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Impact of suspending the Summer Temperature Management Program on conditions in the Nechako River and Fraser River

On 3 August 2019 Rio Tinto received an Order from the BC Comptroller of Water Rights to suspend the Summer Temperature Management Program (STMP). The Order was issued to facilitate instream works in the Fraser River at the Big Bar land slide area and possibly facilitate salmon passage through the slide area. A landslide created an obstacle to salmon migration, including the salmon of the Nechako watershed that the STMP is intended to protect.

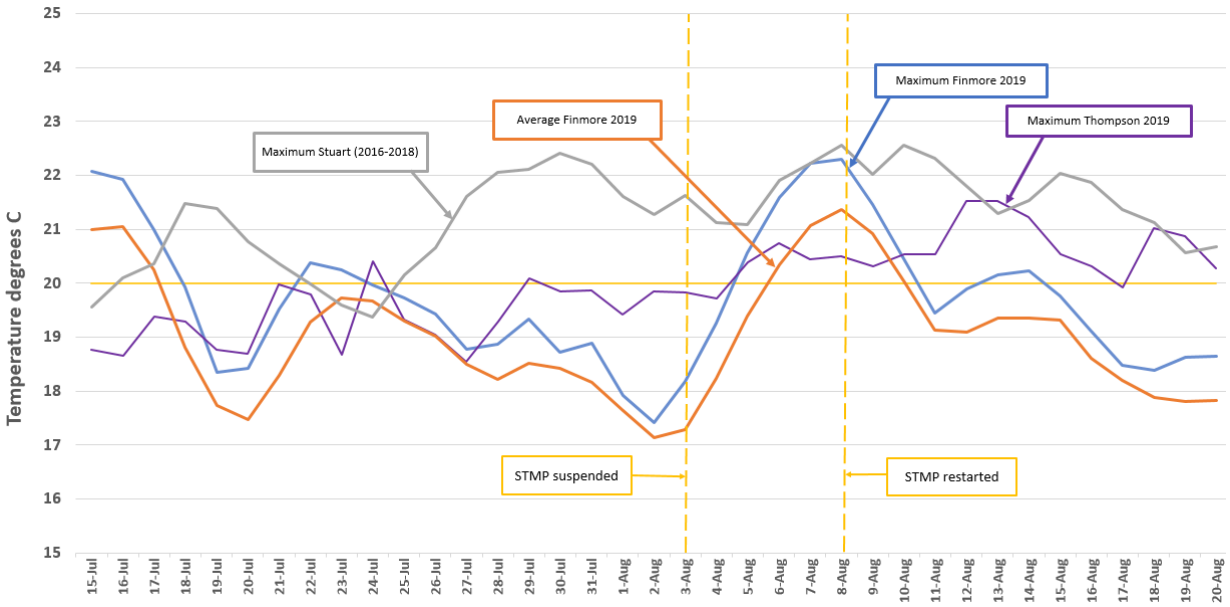
The goal of the STMP is to manage water discharge to between 170 m^3/s and 283 m^3/s in the Nechako River at Cheslatta falls as a way of maintaining average daily water temperature to below 20 degrees in the Nechako River at Finmore (150 km downstream of Cheslatta Falls). This is done because high water temperature can be detrimental to salmon. The STMP is operated from 20 July to 20 August, when warm temperature can be coincident with salmon migration.

Water Temperature

Water temperature in the Nechako River at Finmore during the 2019 STMP period is shown in Figure 1. Water temperature for Stuart River and Thompson River at Spences Bridge is shown for comparison. Note that Nechako River does not impact Stuart River and Thompson River.

Average daily temperature remained below 20 degrees in the Nechako River at Finmore except before the STMP began, and between 5 August and 10 August. Rio Tinto was instructed to resume the STMP when maximum water temperature began to exceed 22 degrees Celsius.

Figure 1. Water Temperature during the 2019 Summer Temperature Management Program. Nechako River at Finmore, Stuart River, and Thompson River.



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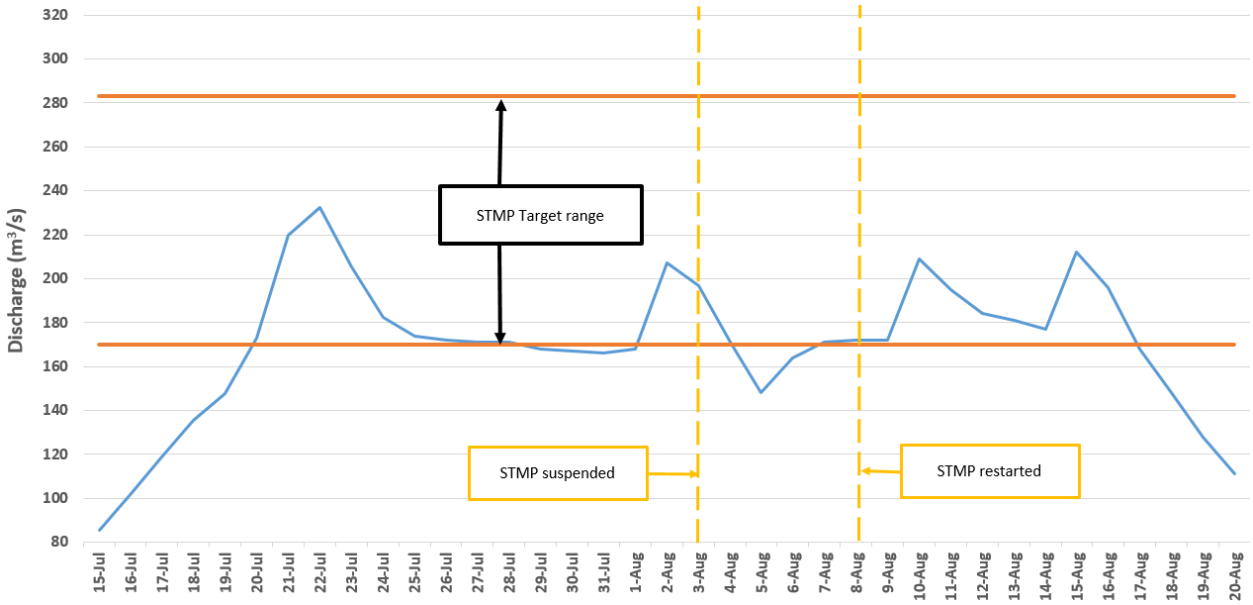
Discharge

From 4 August to 8 August Rio Tinto was instructed to achieve a target discharge of 170 m^3/s in the Nechako River at Cheslatta Falls. The intent was to avoid discharge from increasing to 283 m^3/s, the normal maximum during the STMP, and avoid an additional 113 m^3/s from impacting the site at Big Bar. Figure 2 shows the discharge achieved in the Nechako River at Cheslatta Falls for the duration of the STMP period.

Figure 2. Discharge in the Nechako River at Cheslatta Falls during the 2019 Summer Temperature Management Program.



Impact to the Fraser River at Big Bar

A change in discharge in the Nechako River at Cheslatta Falls takes an estimated 2-3 weeks to impact the Fraser River at Big Bar. By looking at conditions at Big Bar over time it is possible to observe the benefit of reduced discharge on site conditions.

At the Big Bar site discharge dropped by 550 m^3/s between 29 July (Photo 1) and 27 August (Photo 2), significantly increasing the amount of area for crews to safely work to restore salmon migration. Nechako River discharge was curtailed starting on 3 August, 24 days prior to when Photo 2 was taken. Limiting Nechako River discharge represents about 20% of the total change in discharge that resulted in improved working conditions shown in Photo 2.

As of early September the installation of fish ladders and other works have helped restore salmon passage through the Big Bar land slide area.

Photo 1. Fraser River at Big Bar land slide on 29 July 2019 – Discharge at Big Bar was about 2550 m^3/s. Crews were able to safely access only the margin of the river.

Photo 2. Fraser River at Big Bar land slide on 27 August 2019 – Discharge at Big Bar was about 2000 m^3/s. Crews were able to safely access an large area. The work was successful. As of 3 September salmon passage was restored due a combination of instream works done by these crews and water level reducing even further.

Photos Courtesy of the Big Bar Unified Command.