



Memorandum

Project Name: Pang WWTP - Operations

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To: Bhabesh Roy

From: Stephen Bliss, P.Eng.

Date: May 11, 2016

Subject: Fish Plant Wastewater

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Distribution: Bhabesh Roy, Daryl Burke

Based on a visit to Pangnirtung Fisheries to discuss the fish plant's production schedule and characteristics of the fish plant process wastewater, the following information was obtained:

- There are two (2) processing seasons, a two-to-three-week period in the summer (July) for Arctic Char and a 3-month period in the winter (Feb – Apr) for turbot. The char are filleted and frozen while the turbot are just cleaned and frozen with a small quantity being filleted.
- With more cutting of the fish, the filleting process will generate a stronger wastewater. Recent testing of the process wastewater during the turbot processing (not filleting) indicated a "strong" wastewater (BOD=1610 mg/L versus the municipal wastewater at 332 mg/L), but this was understood to be the case when the plant was designed. In both cases, regardless of the manner of processing, the quantity appears to be the same, in the order of 10,000 L/d, or 3% of the design flow for the WWTP (290,000 L/d); current average daily flows are in the order of 140,000 to 160,000 L/d.
- Trucking of this wastewater is by a specific truck in the fleet of trucks used to haul wastewater. The wastewater is picked up twice per day: around 11:30 AM and 3:00 pm.
- The turbot fishing for 2016 appears to be at or near the end of the season so there may not be any more wastewater to treat until the summer fishery. If there is any process wastewater generated, it can be trucked to the WWTP for treatment.

The biggest concern with this process wastewater is with the cleaning chemicals that are used to clean the plant and equipment after processing is completed. There are two (2) products used: "Foam Force" and "Ster-Bac". The "Foam Force" is a strong cleaner whereas the "Ster-Bac" is a sanitizer. Of the two, the "Ster-Bac" is the more problematic. It contains quaternary ammonium compounds (quats) that are anti-biotic and, where the WWTP utilizes bacteria to clean the wastewater, could be harmful if misused.

We were informed that, during either process season, 10 gallons of "Force Foam" and 5 gallons of "Ster-Bac" are used. The "Ster-Bac" is sprayed on the equipment and building surfaces and allowed to dry in place (on a daily basis when processing char (filleting) and a weekly basis during the turbot season). The unknown is what quantity, if any, of the "Ster-Bac" may go back into solution during the next wash-down and mix with the wastewater.

While the process wastewater can be sent for treatment at the WWTP, the loads need to be monitored and sampled (on a daily basis) in the early days of each processing season, particularly the next processing day after a major clean where the “Ster-Bac” is used. The sample should be analyzed for the major constituents (BOD, TSS, ammonia, Total P) and quats. The sample needs to be taken from the truck as it is being emptied into the plant.

As well, each truck load of fish plant processing wastewater should be logged as it is dumped noting date and time.

Within the WWTP, extra attention on the treatment process will be required during the fish processing seasons if the WWTP is receiving the processing wastewater. Particular attention will be required in monitoring the pH throughout the WWTP as well as ammonia in the WWTP effluent – the nitrifying bacteria would be the first to feel any negative effects of the cleaning products and the effluent ammonia concentrations would rise.

A note on the use of the sanitizer “Ster-Bac”, there are alternative sanitizing products that can provide the same level of cleaning/sanitizing; however, comparative usage costs and suitability for the use in question (within a fish plant, acceptability by CFIA) are unknown.

Submitted by:



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