March 29th, 2017

Ministry of the Environment
70 Foster Drive, Suite 110
Sault Ste. Marie, ON P6A 6V4

ATTENTION: Safe Drinking Water Branch

RE: ELLIOT LAKE Wastewater Treatment Plant Annual Performance Report - 2016

Please find attached, the 2016 Annual Report for the Elliot Lake Wastewater Treatment Plant. This report has been prepared in accordance to the guidelines set out in Condition $10_{(5)}$ of Facility Certificate of Approval Number 5239-5GXSMK.

This report covers the period from January 1, 2016 to December 31, 2016.

Please direct any questions or concerns to the undersigned.

Yours truly,

Sean McGhee
Director of Infrastructure Services
City of Elliot Lake

Elliot Lake Wastewater Treatment Plant
2016 Annual Report

The purpose of this report is to provide performance and compliance records pertaining to the Elliot Lake wastewater treatment plant to the Ministry of the Environment. This report is prepared in accordance with Condition $10_{(5)}$ of the Certificate of Approval and covers the reporting period from January 1, 2016 to December 31, 2016.

This report contains the following information:

a) a summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 7, including an overview of the success and adequacy of the *Works;*

b) a description of any operating problems encountered and corrective actions taken;

c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the *Works;*

d) a summary of any effluent quality assurance or control measures undertaken in the reporting period;

e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment;

f) a description of efforts made and results achieved in meeting the Effluent Objectives of Condition 6;

g) a tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;

h) a summary of any complaints received during the reporting period and any steps taken to address the complaints;

i) a summary of all *By-pass,* spill or abnormal discharge events;

a) Effluent Limits – Condition 7:

Month	CBOD	Total Suspended Solids	Total Phosphorus	Total Flow	CBOD Loading	Total Suspended Solids Loading	Total Phosphorus Loading
	Monthly Average mg/l	Monthly Average mg/l	Monthly Average mg/l	Cubic Meters / month	Kilograms / day	Kilograms / day	Kilograms / day
January	7	9	0.36	163,091	38.1	48.9	1.9
February	3	15	0.33	196,128	20.2	101.4	2.0
March	1	9	0.29	280,625	9.1	81.5	2.9
April	4	15	0.32	257,671	34.4	128.8	2.7
May	4	15	0.34	208,143	26.9	100.7	2.3
June	2	11	0.37	142,279	9.5	52.1	1.8
July	2	12	0.36	128,249	8.3	49.6	1.5
August	2	6	0.25	138,471	8.6	25.7	1.1
September	2	7	0.29	132,692	8.8	31.0	1.3
October	2	14	0.41	193,161	12.5	87.2	2.6
November	5	9	0.35	141,350	23.6	42.4	1.6
December	4*	9	0.28	151,960	19.6*	44.1	1.4
Annual Average	**3.2**	**11**	**0.33**	**177,818**	**18.3**	**66.1**	**1.9**

**CBOD samples for December of 2016 were sampled in early January 2017.*

The total flow for the facility for the 2016 operating year was 2,133,820m^3

b) Operating Problems or Issues Encountered:

Contracted service providers updated the software on the boiler system in addition to adding a ground strap to both blower motors. This alleviated the ongoing alarm issues encountered in 2015. Maintenance staff generated a Standard Operating Procedure on igniter maintenance for the boiler system.

Frequent obstructions within the heat exchanger prompted a review of the process and discussion regarding potential changes to the screening system at the plant.

After review of plant processes and monitoring dissolved oxygen levels in the aeration zone, one aeration tank was taken off line. This has effectively lowered dissolved oxygen levels in to an optimum level which has resulted in better overall process results. As a result of the reduction in aeration, the overall energy cost associated with the operation has been reduced.

The CBOD samples for December of 2016 were missed by the operation staff and therefore incomplete. MOECC Regional Office was contacted to advise them of the problem, at which time a directive was given to take two sets of samples in January of 2017. To eliminate reoccurrence, all sampling programs have been calendarized electronically with alerts sent to supervisory staff for verification.

c) Summary of Facility Maintenance:

Annual maintenance for the facility is scheduled in office format and is followed up with a work order which is submitted to the department head for review and filed. A copy of the excel document is appended to this report.

The 2016 year involved only one capital project being completed which involved the replacement of two of the six actuator valves in the primary clarifier building. These were purchased through V.A.C. at a cost of $ 6100 and installed by the maintenance staff.

Update and reconstruction of the secondary pump system at the North Sewage Lift Station was completed by maintenance crews.

d) Quality Assurance, Quality Control Measures:

The majority of the process analysis for the facility is done in house by the Operation staff using standardized and accepted laboratory techniques. All results are recorded and compared to historical data. In the event that a deviation is detected, repeat analysis is performed to verify the results. Samples such as $BOD_5$and CBOD are sent to an accredited lab for analysis. Plant process is further monitored through the use of an on-line turbidity analyser which is monitored daily.

The Elliot Lake Wastewater plant reports quarterly data under the Wastewater Systems Effluent Regulations (WSER) as directed by Environment Canada (EC) to the online Effluent Regulatory Reporting Information System (ERRIS).

- Number of days that effluent was deposited
- Total volume of effluent deposited
- Average CBOD
- Average concentration of suspended solids
- Acute lethality test results

Elliot lake acquired the services of AquaTox Testing & Consulting Inc. Out of Guelph Ontario to perform the lethality testing on its effluent as required by Environment Canada. Results appended.

e) Calibration and Maintenance of Effluent Monitoring Equipment:

The effluent turbidity analyzer and the analytical equipment used in the lab are tested and verified monthly by the Laboratory Technician. The analytical equipment in the laboratory is calibrated once annually.

Calibration reports are attached.

f) Effluent Objectives:

As noted in Section a) of this report, the Effluent Objectives for Suspended Solids, CBOD and for Total Phosphorus are being met by the facility.

Plant chlorination values are sent to the Medical Officer of Health with copies sent to various other stakeholders on a monthly basis. The four sample locations reported for the dechlorination project are as follows:

- Location One – Esten Lake at a point near the diversion channel;
- Location Seven – Diversion Channel taken at the point where Nordic Creek is introduced to the wastewater effluent stream;
- Location Three – Depot Lake farthest area of lake after diversion channel stream is introduced;
- Final Effluent – last accessible sample point in plant. Note that residuals at this location vary as a result of partial mixing and contact time this is due to location of chlorine injection in relation to the sample port;

Copies of the monthly reports entitled "Esten Lake Dechlorination Project" are appended to this report.

Month	Geometric Mean - Total Coliform	Geometric Mean - E-Coli
May	254.6	0
June	87.9	0
July	78.3	0.7
August	9.4	0
September	10.3	0
October	300.4	0

A map of the sample sites utilized in the monitoring of wastewater effluent is appended to this report.

g) Sludge

Month	Digested Sludge Hauled	Methane Produced	Methane Wasted	Aluminum Sulphate Used
	Cubic Meters	Cubic Meters	Cubic Meters	Tonnes
January	463	3970	0	10.9
February	286	1179	0	11.8
March	448	3112	0	11.6
April	334	3385	0	11.1
May	382	4616	758	11.7
June	365	3810	464	10.6
July	324	2269	3358	9.9
August	464	2684	2707	10.9
September	355	4432	1404	10.5
October	401	6473	159	11.6
November	464	6013	0	10.9
December	464	5707	0	11.4
	4,750	**47,649**	**8,850**	**132.9**

All waste sludge is hauled under contract from the wastewater treatment facility to Waste Disposal Site # A560812. The current sludge haulage contractor is KJ. Beamish Ltd. based out of Elliot Lake, Ontario.

The City of Elliot Lake has retained the services of Pinchin Ltd in order to comply with Conditions 22 and 24 of Environmental Compliance Approval No. A560812.

h) Complaints:

There were no noted complaints with regard to the operation of the wastewater treatment facility in this reporting year.

i) Bypasses, Spills, or Abnormal Discharge Events:

There were no bypasses, spills, or abnormal discharge events.