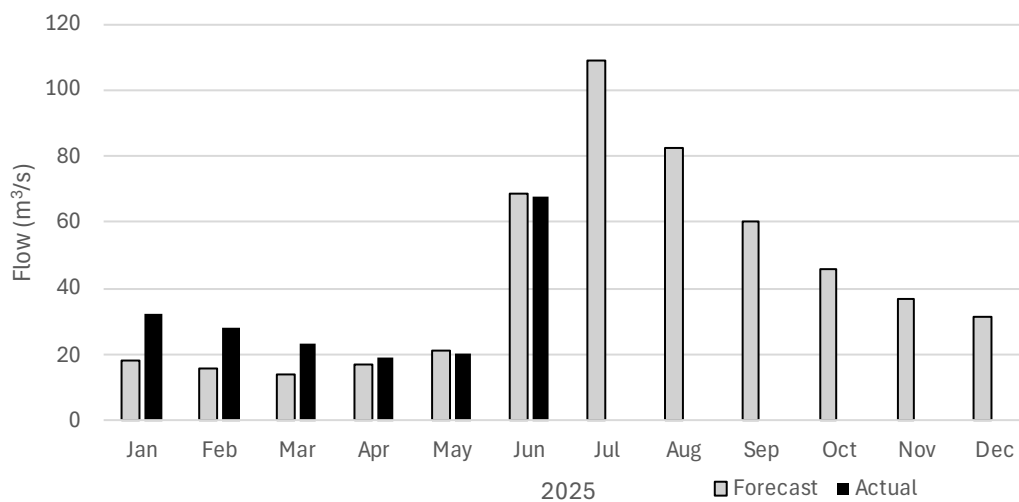
**Figure 2-1 Forecast and Actual Average Monthly Energy Production**

### 3 FORECAST AND ACTUAL FLOWS FOR SNARE RIVER

NTPC uses an empirical model to forecast inflow to the Bigspruce Reservoir. An early forecast is developed in May based on the spring snow survey of the Snare Basin and antecedent conditions from the previous fall. The early forecast is refined and updated after the flow on the Indin River peaks in late June to early July. Forecast and actual inflow of the Snare River into Bigspruce Reservoir is provided in Table 3-1 and Figure 3-1.

**Table 3-1 Forecast and Actual Average Monthly Inflows**

Month (2025)	Inflow	
	Forecast (m <sup>3</sup> /s)	Actual (m <sup>3</sup> /s)
-	Forecast (m <sup>3</sup> /s)	Actual (m <sup>3</sup> /s)
January	18.1	32.1
February	15.7	28.4
March	14	23.6
April	17	19.3
May	21.3	20.3
June	68.5	68.0
July	109	-
August	82.6	-
September	60.0	-
October	45.6	-
November	36.6	-
December	31.7	-



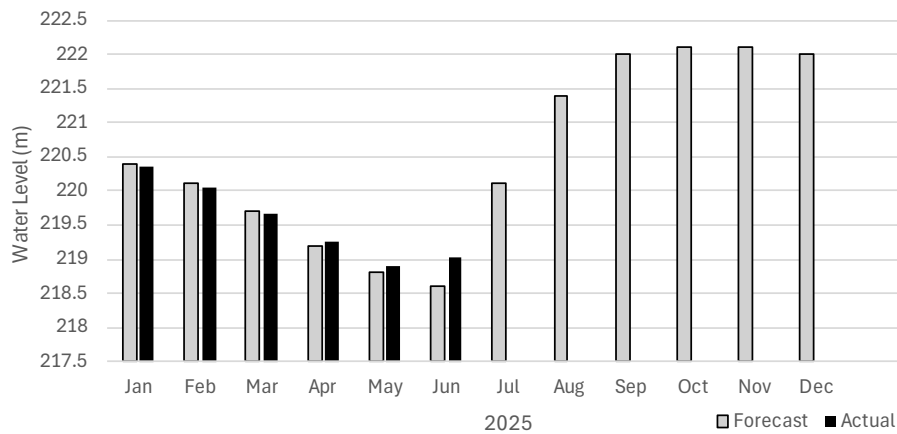
**Figure 3-1: Forecast and Actual Average Monthly Inflows**

## 4 FORECAST AND ACTUAL WATER LEVELS IN BIGSPRUCE RESERVOIR

NTPC forecasts water levels with monthly average inflow and potential outflow predictions. These forecasts are used to maximize power generation and improve flood management strategies. Forecast and actual water level in Bigspruce Reservoir is provided in Table 4-1 and Figure 4-1.

**Table 4-1 Forecast and Actual Average Monthly Reservoir Levels**

Month (2024)	Average Reservoir Level	
	Forecast (m)	Actual (m)
-	Forecast (m)	Actual (m)
January	220.4	220.3
February	220.1	220.0
March	219.7	219.7
April	219.2	219.2
May	218.8	218.9
June	218.6	219.0
July	220.1	-
August	221.4	-
September	222.0	-
October	222.1	-
November	222.1	-
December	222.0	-



**Figure 4-1: Forecast and Actual Average Monthly Reservoir Levels**

## 5 PRECIPITATION

The 2025 snow survey was conducted between March 25 and March 26, and indicated a Snow Water Equivalent (SWE) of 103.1mm (94% of average). The SWE for each sampling location is provided in Table 5-1.

**Table 5-1 Snow Survey Results**

Site	Snow Water Equivalent (SWE)		2001 - 2020 mean SWE (mm)
-	SWE (mm)	% of Mean	SWE (mm)
Bigspruce Lake	90.5	87.3	103.7
Ghost Lake	94.4	76.8	102.5
Indin Lake	112.2	104.4	107.5
Snare Lake	118.5	116.5	101.7
Winter Lake	87.8	110.4	79.5
Mattberry Lake	100.0	105.5	94.8
Castor Lake	89.4	82.1	108.9
Mesa Lake	121	98.5	122.8
Big Lake	93.3	74.6	125.1
White Wolf Lake	111.0	79.7	139.3
Christison Lake	116.0	100.0	116.0
Compared to Mean		94%	

The precipitation recorded by Environment Canada for Yellowknife and Weekweèti for the first six months of 2025 can be seen in Table 5-2. NTPC does not forecast expected surface runoff.

**Table 5-2 Precipitation Records**

Month	Yellowknife	Wekweèti
	Actual (mm)	Actual (mm)
January	5.4	4.8
February	6.8	4.3
March	2.8	0.4
April	5.6	24.9
May	8.7	22.6
June	3.0	13.5
Total	32.3	70.5

## 6 WATER LICENCE COMPLIANCE

No unusual operations or Water Licence non-compliances occurred during the reported period.

Any recommendations and actions taken to address those recommendations from the previous Dam Safety Reviews and Annual Engineering Inspections are provided in the Water Licence Annual Report.

## 7 CLOSURE

This Water Management and Reservoir Operating Plan was prepared by the Northwest Territories Power Corporation to meet the requirements of Water Licence W2023L4-0001.