



February 16, 2017

File: 76975-35/Bridge

Heather Matthews
Director, Generation Resource Management
BC Hydro
9-6911 Southpoint Dr
Burnaby BC V3N 4X8

Via Email: Heather.Matthews@bchydro.com

Dear Ms. Matthews:

Re: Section 93 Order – Terzaghi Target Flow Release and Annual Water Budget

British Columbia Hydro and Power Authority is the operator of the Terzaghi Dam. A Section 87 & 88 Order dated March 30, 2011 under the *Water Act* directs the implementation of the operating parameters and procedures of the Bridge River Water Use Plan.

Clause 8 of the Order reads as follow:

8. For the period between May 1, 2011 and April 1, 2015, the licensee shall discharge from Terzaghi Dam to the Bridge River the equivalent to an annual water budget of 6.0 cubic metres per second (cms) and target the following monthly flows:

<i>DATE</i>	<i>TARGET FLOW (CMS)*</i>	<i>DATE</i>	<i>TARGET FLOW (CMS)*</i>
<i>Jan 1</i>	<i>1.5</i>	<i>Aug 2</i>	<i>11.0</i>
<i>Feb 1</i>	<i>2.0</i>	<i>Aug 8</i>	<i>9.3</i>
<i>Mar 1</i>	<i>3.0</i>	<i>Aug 9</i>	<i>7.7</i>
<i>Apr 1</i>	<i>6.0</i>	<i>Aug 16</i>	<i>6.4</i>
<i>Apr 15</i>	<i>8.5</i>	<i>Aug 17</i>	<i>5.1</i>
<i>Apr 23</i>	<i>11.0</i>	<i>Aug 23</i>	<i>4.1</i>
<i>May 1</i>	<i>11.0</i>	<i>Aug 24</i>	<i>3.0</i>
<i>May 7</i>	<i>13.0</i>	<i>Sept 1</i>	<i>3.0</i>
<i>May 21</i>	<i>14.0</i>	<i>Oct 1</i>	<i>1.5</i>
<i>Jun 1</i>	<i>15.0</i>	<i>Nov 1</i>	<i>1.5</i>
<i>Jul 1</i>	<i>15.0</i>	<i>Dec 1</i>	<i>1.5</i>
<i>Aug 1</i>	<i>12.9</i>		

**The transition between target monthly flows may occur up to ±5 days of the beginning of each month. Target monthly flows less than 5.0 cms may vary instantaneously by ±0.25cms from the target flow. Target monthly flows greater than 5.0cms may vary instantaneously by ±5%. The total annual flow will be determined on a calendar year basis and may vary ±5%.*

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A variance order was granted to BC Hydro on May 8, 2012, providing BC Hydro with the approval to implement the above target flow schedule at Terzaghi Dam having an annual water budget of 6.0 cms. BC Hydro has been directed by the Comptroller of Water Rights, in a letter dated May 28, 2015, to operate under this annual water budget until a decision under Clause 9 of the Bridge River Water Use Plan (WUP) Section 87 and 88 Order dated March 30, 2011 under the *Water Act* is made. Clause 9 requires the determination of a long term flow release strategy for Terzaghi Dam, which BC Hydro has been granted approval to defer the decision until December 31, 2017.

In a letter dated February 2, 2017, BC Hydro requested a modification to the discharge from Terzaghi Dam to the Lower Bridge River outside the boundaries of an annual water budget of 6.0 cms and associated target monthly flows as defined in Clause 8 of the Bridge River WUP.

As per BC Hydro's notification on February 6, 2015, BC Hydro has modified the operations at Downton Reservoir by lowering the maximum normal reservoir elevation from 749.8 m to 734.00 m. The elevation reduction was achieved in 2016 operations as direct by BC Hydro Dam Safety in January 2016 as a risk reduction measure to address seismic and seepage issues at Lajoie Dam.

It is noted that BC Hydro is moving forward on its capital replacement plan for Bridge 1 and 2 generating station units, which are scheduled over the next 10 years. It is understood that during this time the outages required to complete the work, in addition to work at Seton and Lajoie generating stations, will affect the volume and timing of the discharges down Lower Bridge River. Therefore annual discharge during the capital program is forecasted to exceed the 6 cms annual average water budget identified in Clause 8 of the Bridge River WUP.

BC Hydro is proposing that the discharge regime will be based on the water supply forecast, timelines of capital works, and collaborative application of a set of Guiding Principles developed by BC Hydro, Fisheries and Oceans Canada (DFO), Ministry of Forest, Lands, and Natural Resource Operations (FLNRO) (fisheries) and the St'at'imc Nation, which will shape the rate of increase and actual flows.

It is understood that the guiding principles that BC Hydro has proposed for the Lower Bridge River will consist of:

1. Mimic a natural hydrograph shape in the Lower Bridge River
 - a. Annual shape- manage flows in the Lower Bridge River to emulate a preferred natural hydrograph shape on an annual basis.
 - b. Weekly variability at high flows- flows may be varied weekly when they are expected to remain constant and above 50 cms for longer than a week.
2. Reduce risk of high flows in summer and fall in Lower Bridge River- manage flows to reduce the risk of high flows in the summer and fall in Lower Bridge River to meet the August 1st objective to return to the WUP target flows (under guiding principle 4).
3. Minimize risk of early Chinook emergence in Lower Bridge River- flows should target a fix flow of ~1.6 cms from October 1, 2017 to January 15, 2018.
4. Preserve summer rearing Lower Bridge River- reduce flow releases across July and August in Lower bridge River (target flows of 20 cms or below by August 1, 2017) to increase the useable habitat area for rearing during the important growth period for juvenile salmon.

Under Section 93 of the *Water Sustainability Act* I approve BC Hydro to operate outside of the 6 cms annual water budget as defined in Clause 8 of the Bridge River WUP from the date this Order is issued to **February 28, 2018**. I understand the guiding principles listed above will guide BC Hydro flow management decisions. In addition:

- BC Hydro is expected to reach a target flow of 20 cms or lower by August 1, 2017, if the target flow is not reach BC Hydro will provide notification and a rationale as to why the target was not met.
- BC Hydro is expected to reach a target flow of ~1.6 cms for the period of October 1, 2017 to January 15, 2018, if the target flow is not reach BC Hydro will provide notification and a rationale as to why the target was not met.
- BC Hydro will be required to provide updated forecasts of discharges and succinct rationale for flow adjustments to the Comptroller of Water Rights, in addition to supporting rational and if consensus of the water operations group was met, if the water operations group is implemented.
- BC Hydro will be required to notify the Comptroller of Water Rights once flows reach 100 cms and for every incremental increase of 10 cms.
- BC Hydro is required to invite DFO and FLNRO (fisheries) to the water operations group, if implemented.
- BC Hydro will be required to submit to the Comptroller of Water Rights office by September 30, 2017 an output of the actual flows released from the Terzaghi Dam for the period of January 1 to August 31, 2017.
- BC Hydro will be financially responsible for any Bridge River WUP currently ordered physical works that have been implemented and are affected by the increased flows at Terzaghi Dam.
- BC Hydro will be financially responsible for the monitoring identified in Schedule B that accompanied BC Hydro letter dated February 2, 2017 that is outside of the scope of the WUP monitoring studies.

If BC Hydro cannot meet the targets within this Order they may default to the Bridge River WUP Order Clause 22, which states “The licensee may operate the works in an alternate manner in the event of an emergency, dam safety requirement, or an extreme hydrological event.” Subsequently clause 23 of the Order will have to be met, which states “All emergency operations or other deviations from operations ordered above shall be reported to the Comptroller of Water Rights in a timely manner.” Timely manner is defined as a 2 week period.

Please keep me apprised of any changes as you progress through the above time period.

Yours truly,



Glen Davidson, P.Eng.
Comptroller of Water Rights

pc: Rich McCleary, Regional Aquatic Ecologist, Thompson-Okanagan Region, FLNR
Dan Sneep, Habitat Assessment Biologist, DFO
Chief Don Harris, Chair, St'at'imc Chiefs Council, Lillooet, BC