

BLACK BEAR LAKE HYDROELECTRIC PROJECT

NO. 10440

ATTACHMENT 'C'

C. Flows

The Federal Energy Regulatory Commission (FERC) has not issued any violations of the license by the Project over the period of the previous LIHI certification.

This project operates under a License Article (405) that requires minimum instream flows that vary by month. The flows are specifically meant to maintain and enhance the salmonid habitat below the Project tailrace. The instream flow requirement was based on a pre-project average for each month.

The enclosed graph of lake elevations shows that almost every late winter (March-April) the lake is drawn down to near the maximum allowed drawdown of -15 feet. This timeframe is when thaw will begin, but the actual occurrence of the thaw is spread over a 2-3 month period, making thaw variable and unpredictable. The reason we don't often get to -15 feet is because we make an effort to prevent this from happening by using diesel generation, reducing our use of water down to just above the minimum instream flow requirement. Once the lake gets down to about -14 feet and thaw still appears to be down-the-road an unknowable length, we request a temporary waiver from the resource agencies prior to reducing operations to below the minimum instream flow requirement. This places us in a run-of-river mode of operation where we match the inflow to the lake. Doing this with a foot of water remaining allows us room to maneuver as we try and match the inflow with our outflow at the project tailrace until thaw begins. The resource agencies have not objected, although occasionally they grumble, however they recognize that the inflow to the lake is all that is available. FERC has consistently agreed that this is an act of nature beyond our control.

In 2011, we started the year with the lowest lake level we have experienced since operations began in late 1995. Due to our concerns about this trend, we began utilizing diesel generation in January 2011 as the primary power source on the island, reducing the amount of water we used to just above the minimum instream flow requirement. This winter has had less precipitation than usual and snowpack has been less than normal as well (La Nina effect?); also throughout Southeast Alaska. Cold temperatures persisted through March and April at Black Bear Lake limiting the amount of thaw during the day and with freezing temperatures at night. If inflow to the lake is low enough, even operating at the minimum instream flow may still have the lake being drawn down. Another words, the natural inflow to the lake is less than the instream flow requirement, making it difficult to meet the flow requirement at that time of year.

The instream flow requirements were based on the average pre-project monthly flow, which does not reflect times when flows are below the average, hence there is a problem with the reality that flows do drop below the average. Since the instream flow requirement is based on an average, it is easy to see why we go below the required minimum flow. Judging by the operational history of lake drawn downs, approximately 50% of the time the lake has not been in the present situation of low inflow, or if it was very brief. This illustrates how the average pre-project instream flow is just that, but not something to base project operations on. We believe the license should have had the

caveat that when lake level and inflow reached a certain point, the project would automatically operate in run-of-river mode, saving the resource agencies paperwork and time. We may propose a license amendment sometime in the future to deal with this issue.

Although diesel was our most significant power source for nine days in January 2011, we eventually went back to hydro generation being the main source with diesel generation taking a smaller part of the load. On February 22, 2011, diesel became a more significant portion of operations again while the hydro project operated at or just above the minimum instream flow of 12 cfs. On March 1 the minimum instream flow requirement drops to 9 cfs, which we operated just above until March 15. On March 14 we requested of the resource agencies a temporary waiver of the minimum instream flow requirement because inflow to the lake was not enough to even match the flow requirement and the lake was now down to -14 feet, within a foot of the allowed maximum drawdown. No comments were received by the agencies from the March 14 request. On March 15, we went below the minimum instream flow of 9 cfs down to 7.6 cfs, which is 51% of the average pre-project minimum flow for the month and is considered between *outstanding* and *optimum* using the Tennant's Method. The lake level stabilized after this change, indicating that the inflow to the lake was less than the minimum instream flow requirement. This placed us in a run-of-river mode of operation, replicating nature rather than enhancing nature as the project does much of the year by moderating peak flows and providing more flow at low water times.

However, when inflow to the lake is less than the minimum instream flow and the lake has reached a certain elevation, we have to reduce operations to match those inflows in order to slow the lake drawdown. Because the project is operated with a siphon rather than gravity at a dam, shutting the project down at low lake elevation requires more time to recover the siphon to restart the project, increasing the amount of time the stream below the project could be dewatered. In addition, even in run-of-river mode, water is still provided to the anadromous reach below the project that if the project shut down would not be available, because the lake was drawdown below spill. If the lake were naturally full during this period, only 7.6 cfs, or whatever it is on any particular day, would be available to the creek, thus the project is maintaining what nature is providing at any given time during these low flow periods (actually the project is still enhancing flow in the creek because the lake continued to go down, although much more slowly).

The Federal Energy Regulatory Commission (FERC) must be notified of a variance from the minimum instream flow requirement 2 weeks after the variance begins. Therefore, on March 25, 2011, we notified FERC of the need to go to run-of-river mode. The same occurred on April 14 as two weeks transpired in April (a variance request from FERC is only good for a month). In the past, FERC has not considered these occurrences to be violations of our license and understands that this is mainly out of our control due to nature. The danger to us has always been that if we supplement too early and rains return to normal, the lake which can fill quickly (the top 15 feet fills 6+ times annually) could end up spilling and we lose water that is cheaper and cleaner to operate with than diesel, the cost of which then gets passed onto the customer. There is no grid of hydro projects

from different locations to tap into as there is in the Lower 48, so expensive diesel fuel must be relied upon to meet the needs of the local communities and industrial centers. We used 4,000 gallons of diesel per day during March and April to offset the loss of hydropower. Diesel discharges into the air CO², NO_x, and particulate matter, which is worth avoiding.

We do not believe that we are out of compliance with our permits or license in such a way as to make this Project unacceptable for certification as a low impact hydroelectric project because we are dealing with acts of nature and work with and have general agreement from the resource agencies on what best to do. We believe we are operating as responsibly as possible under these circumstances and at minimum provide the amount of water to the anadromous reach that nature is providing, even if the project did not exist.

Recent correspondence, in the form of daily update e-mails, is enclosed as well as a letter from the Alaska Department of Fish & Game (ADF&G), dated April 13, 2011. This letter was inaccurate in its portrayal of our project for many reasons that can be found in our April 21, 2011, response. We believe that ultimately this project will be found to have done its best possible with the variability of this watershed and that FERC will find us in compliance and that what occurred this winter is an act of nature that is out of our control.

All of Southeast Alaska has been hit by this drought this winter, with communities such as Sitka expecting to go to diesel shortly, and Ketchikan is already on diesel. Many of the hydroelectric projects in Southeast Alaska are experiencing lower reservoir levels than is usually the case for this time of year. All of Prince of Wales Island (POW) has its creeks and streams running low or dry. This clearly indicates that this project is not operating at the expense of the environment, but is dealing with the variability of nature. Please read our April 21, 2011, response to ADF&G for details on how this watershed has its own variability.

Black Bear Lake Level-Synthesized

