

Bluefish Hydroelectric Facility General Information

November 2017

General

The Bluefish Hydroelectric Facility (620 42' N, 1140 15' W) is located 39 km north of Yellowknife on the north end of Prosperous Lake where the Yellowknife River enters Prosperous Lake from Bluefish Lake.

Bluefish is comprised of two power plants. The Bluefish G1 plant is the oldest hydro facility in the Northwest Territories built in 1942 to supply the needs of Cominco Mine at Yellowknife and has a generation capacity of 3.5 MW. The Bluefish G2 plant was built in 1994 and has a generation capacity of 4.0 MW.

There is no all season road access to the facility. The facility is accessed by boat in the summer and an ice road is constructed across Prosperous Lake in the winter connecting the facility to NWT Highway #4. When the ice road or boat is not available the site is accessed by helicopter from Yellowknife. The winter road allows for fuel, oversized equipment and freight to be delivered to site.

Duncan Lake is the main storage lake for the Bluefish system and is located upstream of the Bluefish Lake on the Duncan River System. The Duncan Lake control dam is situated at the outlet of the Duncan Lake.

In 1940 the original dam was constructed at the outlet of Bluefish Lake and in 2012 a new rockfill dam with a stainless steel core was constructed 400m downstream of the existing dam. The Bluefish dam is situated at the outlet of Bluefish Lake, upstream of Prosperous Lake on the Yellowknife River. There is a control gate on Bluefish Lake and a penstock leads from Bluefish Lake to the two hydro plants (3.5 MW and 4.0 MW) located in the Yellowknife River that outlets on the north shore of Prosperous Lake. The spillway runs down the old river channel from the Bluefish Dam to rejoin the Yellowknife River west of the facility.

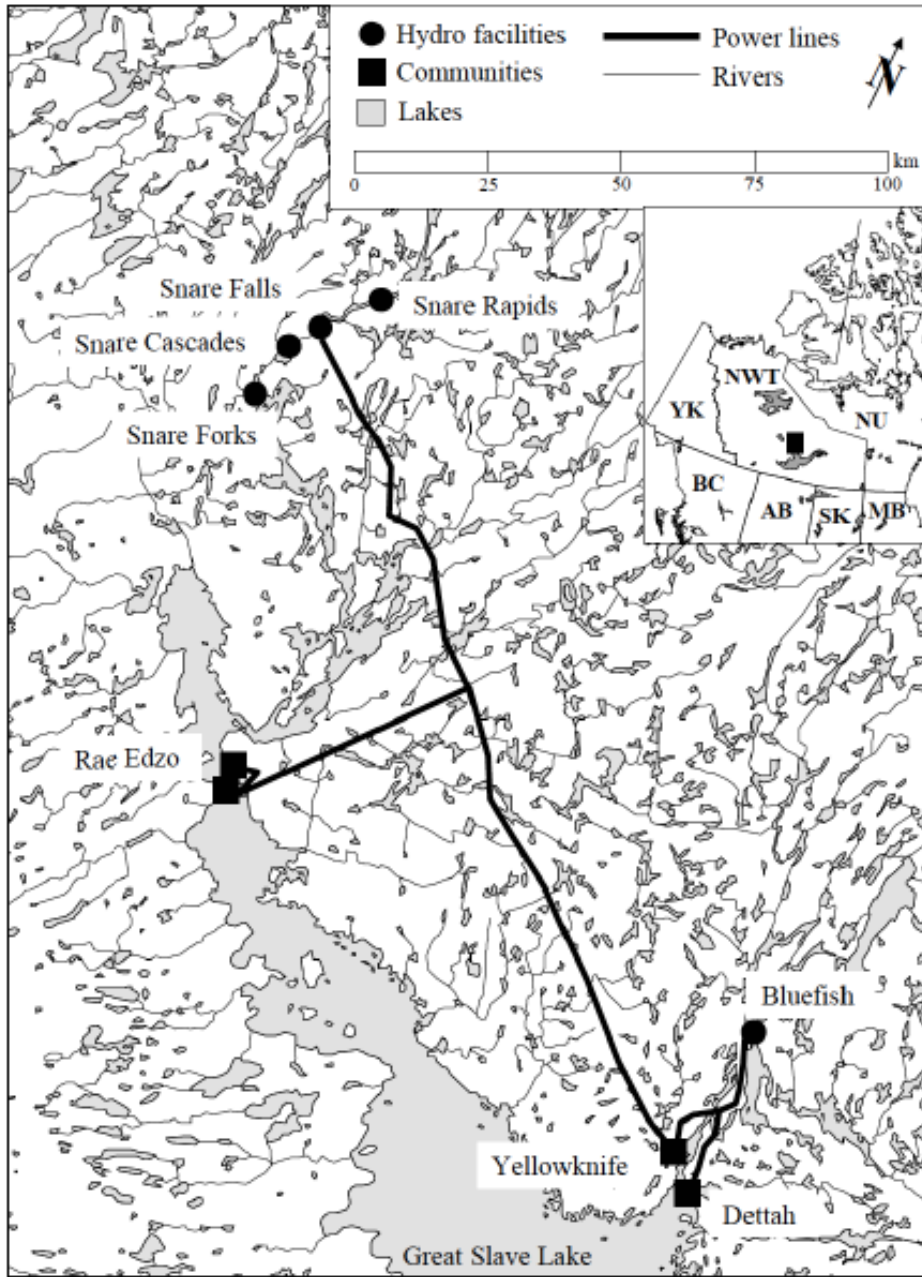
The facility also includes two staff housing buildings, equipment storage buildings and tents, a construction camp from the new dam, waste incinerator, septic system, fuel storage areas, garage and other storage buildings.

The power generated at Bluefish is part of the hydroelectric generation mix that provides power to the North Slave communities of Yellowknife, Behchokò, Dettah and N'Dilo along with the power generated by the four plants at the Snare Hydroelectric Facility.

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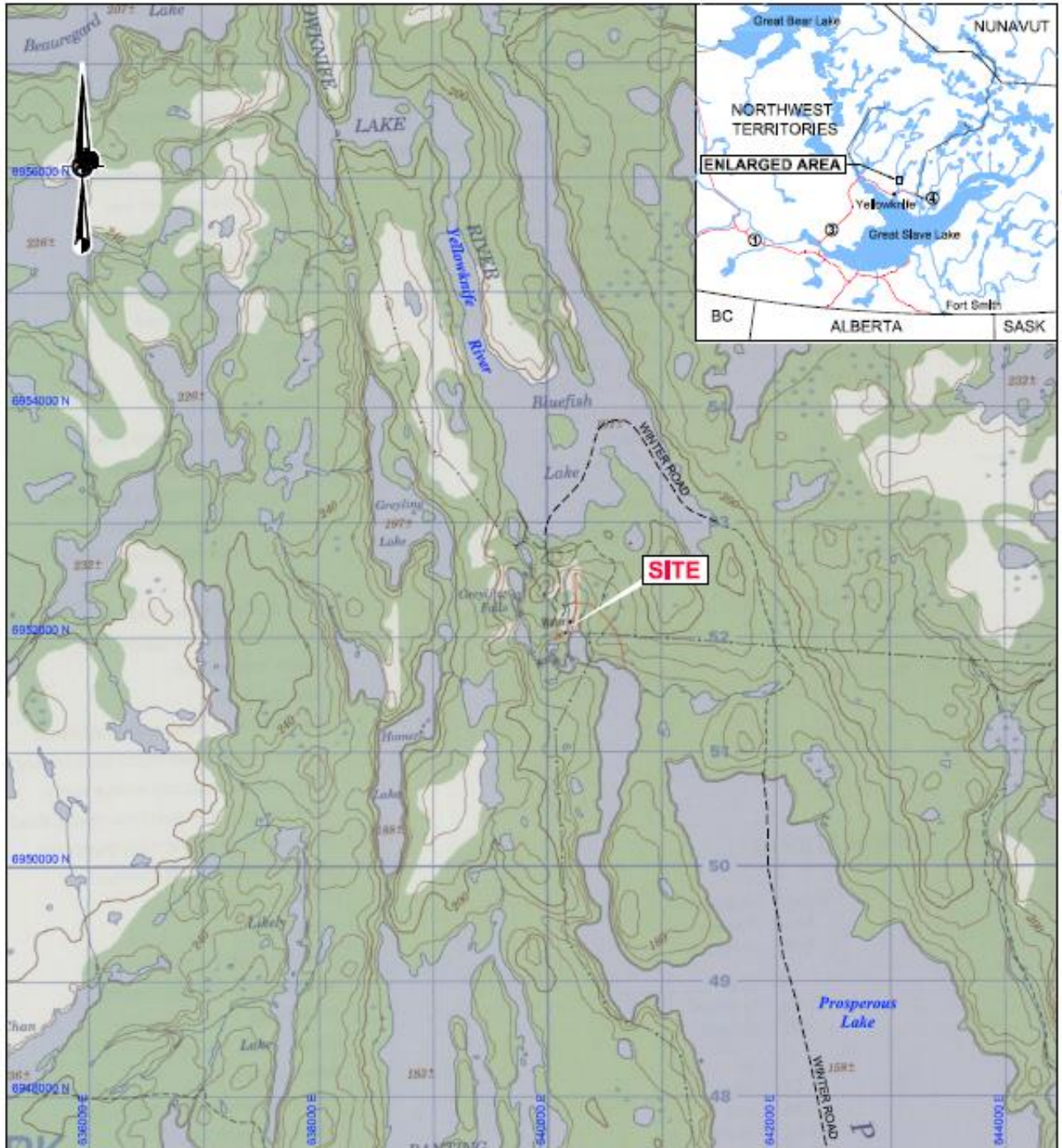
Figure 1: North Slave Hydroelectric System



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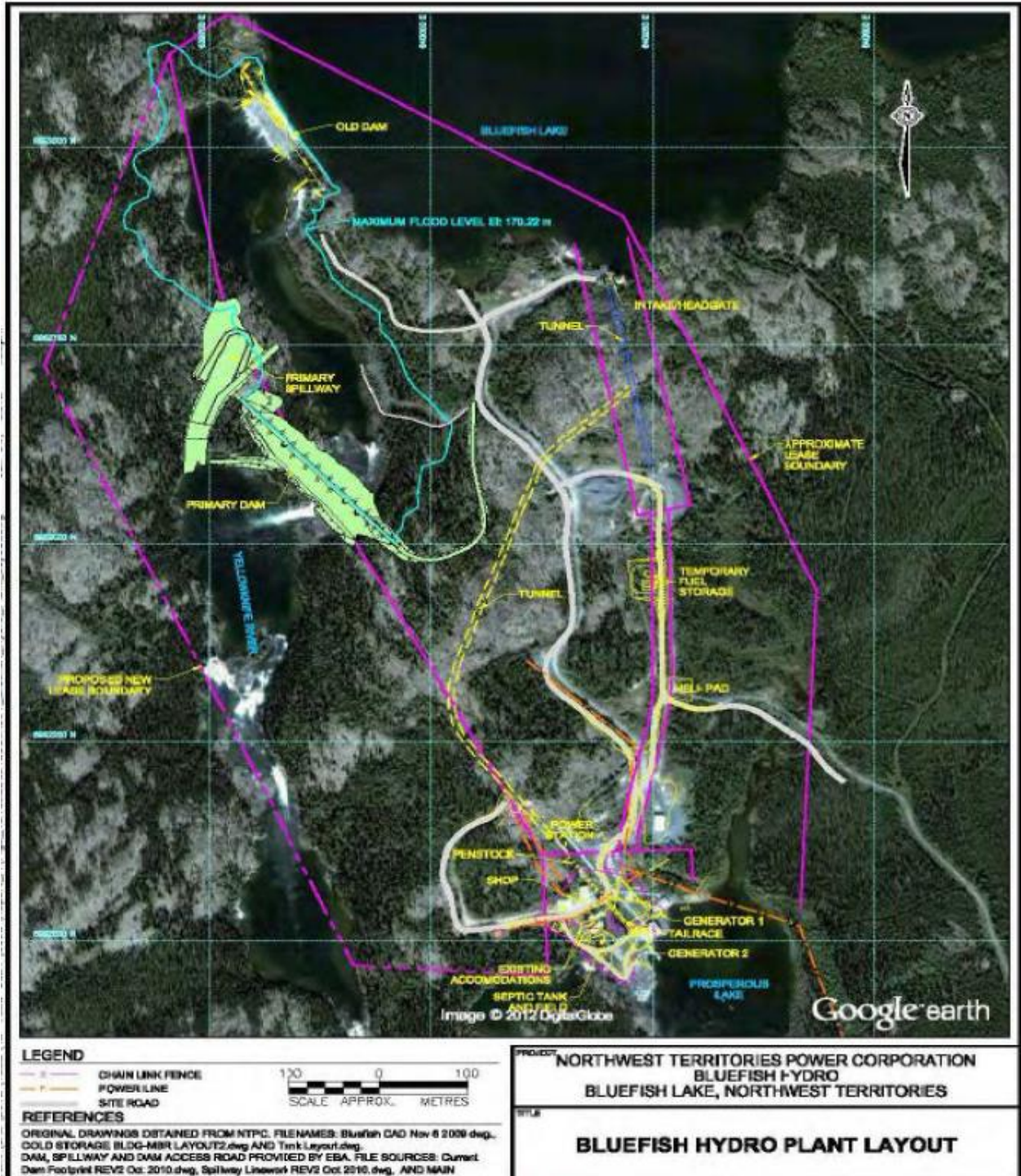
Figure 2: Bluefish Hydroelectric Facility Location



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Figure 3: Bluefish Hydroelectric Facility



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Figure 4: Duncan Dam



Figure 5: Bluefish Plants: G1 on the right and G2 on the left



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Figure 6: Bluefish Hydroelectric Facility



Figure 7: Bluefish Spillway



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Figure 8: Bluefish Dam and Spillway



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Figure 9: Bluefish WSC Gauges and Duncan Dam Location

