Focus Report Task  3.2
Effluent Treatment Plant Replacement
Flowrate Data Analysis

Report No.: 11 1112D, rev.2
June, 2019
Focus Report Task 3.2
Effluent Treatment Plant Replacement

Report prepared for: Northern Pulp Nova Scotia Corporation
Abercrombie Point, NS

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REVISIONS

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Introduction

Task 3.2: Effluent Flow

- **Focus Report Task Description**
  - Provide effluent flow data to support the proposed peak treatment capacity of 85,000 m³ maximum flow of effluent per day. At a minimum, data from 2017 and 2018 is required;
  - Provide flow data for Point A, clarify source of the effluent flow volumes given in the EARD, and provide other relevant data and information to support the proposed treatment system design;
  - If the 85,000 m³ figure cannot be justified based on historical data, identify water reduction projects, or re-evaluate the treatment system design and update the receiving water study accordingly.
Characterization of Mill Effluent - Flowrate

**Mill Effluent Flow**

- The Point C Parshall flume is the most reliable measure of mill effluent flow and meets PPER standards for flow measurement:
  - This is the location of NPNS’ regulated outfall with ECCC;
- Flow is not measured at Point A, the inlet to the BH ETF:
  - Flow is measured using a doppler-type system at the effluent feed pumps at the mill, but this measurement is for indication purposes only, as its accuracy is not sufficient for either data analysis or regulatory purposes.
- To verify the effluent flow at Point C, an analysis of incoming fresh water usage was undertaken, based on the Middle River flow meter installed in the water supply line to NPNS;
- Effluent flow at Point C is roughly 10% lower than the supply of fresh water, which is consistent and representative of evaporative losses to the atmosphere from a mill employing wet scrubber technology.
## Data expressed in m³/day

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Characterization of Mill Effluent – Flowrate Statistics

Point C Treated Effluent Flow – Stats 2016

- Effluent flow exceeded 85,000 m$^3$/day on only one day;
- Data shows that over 90% of daily flows will fall below 74,292 m$^3$/d;
- Effluent flow averaged 64,081 m$^3$/day for the year.

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**Mill Effluent Flow (m$^3$/d) - 2016**

- Point C Effluent Flow
- 90th Percentile
- 85,000 m$^3$/day

**Effluent Flow Distribution**

- Average: 64,081 m$^3$/d
- Median: 63,874 m$^3$/d
- St. Dev.: 9,023 m$^3$/d

1: No production filter applied to data
Characterization of Mill Effluent – Flowrate Statistics

Point C Treated Effluent Flow – Stats 2017

- Effluent flow has not exceeded 85,000 m$^3$/day during the year;
- Data shows that over 90% of daily flows will fall below 71,521 m$^3$/d;
- Effluent flow averaged 62,524 m$^3$/day for the year.

\[\text{Average:} \quad \text{62,524 m}^3/\text{d} \]
\[\text{Median:} \quad \text{63,942 m}^3/\text{d} \]
\[\text{St. Dev.:} \quad \text{10,922 m}^3/\text{d} \]

$^1$: No production filter applied to data
Characterization of Mill Effluent – Flowrate Statistics

Point C Treated Effluent Flow – Stats 2018

- Effluent flow has not exceeded 85,000 m$^3$/day during the year;
- Data shows that over 90% of daily flows will fall below 70,952 m$^3$/d;
- Effluent flow averaged 63,682 m$^3$/day for the year.

1: No production filter applied to data
Mill Effluent Flow – Point C Flow

- Slight downward trend, one high peak day over 85,000 m³/d in last 3 years.

Daily Flow Recorded at Point C in m³/day
Conclusions

- The mill has strived, over the years, to reduce its water usage and has succeeded;
- Over the last 3 years, the average effluent flow, at Point C, has been 63,466 m³/day;
- Effluent flow exceeded 85,000 m³/day one day in 2016 and not at all in both 2017 and 2018;
- Historical data supports the values used for the effluent treatment plant design, as outlined in Section 4.2.1 of the EARD. These are:
  - 62,000 m³/day average daily flow;
  - 85,000 m³/day peak daily flow.
- The design values chosen for the project were based on present day Point C effluent flow.