



2016

Annual Wastewater Report



Mar 30, 2017; v.1.0



2016 Annual Wastewater Report

v. 1.0

Reviewed by:

A handwritten signature in blue ink, appearing to read 'M. Jensen'.

Mike Jensen
Manager of Wastewater Treatment

A handwritten date in blue ink, 'MARCH 31 2017'.

Date

Approved by:

A handwritten signature in black ink, appearing to read 'N. Benkovich'.

Nick Benkovich
Director, Water & Wastewater Services

A handwritten date in black ink, 'March 31 2017.'.

Date

2016 Annual Wastewater Report

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INTRODUCTION TO THE ANNUAL WASTEWATER REPORT

Under Environmental Compliance Approval (ECA) agreements issued by the Ministry of Environment and Climate Change (MOECC), the City is required to report annually on the values/parameters indicated in the ECA and must make this report publicly available within 90 days of January 1st for the year preceding the current year. Specifically the annual report is to include:

- (a) a summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in conditions described in the Approval, 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 the Approval;
- (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, Plant Overflow, Overflow, spill or abnormal discharge events;
- (j) any other information the Water Supervisor requires from time to time; and
- (k) a copy of all Notices of Modification submitted to the Water Supervisor.

The following is an explanation of the various sections of this annual plant performance report;

- 1) A description of any operating issues encountered and corrective actions taken at each plant;
- 2) A summary of all major maintenance carried out, and a summary of any effluent quality assurance or control measures undertaken in the reporting period. This includes a summary of any modifications to the Works;
- 3) A summary of the calibration and maintenance carried out on all effluent monitoring equipment;
- 4) An outline of anticipated sludge over the next reporting period and an indication of the location where the sludge is to be disposed;
- 5) A summary of any complaints received during the reporting period and any steps taken to address the complaints;
- 6) A summary of all bypasses, overcapacities and spills/overflows;
- 7) A summary and interpretation of all monitoring data collected and a comparison to the parameters and limits given in the ECA, including the plant's performance efficiency, provides an introduction to the tabular report of data – a description of efforts made and results achieved in meeting the Effluent Objectives of the ECA; and
- 8) Tables showing all required reporting values and parameters for each wastewater treatment plant of which the City of Greater Sudbury is the owner, including a graphical representation of flows through the plant. A small section outlines the treatment method, plant design capacity, population served and ECA parameter limits as set out by the MOECC. The second (and/or third) page of each individual plant's data shows other data collected in the year – sludge and/or raw or effluent metals analyses. Included in the data is the total of the sludge removed from each plant in the year.

The *Summary of Effluent Quality and Control Measures* (Section 7) following this INTRODUCTION TO THE ANNUAL WASTEWATER REPORT includes these sections for each of CGS' plants:

- 1) Flows – these show the total flow by month, the average day flow and maximum day flow. These flows fluctuate according to weather conditions and high flows are commonly due to Inflow and Infiltration, a condition that allows rain and/or snow melt to enter the sanitary sewer. The graphical representation in the lower left portion of the report shows the variation in flows over the course of the year;
- 2) Biological Oxygen Demand – a five day biochemical oxygen demand for the biological organisms in the material, measured in an unfiltered sample, including carbonaceous and nitrogenous oxygen demand;
- 3) CBOD₅ – Carbonaceous Biochemical Oxygen Demand 5 (refers to 5 days to conduct the test); a test that measures the oxygen demand of biological organisms in the material, without the impact of oxygen depletion by nitrogenous bacteria;
- 4) TSS – Total Suspended Solids; total amount of residual solid matter found in the effluent of the plant;
- 5) TP – Total Phosphorous; total amount of phosphorous found in the effluent;
- 6) T Amm – Total Ammonia measured in the effluent flow;
- 7) Un-ionized Amm – Total Un-ionized Ammonia, a calculated parameter, found in the effluent flow;
- 8) TKN – Total Kjeldahl Nitrogen; the total concentration of organic nitrogen and ammonia;
- 9) Nitrite – measured as an anion of nitrogen (NO₂-);
- 10) Nitrate – measured as an anion of nitrogen (NO₃-);
- 11) pH – potential of hydrogen, a scale of measure, 7 being neutral, acidity (low pH down to 0) or alkalinity (high pH up to 14);
- 12) Alkalinity – ability of water to neutralize acid by absorbing hydrogen ions;
- 13) Sludge – produced through the wastewater treatment process, all of the material removed from the wastewater and is the final product sent for biosolids treatment;
- 14) Chlorine – used to disinfect the wastewater effluent;
- 15) E.Coli – the indicator of bacteria left in the effluent, indicating the effectiveness of the disinfection process.

1 OPERATING ISSUES / CORRECTIVE ACTIONS

DATE	WWTP	PARAMETER	CORRECTIVE ACTIONS TAKEN
31-Mar-16	Chelmsford WPCP	Ammonia	Partial rebuild of C Plant; cleaned grit vortex unit
31-Mar-16	Lively WWTP	e.coli	Increase chlorine and monitor effluent samples
30-Apr-16	Azilda WWTP	Total Suspended Solids (TSS)	High flows closely monitored; process adjustments made as required.
30-Jun-16	Azilda WWTP	pH	Added lime, increased wasting and removal
30-Jun-16	Sudbury WWTP	Total Phosphorus (TP)	Monitor, adjust feed of ferric sulphate
31-Jul-16	Valley East WWTP	pH	Added lime; monitored lowered solids
31-Jul-16	Azilda WWTP	pH	Added lime; continuous skimming of millweed in clarifiers; lowered TSS.
31-Jul-16	Walden WWTP	pH	Added large quantities of lime.
31-Aug-16	Azilda WWTP	pH	Added lime; lowered TSS.
31-Aug-16	Valley East WWTP	pH	Added lime; increased aeration air; lowered TSS
31-Aug-16	Walden WWTP	pH	Repaired broken lime pump; added extra lime; monitored TSS
30-Sep-16	Azilda WWTP	pH	Added lime, adjusted, monitored
31-Oct-16	Azilda WWTP	e.coli	Troubleshoot chlorinator, clean, put back online
31-Oct-16	Azilda WWTP	pH	Added lime into system, reset after cleaning
31-Oct-16	Chelmsford WPCP	e.coli	Finished holding tank maintenance – more options for WAS
31-Oct-16	Lively WWTP	pH	Added lime
31-Oct-16	Chelmsford WPCP	Ammonia	Repaired second holding tank; monitored solids and wasting.
31-Dec-16	Capreol Lagoon	Total Phosphorus (TP)	Consultant hired to advise

2 MAJOR MAINTENANCE COMPLETED, BY PLANT

Azilda WWTP

- No modifications

Dowling WWTP

- No modifications

Capreol Lagoons

- No modifications

Chelmsford WPCP

- Removed and reinstalled bar screen from behind vortex unit to ahead of vortex unit
- Repaired broken piping and leaks in concrete and expansion joints for B plant sludge tank
- Repaired and replaced C plant clarifier flights, gears and chains

Chelmsford Lagoons

- No modifications

Coniston WPCP

- Added two submersible pumps with diffusers into the aeration ditch: these pumps are proven to take the place of the brush aerators. The diffusers keep the process solids in suspension and provide greater efficiency/effectiveness of dissolved oxygen in the aeration tank compared to the replaced aeration brush mechanism.

Levack WWTP

- Removed and reinstalled bar screen from behind vortex unit to ahead of vortex unit

Lively WWTP

- No modifications

Sudbury WWTP

- Added and commissioned PI units around the plant for odour control.
- Increased dissolved oxygen capacity for aeration, by installing a new blower.

Valley East WWTP

- Installed effluent flow meter
- Installed ORP unit for pH, chlorine residual, dissolved oxygen, Total Suspended Solids and temperature monitoring
- Sludge holding tank leak repair and mixer removal

Walden WWTP

- Added new piping and valves and installed a new sludge loading pump to pump more volume

Wahnapitae Lagoons

- No modifications

Lift Stations

- SCADA upgrades

3 CALIBRATIONS & MAINTENANCE, BY PLANT

All analyzers at all plants are calibrated as per manufacturer's recommendations, a minimum of once per year. Calibration Certificates are submitted and retained electronically for each unit.

All major plant equipment is maintained as per manufacturer's recommendations, with regular preventive maintenance checks completed as per established schedules.

4 SLUDGE DISPOSAL

Each plant report in the following pages shows the quantity of sludge removed in calendar year 2016. It is expected that a similar quantity will be produced and recycled in the coming calendar year.

All sludge produced and removed from all wastewater treatment plants in the City of Greater Sudbury are delivered to and recycled by the Biosolids facility on the grounds of the Sudbury Wastewater Treatment Plant.

5 **CUSTOMER COMPLAINTS**

DATE	LOCATION	ISSUE	RESOLUTION
12-MAY-16	211 First Ave., Lively	Resident reported there is a strong smell of sewer odour coming from the treatment plant. The smell is very strong all day long no matter what time they are outside.	The time when the resident notice the smell at Lively Plant was the time we reseeded the system. During that week, was floatables gathered in the center ring causing an odour. The center ring was vactored out and the smell is diminished.
15-AUG-16	1543 Kelly Lake Rd, Sudbury	Very strong smell of sewage coming from the wastewater treatment plant. Resident wondering if there is a problem.	No corrective action recorded
03-OCT-16	265 Laurette St., Chelmsford	Received via Wrong Doing Hotline - Auditor's Office: "Sept 19 at 7:28 pm the gates were locked at the Chelmsford wastewater treatment plant rv station. ..."	Case closed: employee was allowed to leave early due to an appointment
04-OCT-16	Lorne St., Kelly Lake Rd., Sudbury	Received via email: "I have a serious concern regarding the state of the wastewater entering Kelly Lake. Last evening I went for a hike on the Trans Canada Trail between Fielding Park and Southview Dr. ..."	Wastewater Supervisor III has emailed the citizen with a response. The odour is too far away to be associated with the facility and we continue to monitor the situation.
14-OCT-16	1271 Kelly Lake Rd., Sudbury	Caller wants to know if the water from the garden hose on site that reads not potable water is coming from the same source that goes to the building, please advise.	Wastewater Supervisor III spoke with citizen and informed him that although the water is from the potable drinking water system, we do not advise to use it as such due to the manner in which some citizens use the hose to flush their RV sanitary sewage tanks.

6 PLANT BYPASSES

DATE	TIME (24H clock)	DURA- TION	LOCATION	TYPE OF OCCURRENCE
24-Jan-16	7:04	1.75 hrs	Azilda WWTP	Plant bypass
24-Jan-16	13:58	2.75 hrs	Valley East WWTP	OTHER
05-Feb-16	13:45	0.1 hrs	Walden WWTP	OTHER
09-Mar-16	10:58	13.1 hrs	Coniston WWTP	Plant bypass: flow exceeds design capacity
09-Mar-16	17:00	3.5 hrs	Lively WWTP	Plant bypass
12-Mar-16	14:00	4.75 hrs	Walden WWTP	Plant bypass: flow exceeds design capacity
12-Mar-16	17:15	5.75 hrs	Lively WWTP	Plant bypass
12-Mar-16	13:20	201 hrs	Coniston WWTP	Plant bypass: flow exceeds design capacity
15-Mar-16	19:00	38.0 hrs	Lively WWTP	Plant bypass
15-Mar-16	18:00	30.0 hrs	Walden WWTP	Plant bypass: flow exceeds design capacity
16-Mar-16	22:00	2.0 hrs	Valley East WWTP	Plant bypass: flow exceeds design capacity
16-Mar-16	15:24	32.5 hrs	Chelmsford WWTP	Plant bypass: flow exceeds design capacity
16-Mar-16	16:00	26.0 hrs	Coniston WWTP	Plant bypass: flow exceeds design capacity
16-Mar-16	1:35	50.4 hrs	Sudbury WWTP	Plant bypass
16-Mar-16	19:18	17.9 hrs	Azilda WWTP	Plant bypass
16-Mar-16	16:09	7.0 hrs	Laurier LS	Collection system overflow
16-Mar-16	18:15	4.0 hrs	Landry LS	Collection system overflow
17-Mar-16	17:30	6.5 hrs	Valley East WWTP	Plant bypass: flow exceeds design capacity
19-Mar-16	12:01	96.0 hrs	Valley East WWTP	Plant bypass: flow exceeds design capacity
28-Mar-16	10:32	96 hrs	Coniston WWTP	Plant bypass: flow exceeds design capacity
29-Mar-16	12:30	840 hrs	Wahnapitae Lagoon Cell #3	Plant bypass
31-Mar-16	7:55	61.9 hrs	Azilda WWTP	Plant bypass: flow exceeds design capacity
31-Mar-16	7:55	24 hrs	Walden WWTP	Plant bypass: flow exceeds design capacity
31-Mar-16	6:30	23 hrs	Lively WWTP	Plant bypass: flow exceeds design capacity
31-Mar-16	9:30	17.3 hrs	Lively WWTP	Plant bypass
31-Mar-16	14:45	25.5 hrs	Sudbury WWTP	Plant bypass
31-Mar-16	8:21	96 hrs	Valley East WWTP	Plant bypass: flow exceeds design capacity
31-Mar-16	19:15	19 hrs	Chelmsford WWTP	Plant bypass: flow exceeds design capacity
31-Mar-16	8:30	27.0 hrs	Coniston WWTP	Plant bypass
31-Mar-16	21:15	6.5 hrs	Government Rd LS	Collection system overflow
05-Apr-16	10:10	480.0 hrs	Wahnapitae Lagoon Cell #2	Plant bypass
15-Apr-16	12:00	226 hrs	Coniston WWTP	Plant bypass: flow exceeds design capacity
16-Apr-16	0:01	264 hrs	Valley East WWTP	Plant bypass: flow exceeds design capacity
16-May-16	6:35	10.75 hrs	Coniston WWTP	Plant bypass: flow exceeds design capacity
09-Jul-16	12:45	15 hrs	Coniston WWTP	Plant bypass: flow exceeds design capacity
09-Jul-16	9:00	2:05 hrs	Lively WWTP	Plant bypass: flow exceeds design capacity
30-Aug-16	19:55	3.0 hrs	Walden WWTP	Plant bypass: flow exceeds design capacity
30-Aug-16	18:45	13.0 hrs	Lively WWTP	Plant bypass: flow exceeds design capacity

7 SUMMARY OF EFFLUENT QUALITY AND CONTROL MEASURES

Azilda Wastewater Treatment Plant

Flows - This plant experienced normal average day flows to less than normal average day flows when compared to the design capacity of 3300 m³/day during all months except March and April, when the plant experienced average day flows above the design capacity of 3300 m³/day. These higher than average flows were due to spring run-off and/or high amounts of precipitation.

CBOD₅ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of CBOD₅ to the environment is required to be less than 10 mg/l and the Annual Average Loading in the effluent has to be less than 33 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 241 kg/day of CBOD;
- 2) The CBOD effluent monthly average concentration ranged from 0.5 mg/l to 2.6 mg/l with an average of 1.08 mg/l and annual average effluent loading was 2.40 kg/day; and
- 3) 239 kg/day was removed showing 99.2% plant efficiency of CBOD removal.

TSS - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of TSS to the environment is required to be less than 10 mg/l and the Annual Average Loading in the effluent has to be less than 33 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 452 kg/day of TSS;
- 2) The TSS effluent monthly average concentration ranged from 4.6 mg/l to 17.3 mg/l with an average of 7.83 mg/l and annual average effluent loading was 16.72 kg/day; and
- 3) 436 kg/day was removed showing 95.4% plant efficiency of TSS removal.

Total Phosphorous - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of Phosphorous to the environment is required to be less than 0.6 mg/l and the Annual Average Loading in the effluent has to be less than 2.0 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 6.45 kg/day of phosphorous;
- 2) The phosphorous effluent monthly average concentration ranged from 0.19 mg/l to 0.49 mg/l with an average of 0.31 mg/l and annual average effluent loading was 0.58 kg/day; and
- 3) 5.87 kg/day was removed showing 91.8% plant efficiency of Phosphorous removal.

Total Ammonia (as Nitrogen) - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of Total Ammonia (as Nitrogen) to the environment is required to be less than 5 mg/l and the Annual Average Loading in the effluent has to be less than 16.5 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming ammonia (as nitrogen) in the raw sewage from the community contained 32.50 kg/day;
- 2) The monthly average concentration of ammonia (as nitrogen) in the effluent ranged from 0.11 mg/l to 11.0 mg/l with an average of 2.41 mg/l and annual average effluent loading was 4.31 kg/day; and
- 3) 28.18 kg/day was removed showing 86.2% plant efficiency of ammonia (as nitrogen) removal.

pH

From the ECA the pH in the effluent is to be 6.0-9.5 at all times.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained a pH of 7.17;
- 2) The effluent pH ranged from 6.1 to 6.8 throughout the reporting period with an annual average of 6.4.

E.Coli - Monthly Geometric Mean

From the ECA the E.Coli, as a Monthly Geometric Mean, must be less than 200 colony-forming units/100 ml (CFU's) released to the environment.

Using the laboratory results and given the plant flows experienced throughout the reporting period the E.Coli ranged from 2 CFU's/100ml sample to 608 CFU's/100ml sample with an average annual E.Coli of 79 CFU's/100ml.

Capreol Lagoon Wastewater Treatment

Flows – The lagoon experienced normal average day flows when compared to the design capacity of 5500 m³/day throughout the reporting year.

CBOD₅ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of CBOD₅ to the environment is required to be less than 30 mg/l.

Using the laboratory results and given the flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 4090 kg/day of CBOD;
- 2) The CBOD effluent annual average was 36.94 kg/day showing 99.0% treatment efficiency of CBOD removal.

TSS - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of TSS to the environment is required to be less than 40 mg/l.

Using the laboratory results and given the flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 223 kg/day of TSS;
- 2) The TSS effluent annual average was 58.93 kg/day showing 66.6% treatment efficiency of TSS removal.

Total Phosphorous - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of Phosphorous to the environment is required to be less than 1.38 mg/l.

Using the laboratory results and given the flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 5.18 kg/day of Phosphorous;
- 2) The Phosphorous effluent annual average was 1.58 mg/l.

Chelmsford Water Pollution Control Plant

Flows - This plant experienced an average day flow of 4086 m³/day with a design capacity of 7100 m³/day.

CBOD₅ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of CBOD₅ to the environment has two seasonal reporting requirements.

From November 1 – April 30, the concentration of CBOD₅ is to be less than 15 mg/l and the Seasonal Average Loading in the effluent is to be less than 106.5 kg/day.

Using the laboratory results and given the plant flows experienced throughout this seasonal reporting period:

- 1) The average annual incoming raw sewage from the community contained 379 kg/day of CBOD;
- 2) The CBOD effluent seasonal average concentration ranged from 0.6 mg/l to 3.7 mg/l with an average of 1.9 mg/l and seasonal average effluent loading was 7.92 kg/day; and
- 3) 479 kg/day was removed showing 96.5% plant efficiency of CBOD removal.

From May 1 – October 31, the concentration of CBOD₅ is to be less than 7 mg/l and the Seasonal Average Loading in the effluent is to be less than 49.7 kg/day.

Using the laboratory results and given the plant flows experienced throughout this seasonal reporting period:

- 1) The average annual incoming raw sewage from the community contained 409 kg/day of CBOD;
- 2) The CBOD effluent seasonal average concentration ranged from 0.6 mg/l to 4.0 mg/l with an average of 1.7 mg/l and seasonal average effluent loading was 5.16 kg/day; and
- 3) 387 kg/day was removed showing 98% plant efficiency of CBOD removal.

TSS - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of TSS to the environment is required to be less than 10 mg/l and the Annual Average Loading in the effluent has to be less than 33 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 541 kg/day of TSS;
- 2) The TSS effluent monthly average concentration ranged from 2.3 mg/l to 7.5 mg/l with an average of 5.05 mg/l and annual average effluent loading was 20.27 kg/day; and
- 3) 527 kg/day was removed showing 96.2% plant efficiency of TSS removal.

Total Phosphorous - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of Phosphorous to the environment is required to be less than 0.6 mg/l and the Annual Average Loading in the effluent has to be less than 2.0 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 13.48 kg/day of phosphorous;
- 2) The phosphorous effluent monthly average concentration ranged from 0.12 mg/l to 0.37 mg/l with an average of 0.23 mg/l and annual average effluent loading was 0.88 kg/day; and
- 3) 12.59 kg/day was removed showing 93.5% plant efficiency of Phosphorous removal.

Total Ammonia (as Nitrogen) - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of Total Ammonia (as Nitrogen) to the environment is required to be less than 5 mg/l and the Annual Average Loading in the effluent has to be less than 16.5 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming ammonia (as nitrogen) in the raw sewage from the community contained 73.79 kg/day;
- 2) The monthly average concentration of ammonia (as nitrogen) in the effluent ranged from 0.11 mg/l to 7.06 mg/l with an average of 1.86 mg/l and annual average effluent loading was 5.8 kg/day; and
- 3) 67.76 kg/day was removed showing 91.4% plant efficiency of ammonia (as nitrogen) removal.

pH

From the ECA the pH in the effluent is to be 6.0-9.5 at all times.

Using the laboratory results and given the plant flows experienced throughout the reporting period;

- 1) The average annual incoming raw sewage from the community contained a ph of 7.4;
- 2) The effluent pH ranged from 6.2 to 7.3 throughout the reporting period with an annual average of 6.8.

E.Coli - Monthly Geometric Mean

From the ECA the E.Coli, on a Monthly Geometric Mean, must be less than 200 colony forming units/100 ml (CFU's) released to the environment from May 1 – October 31.

Using the laboratory results and given the plant flows experienced throughout the reporting period the E.Coli ranged from 13 CFU's/100ml sample to 415 CFU's/100ml sample with an average annual E.Coli of 100 CFU's/100ml.

Coniston Wastewater Treatment Plant

Flows - This plant experienced an average day flow of 1,863 m³/day and the design capacity is 3,000 m³/day.

BOD₅ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of BOD₅ to the environment is required to be less than 20 mg/l and the Annual Average Loading in the effluent has to be less than 35 kg/day.

Using the laboratory results and given the plant flows experienced throughout this seasonal reporting period:

- 1) The average annual incoming raw sewage from the community contained 157 kg/day of BOD;
- 2) The BOD effluent monthly average concentration ranged from 1.0 mg/l to 14.0 mg/l with an average of 4.49 mg/l and average effluent loading was 9.86 kg/day; and
- 3) 147 kg/day was removed showing 93.7% plant efficiency of BOD removal.

TSS - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of TSS to the environment is required to be less than 20 mg/l and the Annual Average Loading in the effluent has to be less than 35 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 249 kg/day of TSS;
- 2) The TSS effluent monthly average concentration ranged from 4.2 mg/l to 21.9 mg/l with an average of 10.44 mg/l and annual average effluent loading was 21.74 kg/day; and
- 3) 227 kg/day was removed showing 91.3% plant efficiency of TSS removal.

pH

From the ECA the pH in the effluent is to be 6.0-9.5 at all times.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained a pH of 7.65;
- 2) The effluent pH ranged from 6.2 to 7.3 throughout the reporting period with an annual average of 7.05.

E.Coli - Monthly Geometric Mean

From the ECA the E.Coli, on a Monthly Geometric Mean, must be less than 200 colony-forming units/100 ml (CFU's) released to the environment.

Using the laboratory results and given the plant flows experienced throughout the reporting period the E.Coli ranged from 2 CFU's/100ml sample to 1400 CFU's/100ml sample with an average annual E.Coli of 16 CFU's/100ml.

Dowling Wastewater Treatment Plant

Flows - This plant experienced an average day flow of 2072 m³/day and the design capacity is 3200 m³/day.

CBOD₅ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of CBOD₅ to the environment is required to be less than 25 mg/l and the Annual Average Loading in the effluent has to be less than 80 kg/day.

Using the laboratory results and given the plant flows experienced throughout this seasonal reporting period;

- 1) The average annual incoming raw sewage from the community contained 61 kg/day of CBOD;
- 2) The CBOD effluent monthly average concentration ranged from 0.9 mg/l to 6.6 mg/l with an average of 2.23 mg/l and average effluent loading was 4.72 kg/day; and
- 3) 57 kg/day was removed showing 88.4 % plant efficiency of CBOD removal.

TSS - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of TSS to the environment is required to be less than 25 mg/l and the Annual Average Loading in the effluent has to be less than 80 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 86 kg/day of TSS;
- 2) The TSS effluent monthly average concentration ranged from 4.4 mg/l to 9.6 mg/l with an average of 5.93 mg/l and annual average effluent loading was 12.38 kg/day; and
- 3) 74 kg/day was removed showing 84.3 % plant efficiency of TSS removal.

Total Phosphorous - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of Phosphorous to the environment is required to be less than 1.0 mg/l and the Annual Average Loading in the effluent has to be less than 3.2 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 2.21 kg/day of phosphorous;
- 2) The phosphorous effluent monthly average concentration ranged from 0.38 mg/l to 0.58 mg/l with an average of 0.49 mg/l and annual average effluent loading was 1.0 kg/day; and
- 3) 1.22 kg/day was removed showing 53.1 % plant efficiency of Phosphorous removal.

pH

From the ECA the pH in the effluent is to be 6.0-9.5 at all times.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained a pH of 6.89;
- 2) The effluent pH ranged from 6.5 to 8.8 throughout the reporting period with an annual average of 6.83.

E.Coli - Monthly Geometric Mean

From the ECA the E.Coli, on a Monthly Geometric Mean, must be less than 200 colony-forming units/100 ml (CFU's) released to the environment.

Using the laboratory results and given the plant flows experienced throughout the reporting period the E.Coli ranged from 3 CFU's/100ml sample to 81 CFU's/100ml sample with an average annual E.Coli of 17 CFU's/100ml.

Falconbridge Wastewater Treatment Plant

Flows - This plant experienced an average day flow of 355 m³/day and the design capacity is 909 m³/day.

BOD₅ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of BOD₅ to the environment is required to be less than 15.0 mg/l and the Annual Average Loading in the effluent has to be less than 46 kg/day.

Using the laboratory results and given the plant flows experienced throughout this seasonal reporting period:

- 1) The average annual incoming raw sewage from the community contained 63.91 kg/day of BOD;

- 2) The BOD effluent monthly average concentration ranged from 0.5 mg/l to 1.6 mg/l with an average of 0.69 mg/l and average effluent loading was 0.22 kg/day; and
- 3) 63.69 kg/day was removed showing 99.7 % plant efficiency of BOD removal.

TSS - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of TSS to the environment is required to be less than 15.0 mg/l and the Annual Average Loading in the effluent has to be less than 46 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 6.76 kg/day of TSS;
- 2) The TSS effluent monthly average concentration ranged from 1.9 mg/l to 5.6 mg/l with an average of 3.05 mg/l and annual average effluent loading was 1.08 kg/day; and
- 3) 5.67 kg/day was removed showing 84.0 % plant efficiency of TSS removal.

Levack Wastewater Treatment Plant

Flows - This plant experienced an average day flow of 592 m³/day and the design capacity is 2270 m³/day.

CBOD₅ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of CBOD₅ to the environment is required to be less than 25 mg/l and the Annual Average Loading in the effluent has to be less than 56.75 kg/day.

Using the laboratory results and given the plant flows experienced throughout this seasonal reporting period:

- 1) The average annual incoming raw sewage from the community contained 75.7 kg/day of CBOD;
- 2) The CBOD effluent monthly average concentration ranged from 0.5 mg/l to 8.4 mg/l with an average of 1.68 mg/l and average effluent loading was 0.9 kg/day; and
- 3) 74.8 kg/day was removed showing 98.8 % plant efficiency of CBOD removal.

TSS - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of TSS to the environment is required to be less than 25 mg/l and the Annual Average Loading in the effluent has to be less than 56.75 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 114.4 kg/day of TSS;
- 2) The TSS effluent monthly average concentration ranged from 3.3 mg/l to 7.8 mg/l with an average of 5.49 mg/l and annual average effluent loading was 3.24 kg/day; and
- 3) 111.1 kg/day was removed showing 97.2 % plant efficiency of TSS removal.

Total Phosphorous - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of Phosphorous to the environment is required to be less than 1.0 mg/l and the Annual Average Loading in the effluent has to be less than 3.1 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 2.48 kg/day of phosphorous;
- 2) The phosphorous effluent monthly average concentration ranged from 0.15 mg/l to 0.63 mg/l with an average of 0.39 mg/l and annual average effluent loading was 0.21 kg/day; and
- 3) 2.27 kg/day was removed showing 91.6 % plant efficiency of Phosphorous removal.

pH

From the ECA the pH in the effluent is to be 6.0-9.5 at all times.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained a pH of 7.15;

- 2) The effluent pH ranged from 6.4 to 6.8 throughout the reporting period with an annual average of 6.55.

E.Coli - Monthly Geometric Mean

From the ECA the E.Coli, on a Monthly Geometric Mean, must be less than 200 colony-forming units/100 ml (CFU's) released to the environment.

Using the laboratory results and given the plant flows experienced throughout the reporting period the E.Coli ranged from 2 CFU's/100ml sample to 30 CFU's/100ml sample with an average annual E.Coli of 10 CFU's/100ml.

Lively Wastewater Treatment Plant

Flows - This plant experienced an average day flow of 1840 m³/day and the design capacity is 1600 m³/day.

CBOD₅ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of CBOD₅ to the environment is required to be less than 25 mg/l and the Annual Average Loading in the effluent has to be less than 40 kg/day.

Using the laboratory results and given the plant flows experienced throughout this seasonal reporting period:

- 1) The average annual incoming raw sewage from the community contained 153.2 kg/day of BOD;
- 2) The CBOD effluent monthly average concentration ranged from 0.5 mg/l to 20.0 mg/l with an average of 3.26 mg/l and average effluent loading was 5.7 kg/day; and
- 3) 157.5 kg/day was removed showing 94.7 % plant efficiency of CBOD removal.

TSS - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of TSS to the environment is required to be less than 25 mg/l and the Annual Average Loading in the effluent has to be less than 40 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 344.4 kg/day of TSS;
- 2) The TSS effluent monthly average concentration ranged from 5.3 mg/l to 13.8 mg/l with an average of 7.79 mg/l and annual average effluent loading was 14.63 kg/day; and
- 3) 329.8 kg/day was removed showing 95.3 % plant efficiency of TSS removal.

Total Phosphorous - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of Phosphorous to the environment is required to be less than 1.0 mg/l and the Annual Average Loading in the effluent has to be less than 1.6 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 10.07 kg/day of phosphorous;
- 2) The phosphorous effluent monthly average concentration ranged from 0.24 mg/l to 0.81 mg/l with an average of 0.44 mg/l and annual average effluent loading was 0.78 kg/day; and
- 3) 9.3 kg/day was removed showing 90.9 % plant efficiency of Phosphorous removal.

pH

From the ECA the pH in the effluent is to be 6.0-9.5 at all times.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained a pH of 7.2;
- 2) The effluent pH ranged from 6.3 to 7.2 throughout the reporting period with an annual average of 6.87.

E.Coli - Monthly Geometric Mean

From the ECA the E.Coli, on a Monthly Geometric Mean, must be less than 200 colony-forming units/100 ml (CFU's) released to the environment.

Using the laboratory results and given the plant flows experienced throughout the reporting period the E.Coli ranged from 3 CFU's/100ml sample to 228 CFU's/100ml sample with an average annual E.Coli of 47 CFU's/100ml.

Sudbury Wastewater Treatment Plant

Flows - This plant experienced an average day flow of 61,834 m³/day and the design capacity is 79,625 m³/day.

CBOD₅ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of CBOD₅ to the environment is required to be less than 25 mg/l and the Annual Average Loading in the effluent has to be less than 1,990.6 kg/day.

Using the laboratory results and given the plant flows experienced throughout this seasonal reporting period:

- 1) The average annual incoming raw sewage from the community contained 7,690 kg/day of CBOD;
- 2) The CBOD effluent monthly average concentration ranged from 2.3 mg/l to 14.9 mg/l with an average of 5.52 mg/l and average effluent loading was 338.9 kg/day; and
- 3) 7,351 kg/day was removed showing 95.6 % plant efficiency of CBOD removal.

TSS - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of TSS to the environment is required to be less than 25 mg/l and the Annual Average Loading in the effluent has to be less than 1,990.6 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 9,680 kg/day of TSS;
- 2) The TSS effluent monthly average concentration ranged from 6.0 mg/l to 11.4 mg/l with an average of 8.64 mg/l and annual average effluent loading was 545.5 kg/day; and
- 3) 9,135 kg/day was removed showing 94.4 % plant efficiency of TSS removal.

Total Phosphorous - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of Phosphorous to the environment has two seasonal reporting requirements.

From October 1 – May 31, the concentration of Phosphorous is to be less than 1.0 mg/l and the Seasonal Average Loading in the effluent is to be less than 79.6 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) From October 1 – May 31 the average incoming raw sewage from the community contained 229.9 kg/day of phosphorous;
- 2) The phosphorous effluent concentration ranged from 0.38 mg/l to 0.65 mg/l with an average of 0.52 mg/l and annual average effluent loading was 34.1 kg/day; and
- 3) An average of 195.73 kg/day was removed showing 85.4 % plant efficiency of Phosphorous removal.

From June 1 – September 30, the concentration of Phosphorous is to be less than 0.5 mg/l and the Seasonal Average Loading in the effluent is to be less than 49.7 kg/day.

Using the laboratory results and given the plant flows experienced throughout this seasonal reporting period:

- 1) From June 1 – September 30 the average incoming raw sewage from the community contained 166.7 kg/day of Phosphorous;
- 2) The phosphorous effluent concentration ranged from 0.20 mg/l to 0.51 mg/l with an average of 0.33 mg/l and seasonal average effluent loading was 17.0 kg/day; and

- 3) An average of 149.7 kg/day was removed showing 89.8% plant efficiency of Phosphorous removal.

pH

From the ECA the pH in the effluent is to be 6.0-9.5 at all times.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained a pH of 7.1;
- 2) The effluent pH ranged from 6.7 to 7.1 throughout the reporting period with an annual average of 6.9.

E.Coli - Monthly Geometric Mean

From the ECA the E.Coli, on a Monthly Geometric Mean, must be less than 200 colony-forming units/100 ml (CFU's) released to the environment.

Using the laboratory results and given the plant flows experienced throughout the reporting period the E.Coli ranged from 2 CFU's/100ml sample to 29 CFU's/100ml sample with an average annual E.Coli of 9 CFU's/100ml.

Chlorine Residual (after Dechlorination) - Monthly Average Concentration

From the ECA the Monthly Average Concentration for release of Chlorine Residual in the effluent (after Dechlorination) to the environment is required to be less than 0.02 mg/l and the Monthly Average Loading in the effluent has to be less than 1.6 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period the chlorine residual was 0.0 mg/l with an average annual of 0.0 kg/day.

Valley East Wastewater Treatment Plant

Flows - This plant experienced an average day flow of 6,228 m³/day and the design capacity is 11,400 m³/day.

CBOD₅ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of CBOD₅ to the environment is required to be less than 25 mg/l and the Annual Average Loading in the effluent has to be less than 284 kg/day.

Using the laboratory results and given the plant flows experienced throughout this seasonal reporting period;

- 1) The average annual incoming raw sewage from the community contained 643 kg/day of CBOD;
- 2) The CBOD effluent monthly average concentration ranged from 0.5 mg/l to 5.4 mg/l with an average of 2.36 mg/l and average effluent loading was 13.28 kg/day; and
- 3) 629.6 kg/day was removed showing 97.7 % plant efficiency of CBOD removal.

TSS - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of TSS to the environment is required to be less than 25 mg/l and the Annual Average Loading in the effluent has to be less than 284 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 767 kg/day of TSS;
- 2) The TSS effluent monthly average concentration ranged from 2.9 mg/l to 17.3 mg/l with an average of 7.14 mg/l and annual average effluent loading was 45.47 kg/day; and
- 3) 722 kg/day was removed showing 94.4 % plant efficiency of TSS removal.

Total Phosphorous - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of Phosphorous to the environment is required to be less than 1.0 mg/l and the Annual Average Loading in the effluent has to be less than 11.4 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 21.84 kg/day of phosphorous;
- 2) The phosphorous effluent monthly average concentration ranged from 0.32 mg/l to 0.70 mg/l with an average of 0.56 mg/l and annual average effluent loading was 3.41 kg/day; and
- 3) 18.43 kg/day was removed showing 79.9 % plant efficiency of Phosphorous removal.

pH

From the ECA the pH in the effluent is to be 6.0-9.5 at all times.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained a pH of 7.48;
- 2) The effluent pH ranged from 6.8 to 8.1 throughout the reporting period with an annual average of 7.3.

E.Coli - Monthly Geometric Mean

From the ECA the E.Coli, on a Monthly Geometric Mean, must be less than 200 colony-forming units/100 ml (CFU's) released to the environment.

Using the laboratory results and given the plant flows experienced throughout the reporting period the E.Coli ranged from 5 CFU's/100ml sample to 164 CFU's/100ml sample with an average annual E.Coli of 51 CFU's/100ml.

Wahnapiatae Lagoons

Flows - This plant experienced an average day flow of 758 m³/day and the design capacity is 1246 m³/day.

CBOD₅ - Seasonal Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Seasonal Average Concentration for release of CBOD₅ to the environment is required to be less than 30 mg/l.

Using the laboratory results and given the plant flows experienced throughout this seasonal reporting period:

- 1) The average annual incoming raw sewage from the community contained 70 kg/day of CBOD:
- 2) The CBOD effluent quarterly average concentration ranged from 0.8 mg/l to 6.3 mg/l with an average of 3.19 mg/l and average effluent loading was 3.12 kg/day; and
- 3) 68 kg/day was removed showing 97.0 % plant efficiency of CBOD removal.

TSS - Seasonal Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Seasonal Average Concentration for release of TSS to the environment is required to be less than 30 mg/l.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 451 kg/day of TSS:
- 2) The TSS effluent quarterly average concentration ranged from 4.4 mg/l to 42.1 mg/l with an average of 17.45 mg/l and annual average effluent loading was 11.36 kg/day; and
- 3) 436 kg/day was removed showing 97.0 % plant efficiency of TSS removal.

pH

From the ECA the pH in the effluent is to be 6.0-9.5 at all times.

Using the laboratory results and given the plant flows experienced throughout the reporting period the effluent pH ranged from 7.2 to 8.4 throughout the reporting period with an annual average of 7.7.

Walden Wastewater Treatment Plant

Flows - This plant experienced an average day flow of 2546 m³/day and the design capacity is 4500 m³/day.

CBOD₅ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of CBOD₅ to the environment is required to be less than 25 mg/l and the Annual Average Loading in the effluent has to be less than 112.5 kg/day.

Using the laboratory results and given the plant flows experienced throughout this seasonal reporting period:

- 1) The average annual incoming raw sewage from the community contained 368 kg/day of CBOD;
- 2) The CBOD effluent monthly average concentration ranged from 0.5 mg/l to 3.8 mg/l with an average of 1.16 mg/l and average effluent loading was 2.94 kg/day; and
- 3) 365 kg/day was removed showing 98.5 % plant efficiency of CBOD removal.

TSS - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of TSS to the environment is required to be less than 25 mg/l and the Annual Average Loading in the effluent has to be less than 112.5 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 812 kg/day of TSS;
- 2) The TSS effluent monthly average concentration ranged from 5.2 mg/l to 12.0 mg/l with an average of 8.53 mg/l and annual average effluent loading was 20.99 kg/day; and
- 3) 791 kg/day was removed showing 97.0 % plant efficiency of TSS removal.

Total Phosphorous - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of Phosphorous to the environment is required to be less than 1.0 mg/l and the Annual Average Loading in the effluent has to be less than 4.5 kg/day.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained 10.52 kg/day of phosphorous;
- 2) The phosphorous effluent monthly average concentration ranged from 0.26 mg/l to 0.50 mg/l with an average of 0.41 mg/l and annual average effluent loading was 1.04 kg/day; and
- 3) 9.48 kg/day was removed showing 89.9 % plant efficiency of Phosphorous removal.

pH

From the ECA the pH in the effluent is to be 6.0-9.5 at all times.

Using the laboratory results and given the plant flows experienced throughout the reporting period:

- 1) The average annual incoming raw sewage from the community contained a pH of 7.08;
- 2) The effluent pH ranged from 6.3 to 6.8 throughout the reporting period with an annual average of 6.6.

E.Coli - Monthly Geometric Mean

From the ECA the E.Coli, on a Monthly Geometric Mean, must be less than 200 colony-forming units/100 ml (CFU's) released to the environment.

Using the laboratory results and given the plant flows experienced throughout the reporting period the E.Coli ranged from 5 CFU's/100ml sample to 78 CFU's/100ml sample with an average annual E.Coli of 19 CFU's/100ml.

SECTION 8:

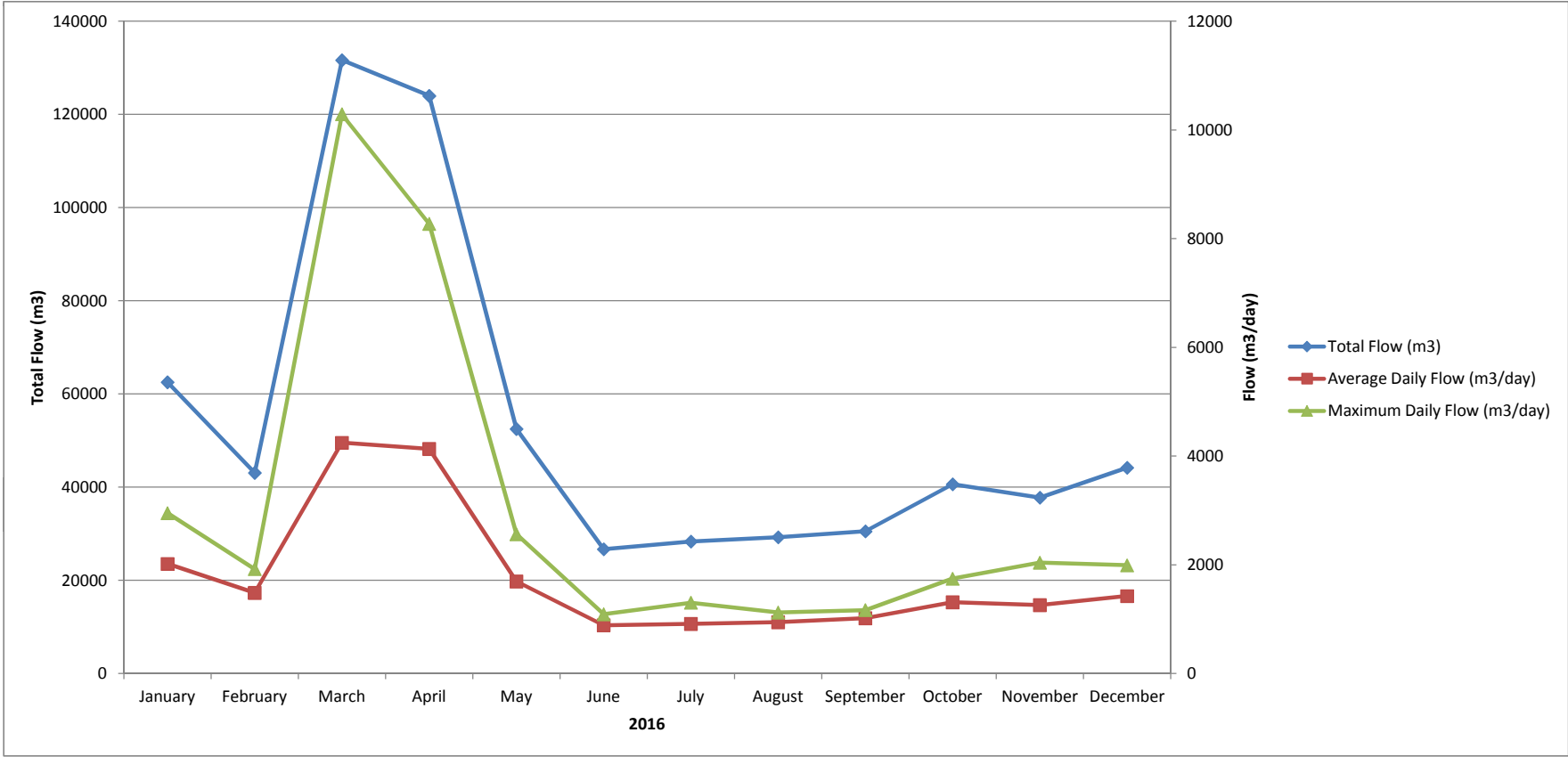
**INDIVIDUAL
PLANT
ANNUAL
DATA
REPORTS**

See previous section (7) for explanation of data following ...



2016 Azilda Wastewater Treatment Plant Performance

Month	Flows			BOD ₅		CBOD ₅		Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized	TKN		Nitrite	Nitrate	pH		Alkalinity		Sludge			Chlorine		E.Coli	
	Total	Avg Day	Max Day	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Ammonia	Raw	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total m ³	Conc.	Total	Total	Residual	Geomean	
	m ³	m ³ /d	m ³ /d	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	µg/L	mg/L	mg/L	mg/L	mg/L			mg/L	mg/L	Hauled	%	m ³	Kg	mg/L	# Col./100mL	
January	62541	2017	2951	103	1.8	3.63	98.3%	164	6.4	12.91	92.7%	3.7	0.37	0.75	90.0%	16.35	0.11	0.22	99.3%	0.05	25.4	0.76	0.04	6.5	7.1	6.5	253	122	320	2.4	7.7	203.6	0.64	15	
February	43051	1485	1921	177	1.4	2.08	99.2%	1201	6.5	9.65	99.5%	5.0	0.23	0.34	95.4%	20.83	5.95	8.83	71.4%	2.43	29.2	6.14	0.41	7.8	7.1	6.5	244	116	120	3.3	4.0	131.0	0.90	10	
March	131628	4246	10289	123	2.6	11.04	97.9%	287	17.3	73.46	94.0%	2.3	0.43	1.83	81.3%	10.30	3.01	12.78	70.8%	1.82	18.4	5.75	0.03	9.7	7.2	6.5	244	152	320	2.5	8.0	201.5	1.60	77	
April	123971	4132	8273	98	1.3	5.37	98.7%	120	9.4	38.84	92.2%	1.9	0.27	1.12	85.8%	7.75	0.44	1.82	94.3%	0.27	15.9	1.72	0.03	8.8	7.0	6.5	191	169	200	4.3	8.6	221.7	0.69	35	
May	52494	1693	2563	93	0.5	0.85	99.5%	101	5.7	9.65	94.4%	3.0	0.19	0.32	93.7%	15.07	11.00	18.63	27.0%	11.10	23.4	11.73	0.03	3.2	7.0	6.6	265	176	80	2.2	1.8	124.1	0.84	9	
June	26670	889	1090	249	1.5	1.33	99.4%	264	4.6	4.12	98.2%	6.1	0.23	0.20	96.2%	33.86	2.95	2.62	91.3%	2.25	42.9	2.97	0.10	21.2	6.8	6.3	132	36	440	3.1	13.6	75.6	0.64	2	
July	28319	914	1303	175	0.7	0.64	99.6%	185	5.0	4.57	97.3%	5.2	0.24	0.22	95.4%	31.88	0.95	0.87	97.0%	1.28	40.2	6.66	0.09	25.2	7.1	6.2	219	33	440	2.0	8.8	110.4	0.72	9	
August	29251	944	1122	121	0.6	0.57	99.5%	191	6.2	5.85	96.8%	5.5	0.30	0.28	94.5%	29.90	0.16	0.15	99.5%	0.09	41.0	0.28	0.03	28.2	7.3	6.1	232	31	200	2.8	5.6	136.1	0.49	4	
September	30504	1017	1167	228	0.7	0.71	99.7%	177	5.7	5.80	96.8%	5.8	0.30	0.31	94.8%	31.30	0.17	0.17	99.5%	0.09	36.9	0.38	0.03	25.9	7.3	6.1	210	31	200	2.8	5.6	124.4	0.84	11	
October	40624	1310	1744	123	0.7	0.92	99.4%	134	10.2	13.37	92.4%	4.4	0.49	0.64	88.9%	25.43	0.74	0.97	97.1%	0.67	29.1	7.28	1.40	19.6	7.3	6.3	219	55	160	3.4	5.4	279.8	0.34	608	
November	37761	1259	2040	160	0.6	0.76	99.6%	190	9.7	12.21	94.9%	5.5	0.38	0.48	93.1%	25.22	1.03	1.33	95.8%	1.03	29.1	1.50	0.83	20.9	7.4	6.4	223	35	200	3.0	6.0	220.1	0.86	165	
December	44153	1424	1991	177	0.6	0.85	99.7%	176	7.2	10.25	95.9%	4.1	0.33	0.47	92.0%	28.38	2.36	3.36	91.7%	3.06	32.5	4.10	0.03	21.05	7.4	6.8	252	83	240	2.3	5.5	164.7	0.99	4	
Total	650967																												2920		80.6				
Average		1783		152	1.08	2.40	99.2%	266	7.83	16.72	95.4%	4.38	0.31	0.58	91.8%	23.02	2.41	4.31	86.2%	2.0	30.33	4.11	0.25	16.49	7.17	6.40	224	87		2.84			0.80	79	



Plant Type: Extended Aeration

Design Capacity: 3300 m³/day

Population Served: 4,105

Compliance Parameters:

	Concentration	Loading	
CBOD ₅	10 mg/L	33 kg/day	} *Monthly Avg (Concentration) *Annual Avg (Loading)
TSS	10 mg/L	33 kg/day	
Total Phosphorus	0.6 mg/L	2.0 kg/day	
Total Ammonia (as N)	5 mg/L	16.5 kg/day	
pH	6.0 to 9.5 inclusive, at all times		
E.Coli	200 col/100 mL		Monthly Geometric Mean



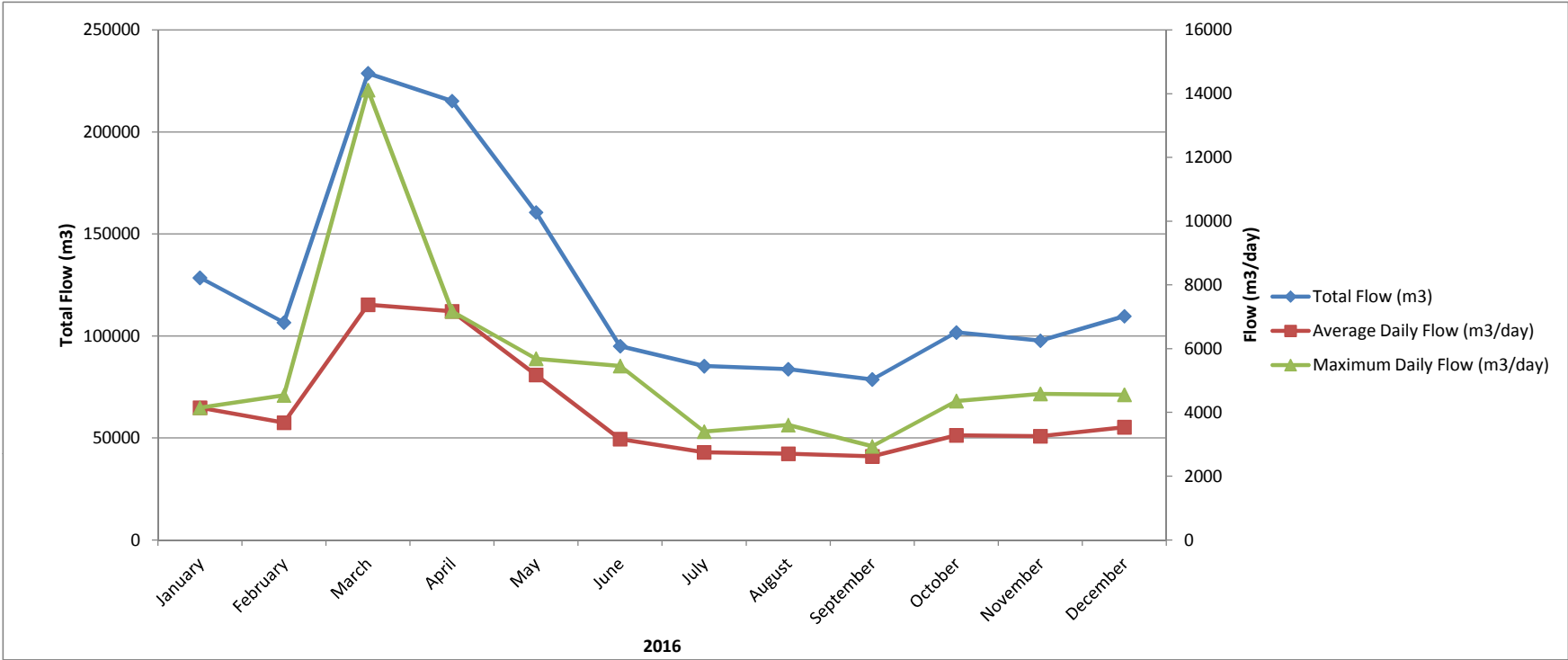
2016 Azilda Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	14.6	259	130	16.9	22.8	144	19.6	18.5	42.3	3.42	14.4	18.5	58.67
Nitrate (as N)	0.53	0.1	0.1	0.1	0.1	0.1	0.57	0.1	1	0.91	0.1	1.03	0.40
Nitrite (as N)	0.03	0.03	0.03	0.03	0.03	0.819	0.415	0.03	0.3	0.95	0.03	2.57	0.44
Potassium	49.7	118	84.1	24.3	44.3	59	72	69	56	26.3	19.8	25.5	54.00
TKN	471	2390	946	487	630	1330	1310	930	1180	318	139	126	855
Total Phosphorus	132	781	251	115	213	400	512	204	390	257	56.3	46.6	279.8
Total Solids	18000	33200	20700	8340	12400	24400	22000	22500	21700	6670	2680	2690	16273
Arsenic	0.0240	0.0486	0.0347	0.0031	0.0190	0.1420	0.1200	0.1100	0.0870	0.0200	0.0100	0.0100	0.0524
Cadmium	0.0016	0.0046	0.0069	0.0001	0.0028	0.0187	0.0188	0.0179	0.0167	0.0057	0.0010	0.0010	0.0080
Chromium	0.0369	0.0598	0.1170	0.0020	0.0757	0.4570	0.3400	0.3740	0.2940	0.0680	0.0200	0.0300	0.1562
Cobalt	0.0523	0.0621	0.1060	0.0135	0.0595	0.2810	0.2010	0.3660	0.2780	0.0467	0.0161	0.0234	0.1255
Copper	0.304	1.74	4.23	0.002	0.433	9.94	10.2	8.97	6.77	1.96	0.539	0.865	3.83
Lead	0.0320	0.0539	0.1010	0.0010	0.0141	0.2110	0.2730	0.2270	0.2060	0.0500	0.0100	0.0200	0.0999
Mercury	0.0001	0.0007	0.0001	0.0001	0.0002	0.0164	0.0056	0.0043	0.0048	0.0010	0.0010	0.0010	0.0029
Molybdenum	0.0075	0.0277	0.0093	0.0010	0.0080	0.1000	0.0990	0.0990	0.0870	0.0200	0.0100	0.0100	0.0399
Nickel	0.195	0.252	0.452	0.050	0.269	1.460	0.997	1.130	0.784	0.199	0.060	0.094	0.495
Selenium	0.0061	0.0195	0.0134	0.0010	0.0090	0.0980	0.0750	0.0590	0.0440	0.0100	0.0100	0.0100	0.0296
Zinc	0.95	1.57	3.65	0.001	1.77	7.89	5.72	6.52	5.70	1.80	0.51	0.65	3.06
Sample Date	Jan.13/16	Feb.23/16	Mar.8/16	Apr.6/16	May 18/16	June 8/16	July 13/16	Aug.4/16	Sep.7/16	Oct.19/16	Nov.9/16	Dec.7/16	



2016 Chelmsford Wastewater Treatment Plant Performance

Month	Flows			CBOD5				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-Ionized	TKN		Nitrite	Nitrate	pH		Alkalinity		Sludge			E.Coli
	Total	Avg Day	Max Day	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Ammonia	Raw	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total m³	Conc.	Total	Geomean
	m³	m³/d	m³/d	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	µg/L	mg/L	mg/L	mg/L	mg/L			mg/L	mg/L	Hauled	%	m³	# Col./100mL
January	128519	4146	4146	124	3.7	15.34	97.0%	143	6.9	28.61	95.2%	5.8	0.37	1.53	93.6%	N/A	3.00	12.44	N/A	5.27	35.2	3.51	0.03	6.5	7.5	6.9	269	126	280	4.5	12.6	8040
February	106580	3675	4533	44	2.9	10.66	93.4%	98	6.3	23.15	93.6%	4.0	0.28	1.03	93.0%	N/A	0.50	1.84	N/A	1.05	27.8	0.97	0.03	16.9	7.5	7.0	253	98	520	2.8	14.6	5186
March	228753	7379	14113	76	0.6	4.43	99.2%	95.1	5.8	42.80	93.9%	2.5	0.20	1.48	92.0%	N/A	0.09	0.66	N/A	0.47	34.8	0.70	0.03	12.2	7.5	7.2	241	120	440	3.4	15.0	4533
April	215185	7173	7173	50	1.0	7.17	98.0%	84	4.7	33.71	94.4%	1.8	0.13	0.93	92.8%	10.9	0.11	0.77	99.0%	0.33	16.3	0.40	0.03	12.6	7.4	7.3	237	144	400	2.5	10.0	3096
May	160557	5179	5687	96	0.6	3.11	99.4%	118	2.3	11.91	98.1%	2.7	0.15	0.78	94.4%	13.7	0.18	0.93	98.7%	2.69	21.1	0.30	0.03	11.4	7.6	7.3	227	107	440	3.3	14.5	19
June	94975	3166	5458	140	2.3	7.28	98.4%	112	4.5	14.25	96.0%	3.6	0.20	0.63	94.4%	18.9	0.47	1.49	97.5%	1.01	26.6	1.37	0.12	16.6	7.5	6.6	198	47	460	3.0	13.8	36
July	85226	2749	3398	100	4.0	11.00	96.0%	183	6.2	17.05	96.6%	4.3	0.32	0.88	92.6%	24.3	7.06	19.41	70.9%	107.85	39.2	12.10	0.52	4.0	7.4	6.6	218	71	400	N/A	N/A	19
August	83705	2700	3603	140	1.3	3.51	99.1%	161	4.2	11.34	97.4%	3.4	0.22	0.59	93.5%	24.4	4.79	12.93	80.4%	34.58	33.3	6.01	1.40	6.2	7.2	6.4	219	45	840	2.5	21.0	13
September	78666	2622	2935	140	0.8	2.10	99.4%	180	7.5	19.67	95.8%	3.8	0.28	0.73	92.6%	43.8	2.67	7.00	93.9%	4.97	45.9	7.85	1.94	12.3	7.2	6.2	230	18	720	2.6	18.7	100
October	101716	3281	4360	150	1.2	3.94	99.2%	180	5.1	16.73	97.2%	3.3	0.25	0.82	92.4%	23.1	0.73	2.40	96.8%	2.02	30.9	1.01	0.03	14.1	7.3	6.4	198	64	560	3.0	16.8	415
November	97674	3256	4583	100	1.4	4.56	98.6%	214	3.9	12.70	98.2%	3.6	0.24	0.78	93.3%	22.0	0.50	1.63	97.7%	2.06	29.7	1.47	0.04	13.9	7.2	6.8	197	58	920	2.3	21.2	1880
December	109691	3538	4554	100	1.5	5.31	98.5%	161	3.2	11.32	98.0%	3.6	0.12	0.42	96.7%	17.0	2.18	7.71	87.2%	4.42	22.9	2.31	0.03	12.23	7.2	6.9	222	93	800	2.5	20.0	19567
Total	1491247																												6780		178.1	
Average		4086		105	1.78	6.53	98.0%	144	5.05	20.27	96.2%	3.53	0.23	0.88	93.5%	22.01	1.86	5.8	91.4%	13.9	30.31	3.17	0.35	11.56	7.38	6.80	226	83		2.95		3575
Summer					1.70	5.16	98.7%		4.97	15.16	96.9%		0.24	0.74	93.4%	24.70	2.65	7.36	90.3%													
Winter					1.85	7.91	97.9%		5.13	25.38	95.7%		0.22	1.03	93.5%	16.63	1.06	4.18	95.2%													



Plant Type: Extended Aeration w/modified activated sludge for denitrification
Design Capacity: 7100 m³/day
Population Served: 7,147 (Plant & Lagoon)
Compliance Parameters:

Summer - May 1 to October 31

	Conc.	Loading	
CBOD ₅	7.0 mg/L	49.7 kg/day	Seasonal Average
TSS	7.0 mg/L	49.7 kg/day	Seasonal Average
Total Phosphorus	0.3 mg/L	2.13 kg/day	Monthly Average
Total Ammonia as N	2.0 mg/L	14.2 kg/day	Seasonal Average
E.Coli	200 col/100 mL		Monthly Geometric Mean

UV Disinfection turned on.

Winter - November 1 to April 30

	Conc.	Loading	
CBOD ₅	15.0 mg/L	106.5 kg/day	Seasonal Average
TSS	15.0 mg/L	106.5 kg/day	Seasonal Average
Total Phosphorus	0.5 mg/L	3.55 kg/day	Monthly Average
Total Ammonia as N	4.0 mg/L	28.4 kg/day	Seasonal Average

UV Disinfection turned off.



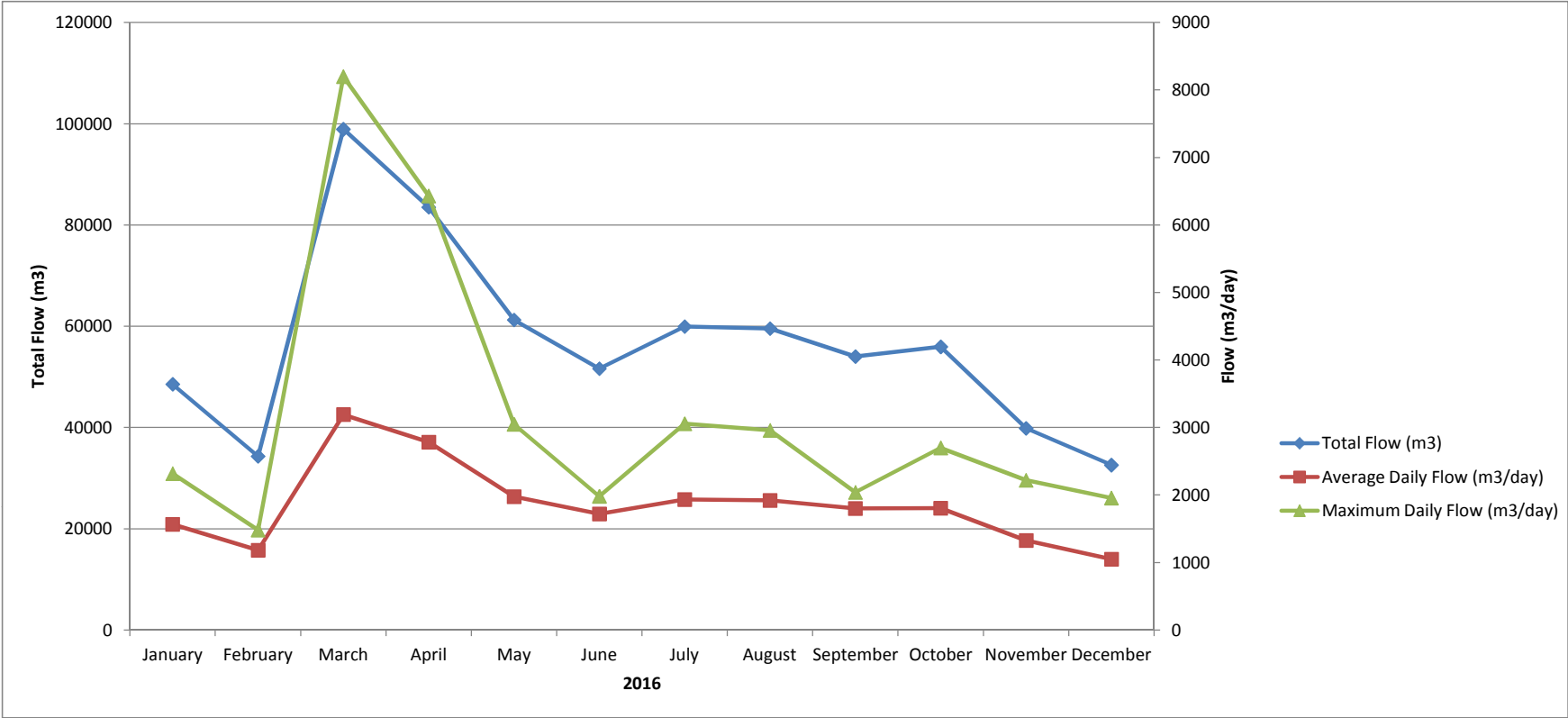
2016 Chelmsford Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	208.0	13.7	156.0	34.6	43.0	235.0	2.37	156.0	149.0	47.5	44.1	212.0	108.4
Nitrate (as N)	0.1	0.1	0.1	0.1	0.32	0.1	0.1	0.1	1	0.36	0.44	0.93	0.31
Nitrite (as N)	0.03	0.03	0.03	0.03	0.03	1.04	0.03	0.03	0.70	0.86	0.26	0.53	0.30
Potassium	62.6	43.7	121.0	74.3	58.4	37.0	42.3	44.8	58.0	52.0	63.0	102.0	63.3
TKN	1270	603	1760	981	915	1280	1350	1170	1410	1480	1400	1110	1227
Total Phosphorus	587	180	621	349	337	425	518	346	399	527	365	444	425
Total Solids	30500	12000	32100	24500	20300	29800	21700	25100	29100	28200	23800	27900	25417
Arsenic	0.0710	0.0119	0.0770	0.0520	0.0405	0.1370	0.102	0.1310	0.1000	0.1260	0.0940	0.0910	0.0861
Cadmium	0.0085	0.0023	0.0093	0.0028	0.0034	0.0153	0.0135	0.0208	0.0145	0.0113	0.0162	0.0176	0.0113
Chromium	0.202	0.076	0.228	0.118	0.111	0.328	0.325	0.447	0.305	0.364	0.278	0.263	0.254
Cobalt	0.221	0.127	0.385	0.315	0.318	0.379	0.179	0.139	0.126	0.104	0.158	0.255	0.226
Copper	5.36	0.26	8.93	1.05	0.93	6.47	8.55	11.20	6.920	8.10	6.07	7.37	5.93
Lead	0.2090	0.0528	0.2240	0.0920	0.0872	0.2840	0.2850	0.4090	0.2870	0.3170	0.2110	0.2060	0.2220
Mercury	0.0075	0.0034	0.0084	0.0006	0.0002	0.0117	0.0097	0.0162	0.0105	0.0197	0.0147	0.0303	0.0111
Molybdenum	0.0373	0.0055	0.0081	0.0108	0.0043	0.0780	0.0700	0.1160	0.0780	0.1080	0.0690	0.0710	0.0547
Nickel	1.09	0.33	1.16	1.31	1.17	1.61	1.24	1.16	0.96	0.89	1.01	1.29	1.10
Selenium	0.0267	0.0054	0.0102	0.0083	0.0094	0.0670	0.0530	0.0600	0.0370	0.0400	0.0310	0.0320	0.0317
Zinc	3.25	1.65	8.68	1.76	2.29	5.54	5.63	5.89	5.79	4.28	5.45	5.45	4.64
Sample Date	Jan.27/16	Feb.17/16	Mar.9/16	Apr.13/16	May 10/16	June 7/16	July 19/16	Aug.9/16	Sep.7/16	Oct.12/16	Nov.8/16	Dec.6/16	



2016 Coniston Wastewater Treatment Plant Performance

Month	Flows			BOD5				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-Ionized	TKN	Nitrite	Nitrate	pH		Alkalinity			Sludge			Chlorine		E.Coli
	Total	Avg Day	Max Day	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Ammonia	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total m³	Conc.	Total	Total	Residual	Geomean # Col./100mL	
	m³	m³/d	m³/d	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	µg/L	mg/L	mg/L	mg/L			mg/L	mg/L	Hauled	%	m³	Kg	mg/L		
January	48564	1567	2317	100	3.0	4.70	97.0%	117	7.1	11.12	93.9%	4.0	1.05	1.64	73.8%	N/A	3.35	5.25	N/A	4.5	4.93	0.03	4.42	7.6	7.0	150	97	280	1.6	4.5	60.7	0.79	4	
February	34332	1184	1483	85	1.2	1.42	98.6%	171	10.2	12.08	94.0%	4.6	1.25	1.48	72.8%	N/A	7.20	8.52	N/A	12.0	8.70	0.03	5.41	7.0	6.2	179	97	280	1.5	4.2	38.5	0.78	16	
March	98931	3191	8200	49	6.1	19.47	87.6%	116	21.9	69.89	81.1%	1.7	5.14	16.40	-202.4%	N/A	12.20	38.93	N/A	47.8	12.10	0.03	0.68	7.5	7.3	115	114	120	1.6	1.9	98.2	0.74	1360	
April	83513	2784	6431	84	14.0	38.97	83.3%	110	20.2	56.23	81.6%	2.5	1.17	3.26	53.2%	10.5	7.93	22.08	24.5%	36.7	14.10	0.03	1.24	7.6	7.4	141	123	40	2.3	0.9	101.4	0.77	1400	
May	61257	1976	3048	40	4.0	7.90	90.0%	111	8.1	16.01	92.7%	0.2	1.51	2.98	-655.0%	15.1	11.20	22.13	25.8%	139.7	11.50	0.03	0.84	7.9	7.2	172	147	200	1.5	3.0	58.7	0.76	14	
June	51632	1721	1981	120	0.9	1.55	99.3%	149	12.7	21.86	91.5%	4.2	1.63	2.81	61.2%	23.8	13.20	22.72	44.5%	43.9	16.30	0.03	0.10	7.6	7.0	185	134	280	0.7	2.0	53.5	0.82	2	
July	59949	1934	3055	140	9.2	17.79	93.4%	140	14.6	28.23	89.6%	3.5	0.90	1.74	74.3%	17.1	12.80	24.75	25.1%	39.6	13.40	0.80	2.21	7.4	7.0	12	126	200	1.0	2.0	61.6	0.85	136	
August	59534	1920	2957	50	1.9	3.65	96.2%	156	6.3	12.10	96.0%	12.0	1.73	3.32	85.6%	21.0	1.69	3.25	92.0%	4.4	4.96	0.89	3.21	7.5	6.9	153	78	200	N/A	N/A	67.0	0.64	2	
September	54015	1801	2039	40	7.4	13.32	81.5%	140	4.6	8.28	96.7%	4.1	2.07	3.73	49.5%	19.5	1.00	1.80	94.9%	4.0	2.00	0.03	1.69	7.7	7.0	152	88	320	1.2	3.8	53.5	0.73	2	
October	55946	1805	2699	140	3.6	6.50	97.4%	149	4.2	7.58	97.2%	5.0	1.11	2.00	77.8%	33.0	3.90	7.04	88.2%	9.2	4.20	0.39	3.15	7.8	7.2	193	82	280	1.0	2.8	51.5	0.75	8	
November	39855	1329	2219	70	1.0	1.33	98.6%	162	4.8	6.38	97.0%	5.8	1.51	2.01	74.0%	29.6	6.20	8.24	79.1%	28.5	6.30	0.03	0.71	8.2	7.1	189	105	200	1.4	2.8	45.8	0.58	2	
December	32592	1051	1957	160	1.6	1.68	99.0%	138	10.6	11.14	92.3%	4.6	1.39	1.46	69.8%	24.5	1.15	1.21	95.3%	5.6	2.25	0.03	5.13	8.0	7.3	215	84	160	1.2	2.0	54.7	0.57	10	
Total	680120																												2560		29.9			
Average		1863		90	4.49	9.86	93.7%	138	10.44	21.74	91.3%	4.35	1.71	3.57	52.7%	21.6	6.82	13.83	63.3%	31.33	8.40	0.20	2.40	7.65	7.05	155	106		1.37			0.73	16	



Plant Type: Extended Aeration

Design Capacity: 3000 m³/day

Population Served: 2,090

Compliance Parameters:

	Conc.	Loading	
BOD ₅	20 mg/L	35 kg/day	*
TSS	20 mg/L	35 kg/day	*
E.Coli	200 col/100 mL	Annual Geometric Mean	

* Average of any 12 consecutive month period.



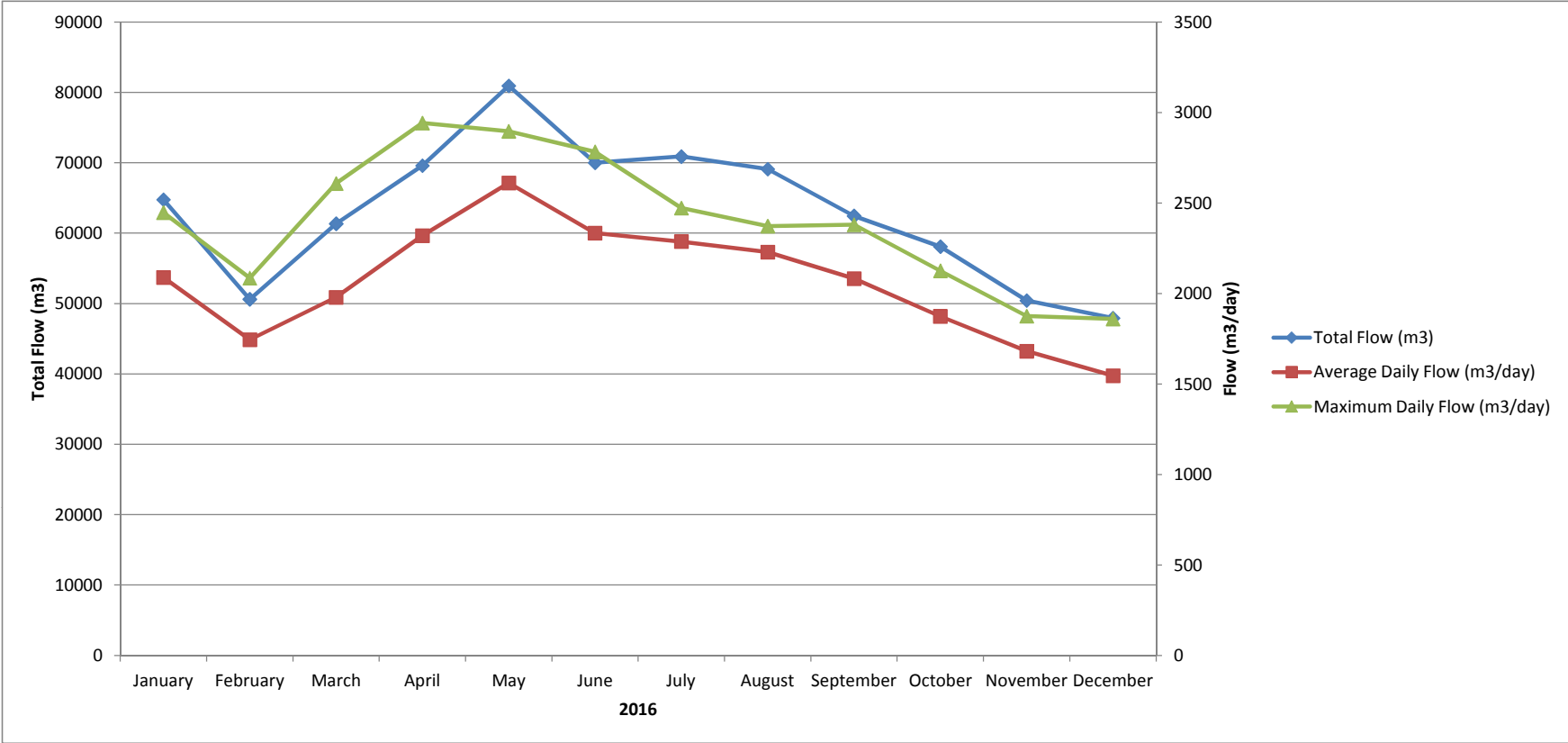
2016 Coniston Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November		December	Average
Ammonia (as N)	11.2	15.8	20.1	17.8	28	1.68	19.2	7.84	5.59	2.16	43.4	36	24.4	17.9
Nitrate (as N)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.11
Nitrite (as N)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.08	0.75	0.03	0.09
Potassium	20	23.4	26.4	70.2	36.9	26.7	31.9	54	45.9	43	54	85	92	46.9
TKN	232	393	433	1130	723	379	481	871	317	84.8	986	1470	634	626
Total Phosphorus	61.4	68.2	96	417	148	63.8	94.8	194	69.5	18.2	220	260	2.32	131.8
Total Solids	3730	3810	6040	27300	10400	5110	6790	12200	5890	9900	13800	22000	14400	10875
Arsenic	0.0023	0.0031	0.0067	0.037	0.027	0.0143	0.067	0.055	0.02	0.02	0.04	0.054	0.054	0.0308
Cadmium	0.0016	0.0019	0.0035	0.0173	0.0120	0.0093	0.0216	0.0244	0.0079	0.0110	0.0177	0.0256	0.0241	0.0137
Chromium	0.0099	0.0109	0.0512	0.1700	0.1030	0.0698	0.2370	0.2010	0.0790	0.0960	0.1570	0.2050	0.1770	0.1205
Cobalt	0.0389	0.0510	0.0816	0.2160	0.0704	0.0433	0.1850	0.1570	0.0702	0.0575	0.1080	0.1390	0.2090	0.1098
Copper	0.0703	0.147	0.55	5.42	3.89	3.04	8.62	10.8	3.3	4.31	6.16	8.11	8.85	4.867
Lead	0.0179	0.0135	0.0821	0.2380	0.1250	0.1000	0.3590	0.4070	0.1300	0.1620	0.2310	0.3060	0.3070	0.1907
Mercury	0.0001	0.0001	0.0001	0.0009	0.0024	0.0007	0.0131	0.0076	0.0010	0.0010	0.0037	0.0046	0.0047	0.0031
Molybdenum	0.0013	0.0017	0.0024	0.0141	0.0220	0.0173	0.0520	0.0560	0.0200	0.0360	0.0490	0.0640	0.0680	0.0311
Nickel	0.56	0.57	0.83	7.63	2.69	1.61	3.77	3.24	1.80	1.85	3.60	3.86	4.30	2.79
Selenium	0.0022	0.0025	0.0029	0.0136	0.0317	0.0171	0.0500	0.0500	0.0200	0.0200	0.0380	0.0640	0.0470	0.0276
Zinc	0.47	0.71	1.23	3.98	2.95	2.43	6.23	8.48	3.02	4.00	5.44	7.07	6.95	4.07
Sample Date	Jan.14/16	Feb.11/16	Mar.10/16	Apr.18/16	May 18/16	June 9/16	July 20/16	Aug.15/16	Sep.8/16	Oct.6/16	Nov.10/16	Nov.16/16	Dec.5/16	



2016 Dowling Wastewater Treatment Plant Performance

Month	Flows			CBOD5				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized	TKN	Nitrite	Nitrate	pH		Alkalinity		Sludge			Chlorine		E.Coli
	Total	Avg Day	Max Day	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Ammonia	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total m³	Conc.	Total	Total	Residual	Geomean
	m³	m³/d	m³/d	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	µg/L	mg/L	mg/L	mg/L			mg/L	mg/L	Hauled	%	m³	Kg	mg/L	# Col./100mL
January	64774	2089	2447	12	2.9	6.06	75.8%	29	7.5	15.67	74.1%	1.0	0.50	1.04	50.0%	N/A	0.10	0.21	N/A	0.04	0.68	0.03	2.45	6.9	6.5	67	40	180	0.9	1.7	132.9	0.43	81
February	50617	1745	2085	74	2.9	5.06	96.1%	31	5.3	9.25	82.9%	0.9	0.42	0.73	53.3%	N/A	0.23	0.40	N/A	0.27	1.80	0.03	5.50	6.9	8.8	78	37	80	0.7	0.6	130.5	0.50	15
March	61343	1979	2608	4	1.5	2.97	62.5%	26	6.7	13.26	74.2%	0.8	0.51	1.01	36.3%	N/A	0.15	0.30	N/A	0.18	0.95	0.03	5.37	7.0	6.7	77	42	80	1.8	1.4	142.3	0.65	10
April	69605	2320	2942	22	3.6	8.35	83.6%	35	9.6	22.27	72.6%	0.7	0.38	0.88	45.7%	4.89	0.30	0.70	93.9%	0.35	0.92	0.03	5.26	6.8	6.6	71	37	120	0.8	1.0	151.3	0.70	15
May	80937	2611	2897	30	2.9	7.57	90.3%	37	6.5	16.97	82.4%	0.8	0.41	1.07	48.8%	2.90	0.32	0.84	89.0%	0.31	1.20	0.03	5.21	6.9	6.7	59	36	80	1.8	1.4	146.5	0.57	3
June	70020	2334	2783	71	3.5	8.17	95.1%	37	5.0	11.67	86.5%	1.0	0.44	1.03	56.0%	6.10	0.15	0.35	97.5%	0.14	0.50	0.03	5.41	6.9	6.7	76	41	80	2.0	1.6	129.6	0.57	4
July	70901	2287	2472	30	1.0	2.29	96.7%	62	4.4	10.06	92.9%	1.5	0.53	1.21	64.7%	4.10	0.11	0.25	97.3%	0.11	0.20	0.30	5.04	7.0	6.5	70	37	200	1.4	2.8	124.2	0.53	10
August	69104	2229	2373	30	1.9	4.24	93.7%	59	4.4	9.81	92.5%	1.2	0.53	1.18	55.8%	4.85	0.63	1.40	87.0%	0.57	2.46	0.03	4.85	6.8	6.6	75	43	80	1.3	1.0	142.5	0.53	9
September	62455	2082	2380	20	2.7	5.62	86.5%	48	7.3	15.20	84.8%	1.2	0.58	1.21	51.7%	3.60	1.28	2.66	64.4%	1.91	2.66	0.05	4.25	6.9	6.7	66	44	160	2.8	4.5	123.1	0.48	31
October	58090	1874	2126	20	0.9	1.69	95.5%	46	4.6	8.62	90.0%	1.2	0.54	1.01	55.0%	3.60	0.29	0.54	91.9%	0.45	1.20	0.03	6.03	6.9	6.7	69	49	120	1.4	1.7	143.6	0.55	8
November	50436	1681	1875	20	1.2	2.02	94.0%	43	4.9	8.24	88.6%	1.8	0.52	0.87	71.1%	3.70	0.16	0.27	95.7%	0.11	1.70	0.03	5.60	6.9	6.7	69	39	80	1.5	1.2	140.7	0.51	9
December	47932	1546	1860	20	1.7	2.63	91.5%	49	4.9	7.58	90.0%	0.9	0.46	0.71	48.9%	4.10	0.09	0.14	97.8%	0.06	1.30	0.03	5.69	6.8	6.8	69	37	120	1.3	1.6	129.0	0.49	13
Total	756214																																
Average		2072		29	2.23	4.72	88.4%	42	5.93	12.38	84.3%	1.08	0.49	1.00	53.1%	4.20	0.32	0.67	90.5%	0.38	1.30	0.05	5.06	6.89	6.83	71	40		1.48			0.54	17



Plant Type: Extended Aeration
Design Capacity: 3200 m³/day
Population Served: 1,857

Compliance Parameters:			
	Conc.	Loading	
CBOD ₅	25 mg/L	80 kg/day	Annual Average
TSS	25 mg/L	80 kg/day	Annual Average
Total Phosphorus	1.0 mg/L	3.2 kg/day	Annual Average
E.Coli	200 col/100 mL		Monthly Geometric Mean



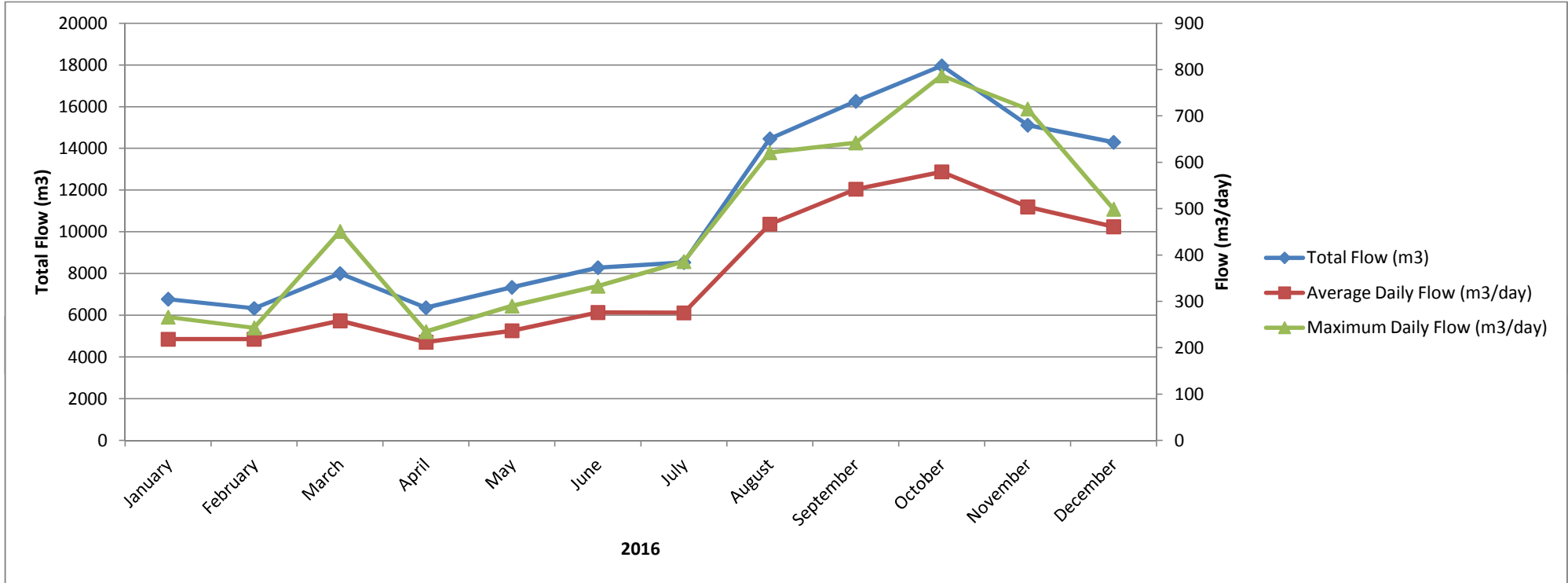
2016 Dowling Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	84.2	0.827	1.48	1.47	3.65	1.51	1.55	24.5	203	2	204	0.92	44.1
Nitrate (as N)	0.1	1.46	3.17	1.47	2.05	2.84	1.48	0.1	1.47	2.26	0.51	0.03	1.41
Nitrite (as N)	0.03	0.03	0.03	0.03	0.03	0.03	0.538	0.03	5.6	0.25	4.25	3.11	1.16
Potassium	51.3	9.13	11.3	8.58	12.7	14.6	15.8	29.6	76	10.6	71	13	27.0
TKN	838	75	78.9	409	193	266	228	322	1660	123	1220	114	460.6
Total Phosphorus	124	38.1	29.3	55.1	41.7	24.5	49.8	46.8	315	18.7	234	20.2	83.10
Total Solids	9500	1660	2240	2870	2590	2050	2590	4270	21000	1940	15500	2280	5708
Arsenic	0.0045	0.001	0.0012	0.001	0.001	0.0265	0.01	0.01	0.034	0.01	0.02	0.01	0.01
Cadmium	0.0015	0.0003	0.0004	0.0001	0.0001	0.0097	0.0010	0.0030	0.0140	0.0020	0.0092	0.0010	0.0035
Chromium	0.0601	0.0130	0.0159	0.0010	0.0043	0.1830	0.0680	0.1450	0.4130	0.0430	0.2830	0.0310	0.1050
Cobalt	0.0082	0.0016	0.0021	0.0005	0.0005	0.0908	0.0053	0.0135	0.0534	0.0046	0.0347	0.0043	0.0183
Copper	2.49	0.354	1.01	0.0167	0.0383	7.18	2.33	5.82	24.5	1.83	15.1	1.74	5.20
Lead	0.0560	0.0084	0.0121	0.0010	0.0010	0.3190	0.0350	0.0740	0.3570	0.0560	0.2230	0.0410	0.0986
Mercury	0.0001	0.0001	0.0001	0.0001	0.0001	0.0062	0.0010	0.0010	0.0061	0.0010	0.0032	0.0010	0.0017
Molybdenum	0.0017	0.0010	0.0017	0.0010	0.0010	0.0426	0.0100	0.0200	0.0840	0.0100	0.0630	0.0100	0.0205
Nickel	0.1380	0.0258	0.0268	0.0038	0.0121	1.8000	0.1150	0.2850	1.2800	0.1170	0.7850	0.0910	0.3900
Selenium	0.0024	0.0010	0.0010	0.0010	0.0010	0.0274	0.0100	0.0200	0.0740	0.0100	0.0510	0.0100	0.0174
Zinc	0.76	0.14	0.24	0.00	0.05	3.26	0.54	1.42	6.20	0.68	4.16	0.46	1.49
Sample Date	Jan.7/16	Feb.1/16	Mar.9/16	Apr.6/16	May 4/16	June 6/16	July 5/16	Aug.4/16	Sep.15/16	Oct.5/16	Nov.10/16	Dec.7/16	



2016 Falconbridge Wastewater Treatment Plant Performance

Month	Flows			BOD5				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-Ionized	TKN	Nitrite	Nitrate	pH		E.Coli
	Total	Avg Day	Max Day	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Ammonia	Effluent	Effluent	Effluent	Raw	Effluent	Average
	m ³	m ³ /d	m ³ /d	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	µg/L	mg/L	mg/L	mg/L			
January	6773	218	266	255	1.4	0.31	99.5%	92	2.3	0.50	90.1%	9.1	0.02	0.00	99.8%	N/A	0.18	0.04	N/A	0.26	0.59	0.03	0.87	7.4	6.9	18
February	6335	218	243	155	0.5	0.11	99.7%	114	2.5	0.55	85.8%	8.3	0.02	0.00	99.8%	N/A	0.02	0.00	N/A	0.03	0.42	0.03	0.81	7.6	6.8	10
March	8006	258	451	145	1.6	0.41	98.9%	144	2.6	0.67	87.4%	5.4	0.02	0.01	99.6%	N/A	0.16	0.04	N/A	0.35	0.28	0.03	0.88	8.1	7.2	68
April	6364	212	235	379	0.5	0.11	99.9%	200	1.9	0.40	97.5%	10.1	0.01	0.00	99.9%	64.30	0.01	0.00	100.0%	0.02	1.10	0.03	0.42	7.9	7.3	4
May	7341	237	290	337	0.8	0.19	99.8%	123	2.8	0.66	93.2%	9.6	0.03	0.01	99.7%	58.80	0.12	0.03	99.8%	1.10	0.50	0.03	0.10	7.9	7.2	14
June	8287	276	333	150	0.5	0.14	99.7%	85	5.6	1.55	55.9%	7.7	0.17	0.05	97.8%	59.80	0.11	0.03	99.8%	0.44	0.71	0.30	1.00	7.7	6.9	32
July	8536	275	386	100	0.5	0.14	99.5%	79	4.2	1.16	46.6%	10.3	0.15	0.04	98.5%	49.20	0.13	0.04	99.7%	0.18	0.40	0.03	0.10	7.2	6.9	160
August	14467	467	621	150	0.5	0.23	99.7%	84	3.5	1.63	72.1%	6.3	0.08	0.04	98.7%	36.90	0.05	0.02	99.9%	0.16	0.99	0.03	0.10	6.9	6.8	58
September	16261	542	642	160	0.5	0.27	99.7%	75	2.6	1.41	78.3%	7.1	0.03	0.02	99.6%	44.00	0.02	0.01	100.0%	0.07	0.40	0.03	0.10	7.2	6.9	140
October	17964	579	787	190	0.5	0.29	99.7%	94	3.1	1.80	82.6%	7.4	0.02	0.01	99.7%	41.90	0.22	0.13	99.5%	1.01	0.88	0.30	1.00	7.5	7.1	810
November	15114	504	715	130	0.5	0.25	99.6%	82	3.1	1.56	70.8%	8.8	0.02	0.01	99.8%	55.60	0.11	0.06	99.8%	0.08	0.80	0.03	0.10	7.4	7.1	6500
December	14294	461	499	170	0.5	0.23	99.7%	93	2.4	1.11	84.8%	6.5	0.01	0.00	99.8%	36.80	0.06	0.03	99.8%	0.15	0.50	0.03	0.10	7.7	7.2	10
Total	129742																									
Average		355		193	0.69	0.22	99.7%	105	3.05	1.08	84.0%	8.04	0.05	0.02	99.4%	49.70	0.10	0.04	99.8%	0.32	0.63	0.08	0.47	7.54	7.03	652



Plant Type: Trickling Filter
Design Capacity: 909 m³/day
Population Served: 754

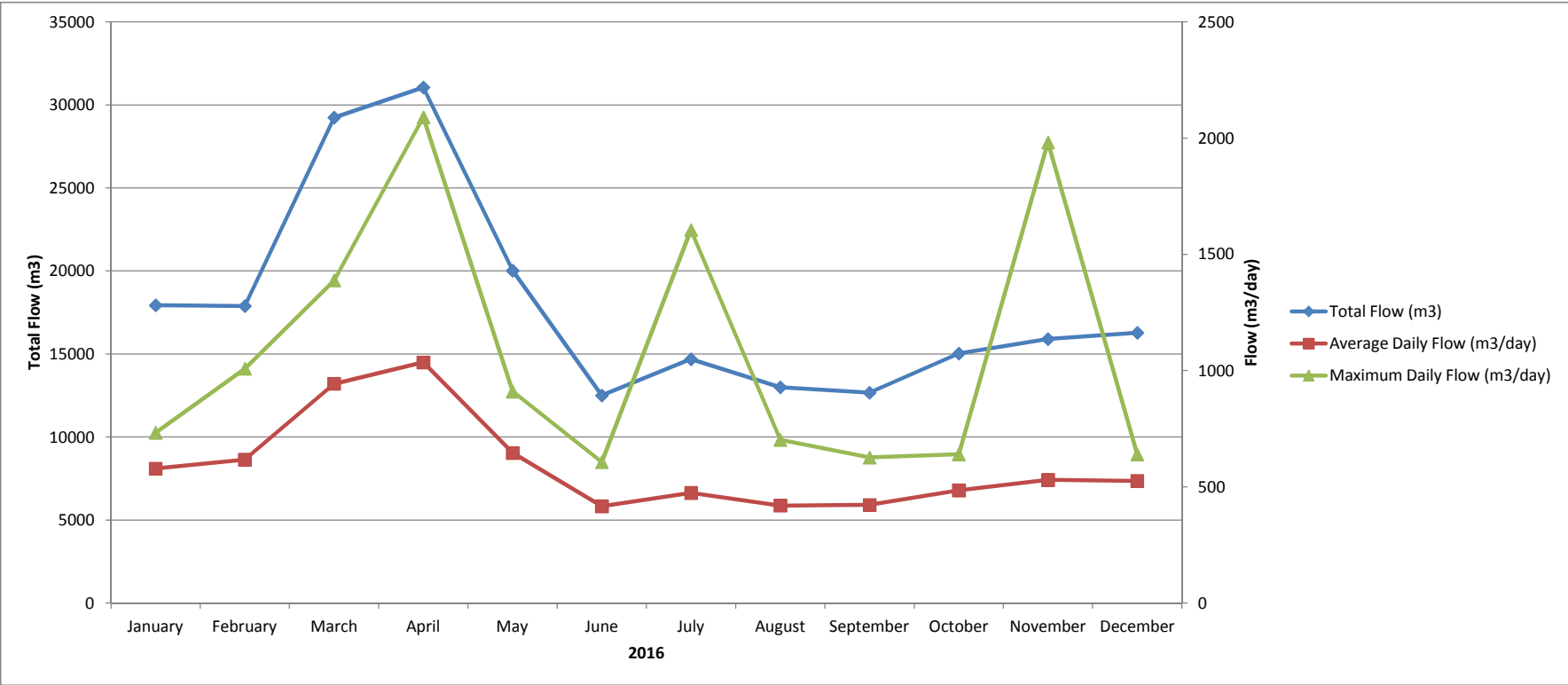
Compliance Parameters:

	Conc.	Loading	
BOD ₅	15 mg/L	46 kg/day	Annual Avg.
TSS	15 mg/L	46 kg/day	Annual Avg.



2016 Levack Wastewater Treatment Plant Performance

Month	Flows			CBOD5				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized	TKN		Nitrite	Nitrate	pH		Alkalinity		Sludge			Chlorine		E.Coli	
	Total	Avg Day	Max Day	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Ammonia	Raw	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total m³	Conc.	Total	Total	Residual	Geomean	
	m³	m³/d	m³/d	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	µg/L	mg/L	mg/L	mg/L	mg/L	Raw	Effluent	mg/L	mg/L	Hauled	%	m³	Kg	mg/L	# Col./100mL	
January	17930	578	733	122	1.7	0.98	98.6%	165	5.7	3.30	96.5%	4.5	0.22	0.13	95.1%	23.4	0.32	0.19	98.6%	0.09	33.5	0.65	0.03	18.90	7.1	6.4	140	12	160	1.2	1.9	63.1	0.78	4	
February	17886	617	1008	110	0.5	0.31	99.5%	167	6.4	3.95	96.2%	4.9	0.28	0.17	94.3%	26.7	0.67	0.41	97.5%	0.58	40.7	0.78	0.03	21.80	7.3	6.5	169	52	160	2.1	3.4	43.8	0.72	15	
March	29237	943	1388	44	0.5	0.47	98.9%	128	6.1	5.75	95.2%	3.1	0.20	0.19	93.5%	15.3	0.39	0.37	97.5%	0.28	24.3	0.59	0.03	14.20	7.0	6.5	110	19	200	1.8	3.6	56.3	0.63	4	
April	31061	1035	2090	67	0.5	0.52	99.3%	121	4.9	5.07	96.0%	2.7	0.15	0.16	94.4%	17.1	0.22	0.23	98.7%	0.03	29.2	0.20	1.00	13.90	6.9	6.4	120	11	160	1.4	2.2	67.7	0.53	22	
May	20016	646	910	120	1.7	1.10	98.6%	210	5.7	3.68	97.3%	4.2	0.40	0.26	90.5%	18.3	0.19	0.12	99.0%	0.20	24.6	0.30	0.03	16.70	7.0	6.5	125	55	160	2.4	3.8	70.5	0.64	7	
June	12495	417	606	250	3.5	1.46	98.6%	266	6.6	2.75	97.5%	4.2	0.50	0.21	88.1%	23.8	0.35	0.15	98.5%	0.33	34.0	0.60	0.03	20.90	7.1	6.5	90	33	200	2.1	4.2	85.3	0.61	30	
July	14692	474	1605	140	0.9	0.43	99.4%	273	3.3	1.56	98.8%	4.4	0.63	0.30	85.7%	33.8	0.30	0.14	99.1%	0.36	40.4	0.30	0.03	25.10	7.1	6.6	204	28	160	1.4	2.2	73.8	0.73	3	
August	12994	419	702	200	0.5	0.21	99.8%	246	4.1	1.72	98.3%	4.1	0.60	0.25	85.4%	34.3	0.38	0.16	98.9%	0.69	44.7	2.05	0.03	24.30	7.2	6.6	188	43	200	1.0	2.0	64.5	0.64	2	
September	12662	422	626	130	0.7	0.30	99.5%	324	6.6	2.79	98.0%	5.3	0.50	0.21	90.6%	40.7	0.36	0.15	99.1%	0.97	43.7	4.22	0.03	24.20	7.4	6.8	192	49	160	0.4	0.6	62.8	0.67	4	
October	15031	485	640	180	0.7	0.34	99.6%	212	7.8	3.78	96.3%	4.9	0.59	0.29	88.0%	31.5	0.28	0.14	99.1%	0.21	40.3	0.40	0.03	28.90	7.1	6.5	169	39	160	1.6	2.6	75.5	0.67	8	
November	15894	530	1982	190	8.4	4.45	95.6%	194	4.4	2.33	97.7%	4.6	0.36	0.19	92.2%	34.2	0.71	0.38	97.9%	1.50	40.3	1.90	0.03	27.70	7.3	6.7	175	62	200	1.4	2.8	55.2	0.71	11	
December	16274	525	639	160	0.5	0.26	99.7%	203	4.3	2.26	97.9%	5.9	0.30	0.16	94.9%	27.6	0.07	0.04	99.7%	0.06	34.9	0.30	0.03	24.60	7.3	6.6	174	25	160	1.9	3.0	57.4	0.76	7	
Total	216172																												2080		32.4				
Average		592		143	1.68	0.90	98.8%	209	5.49	3.24	97.2%	4.40	0.39	0.21	91.6%	27.23	0.35	0.21	98.6%	0.44	35.88	1.02	0.11	21.77	7.15	6.55	155	36		1.56			0.67	10	



Plant Type: Extended Aeration
Design Capacity: 2270 m³/day
Population Served: 2,320

Compliance Parameters:

	Conc.	Loading	
CBOD ₅	25 mg/L	56.75 kg/day	Annual Average
TSS	25 mg/L	56.75 kg/day	Annual Average
Total Phosphorus	1.0 mg/L	3.1 kg/day	Monthly Average
pH	6.0 to 9.5 inclusive, at all times		
E.Coli	200 col/100 mL	Monthly Geometric Mean	



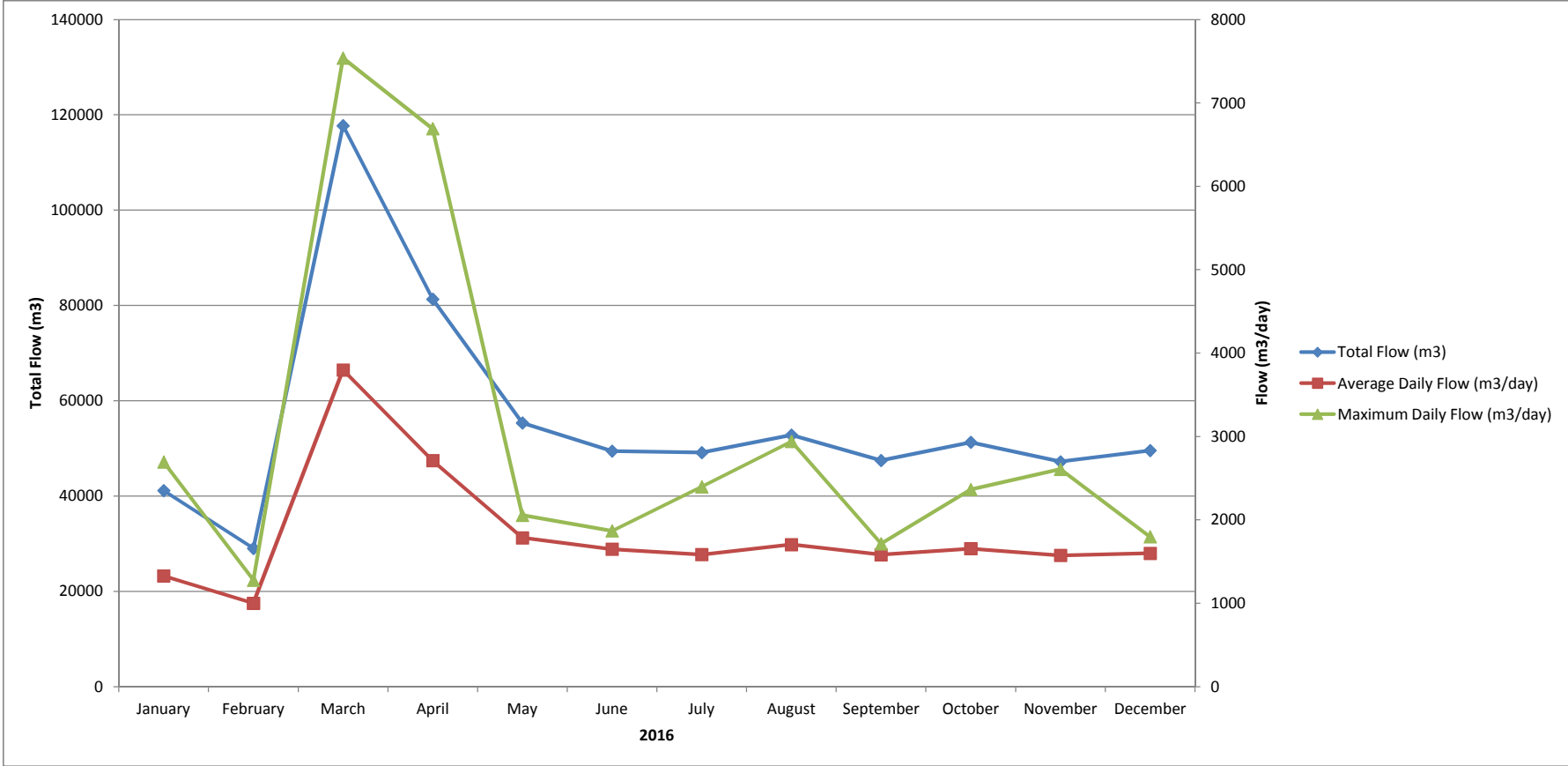
2016 Levack Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	15.2	10.3	25.4	26.3	49.4	10.7	16.5	23.1	8.66	26.9	11.9	13.7	19.8
Nitrate (as N)	0.1	0.1	0.1	0.1	1.06	0.1	0.1	0.1	1.17	0.1	0.1	0.2	0.28
Nitrite (as N)	0.03	0.03	0.03	0.03	0.736	0.03	0.03	0.03	4.34	0.03	0.92	0.03	0.52
Potassium	35.5	43.4	55.1	27.1	96.1	24.7	59	61	22	52	26.4	70	47.7
TKN	533	529	1050	471	1450	652	870	1130	209	145	263	67.9	614.2
Total Phosphorus	192	246	326	164	551	102	41.1	223	90.6	747	95.4	161	244.9
Total Solids	8880	20200	15800	7700	21400	8530	15400	23500	3870	21300	4850	12100	13628
Arsenic	0.0121	0.012	0.0141	0.0036	0.0131	0.01	0.036	0.052	0.01	0.048	0.01	0.03	0.0209
Cadmium	0.0059	0.0094	0.0060	0.0001	0.0052	0.0044	0.0159	0.0211	0.0036	0.0237	0.0030	0.0136	0.0093
Chromium	0.0883	0.1690	0.0967	0.0042	0.0621	0.1140	0.2700	0.4240	0.0610	0.3870	0.0520	0.1450	0.1561
Cobalt	0.0801	0.1360	0.0493	0.0037	0.0483	0.0398	0.1210	0.2120	0.0313	0.2140	0.0349	0.0784	0.0874
Copper	4.23	2.24	4.46	0.0161	0.795	3.43	14	17.1	2.76	15.8	2.05	7.41	6.19
Lead	0.243	0.303	0.255	0.001	0.207	0.148	0.706	0.930	0.152	0.820	0.121	0.479	0.364
Mercury	0.0008	0.0021	0.0001	0.0001	0.0002	0.0034	0.0255	0.0249	0.0030	0.0292	0.0020	0.0094	0.0084
Molybdenum	0.2310	0.0157	0.0067	0.0020	0.0091	0.0200	0.0530	0.0760	0.0100	0.0590	0.0100	0.0380	0.0442
Nickel	1.16	2.08	1.20	0.05	1.20	0.91	2.32	3.99	0.62	3.70	0.48	1.46	1.60
Selenium	0.0031	0.0092	0.0027	0.0010	0.0070	0.0200	0.0410	0.0500	0.0100	0.0610	0.0100	0.0300	0.0204
Zinc	2.11	4.95	2.64	0.02	1.80	2.09	7.37	9.66	1.69	9.23	1.43	5.14	4.01
Sample Date	Jan.5/16	Feb.1/16	Mar.8/16	Apr.6/16	May 3/16	June 6/16	July 5/16	Aug.2/16	Sep.14/16	Oct.5/16	Nov.8/15	Dec.6/16	



2016 Lively Wastewater Treatment Plant Performance

Month	Flows				BOD ₅	CBOD ₅			Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized	TKN		Nitrite	Nitrate	pH		Alkalinity		Sludge			Chlorine			E.Coli	
	Total	Avg Day	Max Day	Diverted	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Ammonia	Raw	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total m ³	Conc.	Total	Total	Residual	Geomean		
	m ³	m ³ /d	m ³ /d	m ³	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	µg/L	mg/L	mg/L	mg/L	mg/L	Raw	Effluent	mg/L	mg/L	Hauled	%	m ³	Kg	mg/L	# Col./100mL		
January	41160	1328	2695	2608	95	5.2	6.90	97.3%	136	10.4	13.81	96.2%	5.3	0.31	0.41	97.1%	N/A	10.60	14.07	N/A	30.72	27.0	12.80	0.03	2.00	7.3	7.0	155	69	240	3.3	7.9	26.3	0.84	3		
February	29033	1001	1277	2504	112	0.5	0.50	99.7%	126	3.6	3.60	97.8%	5.5	0.26	0.26	96.3%	N/A	7.29	7.30	N/A	19.23	42.2	7.67	0.03	9.10	7.1	7.1	166	34	140	2.0	2.8	16.4	0.69	3		
March	117727	3798	7539	10202	32	0.5	1.90	99.2%	132	6.9	26.20	97.4%	2.7	0.24	0.91	95.5%	N/A	12.10	45.95	N/A	19.53	14.4	13.70	0.03	3.68	7.6	7.0	83	66	80	0.3	0.2	64.1	0.68	228		
April	81331	2711	6692	9616	50	2.2	5.96	98.2%	80	10.8	29.28	94.5%	2.1	0.34	0.92	93.4%	8.29	6.62	17.95	67.6%	21.63	15.2	10.90	0.03	1.94	7.5	7.2	103	80	40	1.2	0.5	56.2	0.66	20		
May	55349	1785	2056	4724	40	20.0	35.71	56.6%	103	13.8	24.64	88.4%	2.5	0.44	0.79	84.7%	15.50	15.90	28.39	10.9%	43.75	18.0	19.60	0.03	0.60	7.0	7.0	135	125	40	2.5	1.0	53.8	0.46	160		
June	49454	1648	1868	3215	93	4.9	8.08	95.4%	134	6.4	10.55	95.8%	3.4	0.40	0.66	89.6%	21.10	17.00	28.02	28.9%	123.50	29.1	22.20	0.38	1.33	6.9	6.9	122	96	240	3.5	8.4	58.2	0.46	26		
July	49117	1584	2397	1748	66	2.2	3.49	97.8%	130	6.6	10.46	96.6%	4.8	0.38	0.60	94.8%	17.10	5.60	8.87	78.4%	26.61	20.5	6.20	0.98	11.40	7.0	6.8	128	55	40	4.1	1.6	103.9	0.48	13		
August	52810	1704	2941	3563	20	0.7	1.19	98.0%	121	8.9	15.16	95.7%	3.7	0.38	0.65	94.1%	18.50	1.91	3.25	94.0%	3.78	19.9	1.91	0.27	18.00	7.2	6.7	142	20	N/A	N/A	N/A	135.3	0.53	32		
September	47471	1582	1714	2107	81	0.6	0.95	99.3%	113	6.2	9.81	94.9%	4.1	0.81	1.28	81.8%	26.80	1.67	2.64	94.2%	20.55	30.5	5.57	0.16	15.40	7.2	6.8	157	18	80	N/A	N/A	144.3	0.75	3		
October	51295	1655	2365	2698	47	0.8	1.32	98.8%	133	7.3	12.08	96.2%	3.9	0.65	1.08	88.3%	25.50	0.76	1.26	97.9%	0.87	29.3	1.14	0.03	16.65	7.2	6.3	151	19	160	2.4	3.8	134.4	0.67	5		
November	47214	1574	2608	2355	40	1.0	1.57	98.5%	105	7.3	11.49	95.8%	3.7	0.63	0.99	89.7%	21.80	0.64	1.01	98.2%	0.95	25.0	0.76	0.13	17.12	7.4	6.6	144	12	80	2.9	2.3	138.1	0.55	60		
December	49565	1599	1797	2597	20	0.5	0.80	97.8%	91	5.3	8.47	94.8%	3.0	0.49	0.78	85.5%	8.65	0.08	0.13	99.2%	0.06	8.7	0.85	0.03	14.50	7.0	7.0	94	2	160	2.5	4.0	133.7	0.57	16		
Total	671526																														1300		32.6				
Average		1840			58	3.26	5.70	94.7%	117	7.79	14.63	95.3%	3.73	0.44	0.78	90.9%	18.14	6.68	13.2	74.4%	25.93	23.32	8.61	0.18	9.31	7.20	6.87	132	50		2.47			0.61	47		





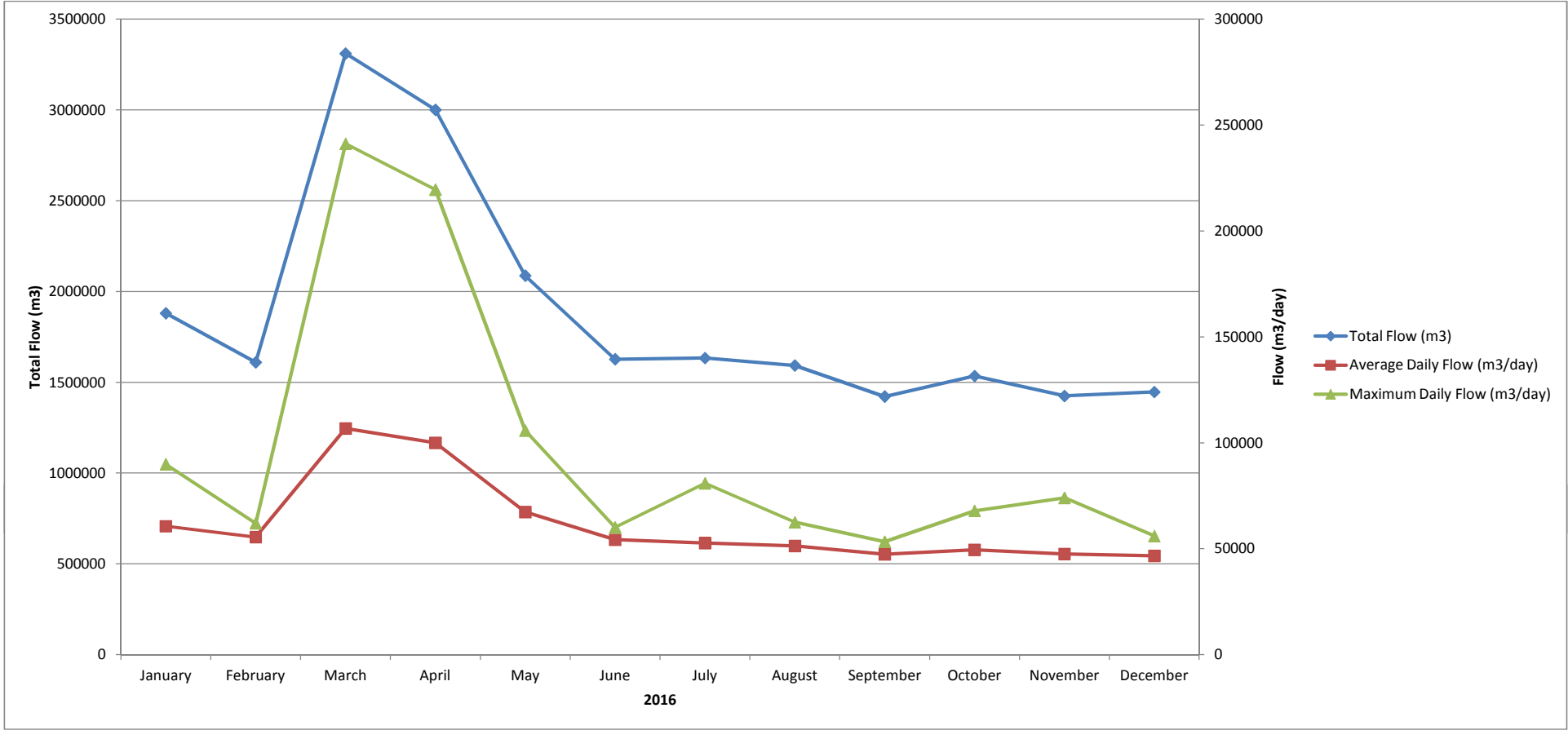
2016 Lively Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	24.7	13.6	16.2		23.8	26.2	13.3	33.1	8.28	10.1	14.8	108	26.6
Nitrate (as N)	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.62	1	0.1	0.3	0.25
Nitrite (as N)	0.03	0.03	0.03		0.03	0.924	0.03	0.03	2.13	0.30	0.03	0.49	0.37
Potassium	75.4	57.6	63.3		53.7	94	130	168	88	82	90	146	95.3
TKN	1320	1150	1150		1410	1620	1810	2240	108	1880	160	1590	1312.5
Total Phosphorus	530	420	442		566	468	607	433	263	404	443	550	466.0
Total Solids	34700	33700	26400		30600	33200	34900	38200	19400	20900	22400	37700	30191
Arsenic	0.0736	0.0269	0.0466		0.0316	0.164	0.177	0.222	0.117	0.098	0.106	0.157	0.1109
Cadmium	0.0239	0.0195	0.0169		0.0302	0.0684	0.0676	0.0645	0.0365	0.0318	0.0337	0.0512	0.0404
Chromium	0.235	0.157	0.100		0.220	0.661	0.942	0.960	0.563	0.488	0.446	0.757	0.503
Cobalt	0.210	0.275	0.362		0.334	0.370	0.435	0.388	0.190	0.184	0.148	0.281	0.289
Copper	7.16	0.722	3.62		1.46	18.5	24.3	26.9	16.7	14.1	10.6	24.3	13.49
Lead	0.286	0.269	0.197		0.291	1.100	1.420	1.530	0.856	0.754	0.724	1.140	0.779
Mercury	0.0051	0.0004	0.0008		0.0014	0.0202	0.0408	0.0665	0.0362	0.0360	0.0210	0.0443	0.0248
Molybdenum	0.0238	0.0076	0.0064		0.0094	0.0790	0.0930	0.1150	0.0740	0.0680	0.0750	0.1230	0.0613
Nickel	2.69	2.38	3.12		3.74	5.42	5.62	5.70	3.30	2.98	2.65	4.49	3.83
Selenium	0.0219	0.0109	0.0093		0.0164	0.0960	0.1230	0.1620	0.0950	0.0770	0.0820	0.1450	0.0762
Zinc	8.95	10.30	4.63		10.90	17.30	18.80	17.70	10.40	8.92	6.84	15.80	11.87
Sample Date	Jan.8/15	Feb.9/16	Mar.30/15	N/A	May 11/16	June 7/16	July 5/16	Aug.5/16	Sep.14/16	Oct.5/16	Nov.2/16	Dec.1/16	



2016 Sudbury Wastewater Treatment Plant Performance

Month	Flows			CBOD5				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized	TKN		Nitrite	Nitrate	pH		Alkalinity		Sludge		Chlorine		Dechlorination		E.Coli	
	Total	Avg Day	Max Day	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Ammonia	Raw	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total	Conc.	Total	Residual	Total	Loading	Geomean	
	m³	m³/d	m³/d	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	µg/L	mg/L	mg/L	mg/L	mg/L	Raw	Effluent	mg/L	mg/L	m³	%	Kg	mg/L	mg/L	Kg/day	# Col./100mL	
January	1880000	60645	89900	93	4.6	279.0	95.1%	175	7.3	442.7	95.8%	4.3	0.74	44.9	82.8%	N/A	14.78	896.3	N/A	25.09	35.2	15.7	0.18	2.27	7.2	6.8	171	138	N/A	3.14	2258	0.73	0.000	0.00	2	
February	1610250	55526	62000	126	5.1	283.2	96.0%	176	8.1	449.8	95.4%	5.1	0.65	36.1	87.3%	N/A	16.48	915.1	N/A	26.11	34.6	16.9	0.03	0.64	7.1	6.8	176	136	N/A	2.88	1744	0.65	0.000	0.00	9	
March	3310504	106790	241140	101	5.7	608.7	94.4%	96	9.6	1025.2	90.0%	3.2	0.49	52.3	84.7%	6.8	11.40	1217.4	-67.6%	14.83	24.8	12.0	0.03	0.93	7.2	6.7	152	126	N/A	3.79	3032	0.57	0.000	0.00	13	
April	3000500	100017	219500	92	4.2	420.1	95.4%	144	9.8	980.2	93.2%	2.7	0.49	49.0	81.9%	15.7	10.51	1051.2	33.1%	19.91	26.2	11.9	0.03	0.72	7.1	6.8	161	133	N/A	3.05	2860	0.60	0.000	0.00	6	
May	2087200	67329	105800	162	5.6	377.0	96.5%	122	10.8	727.2	91.1%	2.9	0.35	23.6	87.9%	20.0	14.53	978.3	27.4%	26.55	30.2	15.3	0.03	1.02	7.0	6.9	178	139	N/A	2.63	2789	0.61	0.000	0.00	3	
June	1627200	54240	60100	140	14.9	808.2	89.4%	145	11.4	618.3	92.1%	3.1	0.51	27.7	83.5%	20.0	20.38	1105.4	-1.9%	46.44	32.3	21.7	0.50	0.76	7.0	6.8	154	136	N/A	3.02	2438	0.56	0.000	0.00	3	
July	1633400	52690	80900	205	6.8	358.3	96.7%	150	8.4	442.6	94.4%	3.3	0.33	17.4	90.0%	21.4	20.90	1101.2	2.3%	51.20	36.8	21.5	0.03	0.10	6.9	6.8	154	130	N/A	2.46	2386	0.52	0.000	0.00	4	
August	1592600	51374	62500	143	3.0	154.1	97.9%	180	8.4	431.5	95.3%	3.0	0.26	13.4	91.3%	22.4	18.58	954.5	17.1%	44.83	30.5	18.1	0.47	1.65	6.8	6.8	156	129	N/A	3.07	2573	0.48	0.000	0.00	12	
September	1421600	47387	53300	76	2.3	109.0	97.0%	174	6.0	284.3	96.6%	3.6	0.20	9.5	94.4%	20.3	16.43	778.6	19.1%	45.35	29.0	17.8	0.40	0.71	6.9	6.8	148	119	N/A	2.64	2370	0.51	0.000	0.00	29	
October	1534800	49510	67900	170	4.3	212.9	97.5%	203	8.1	401.0	96.0%	3.1	0.48	23.8	84.5%	21.0	17.06	844.6	18.8%	41.31	27.2	18.6	0.42	0.64	6.9	6.8	159	122	N/A	3.48	2514	0.52	0.000	0.00	11	
November	1424900	47497	74000	138	4.4	209.0	96.8%	225	7.5	356.2	96.7%	3.6	0.54	25.6	85.0%	20.4	16.35	776.6	19.9%	74.40	27.5	16.8	0.45	1.00	7.4	7.1	139	117	N/A	2.74	2367	0.51	0.000	0.00	10	
December	1446600	46665	56000	95	5.3	247.3	94.4%	191	8.3	387.3	95.7%	3.5	0.38	17.7	89.1%	20.1	16.58	773.7	17.5%	48.89	26.7	17.3	0.11	0.67	7.2	7.1	159	127	N/A	2.34	2226	0.60	0.000	0.00	4	
Total	22569554																																			
Average		61834		128	5.52	338.90	95.6%	165	8.64	545.53	94.4%	3.45	0.45	28.41	86.4%	18.81	16.17	949.41	0.09	38.74	30.08	16.97	0.22	0.93	7	7		129.33		2.94	2463	0.57	0.00	0.00	9	



Plant Type: High Rate
Design Capacity: 79625 m³/day
Population Served: 84609

Compliance Parameters:

	Conc.	Loading	
CBOD ₅	25 mg/L	1990.6 kg/day	Annual Avg
TSS	25 mg/L	1990.6 kg/day	Annual Avg
Total P	1.0 mg/L	79.6 kg/day	Monthly Avg (Oct.-May)
Total P	0.5 mg/L	39.8 kg/day	Monthly Avg (June-Sept.)
E.Coli	200 col/100 mL		Monthly Geometric Mean
pH	6.0 to 9.5 inclusive, at all times		
Dechlorination	total chlorine residual 0.02 mg/L, 1.6 kg/L, Monthly Avg		



2016 Sudbury Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	360	240	464	190	497	247	212	355	190	397	207	293	304.3
Nitrate (as N)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.43	0.82	1	0.43	0.37
Nitrite (as N)	0.03	1.24	0.03	0.668	0.03	11.3	0.03	0.03	6.67	11.4	4.68	2.36	3.21
Potassium	153	82	119	0.641	91.3	85	111	97	78	87	77	100	90.1
TKN	2090	1530	1400	1540	1630	2290	1870	1930	1710	2180	1530	1100	1733
Total Phosphorus	640	554	559	272	560	434	822	156	755	691	510	511	539
Total Solids	27900	20200	23600	24700	21700	32200	28100	26000	27000	26300	20300	22600	25050
Arsenic	0.187	0.021	0.122	0.0237	0.0254	0.136	0.14	0.142	0.126	0.139	0.117	0.099	0.1065
Cadmium	0.0316	0.0085	0.0184	0.0013	0.0092	0.0284	0.0291	0.0262	0.0265	0.0285	0.0253	0.0240	0.0214
Chromium	0.3970	0.1360	0.3130	0.0352	0.1370	0.3130	0.3910	0.4060	0.3350	0.3380	0.2690	0.2450	0.2763
Cobalt	0.2360	0.0835	0.1790	0.0412	0.1180	0.2100	0.2760	0.2470	0.2290	0.2170	0.2170	0.1550	0.1841
Copper	17.1	1	9.38	0.693	0.558	11	15.8	13.8	12.9	15.1	10.9	10.8	9.92
Lead	0.8810	0.1690	0.4340	0.0319	0.2320	0.6940	0.6230	0.5700	0.7400	0.6850	0.7490	0.4650	0.5228
Mercury	0.0234	0.0013	0.0085	0.0001	0.0002	0.0046	0.0095	0.0010	0.0091	0.0121	0.0010	0.0124	0.0069
Molybdenum	0.1040	0.0173	0.1030	0.0057	0.0054	0.0930	0.1000	0.1160	0.0890	0.1050	0.0860	0.0860	0.0759
Nickel	5.59	1.17	2.90	0.50	1.90	3.70	5.53	3.54	3.86	3.89	3.26	3.04	3.24
Selenium	0.0850	0.0132	0.0539	0.0091	0.0122	0.0960	0.1090	0.1290	0.0690	0.0790	0.0850	0.0570	0.0665
Zinc	15.60	4.77	7.96	0.28	3.86	8.32	11.50	10.10	9.38	10.50	8.09	8.50	8.24
Sample Date	Jan.6/16	Feb.3/16	Mar.9/16	Apr.6/16	May 11/16	June 8/16	July 6/16	Aug.3/16	Sep.12/16	Oct.11/16	Nov.7/16	Dec.5/16	

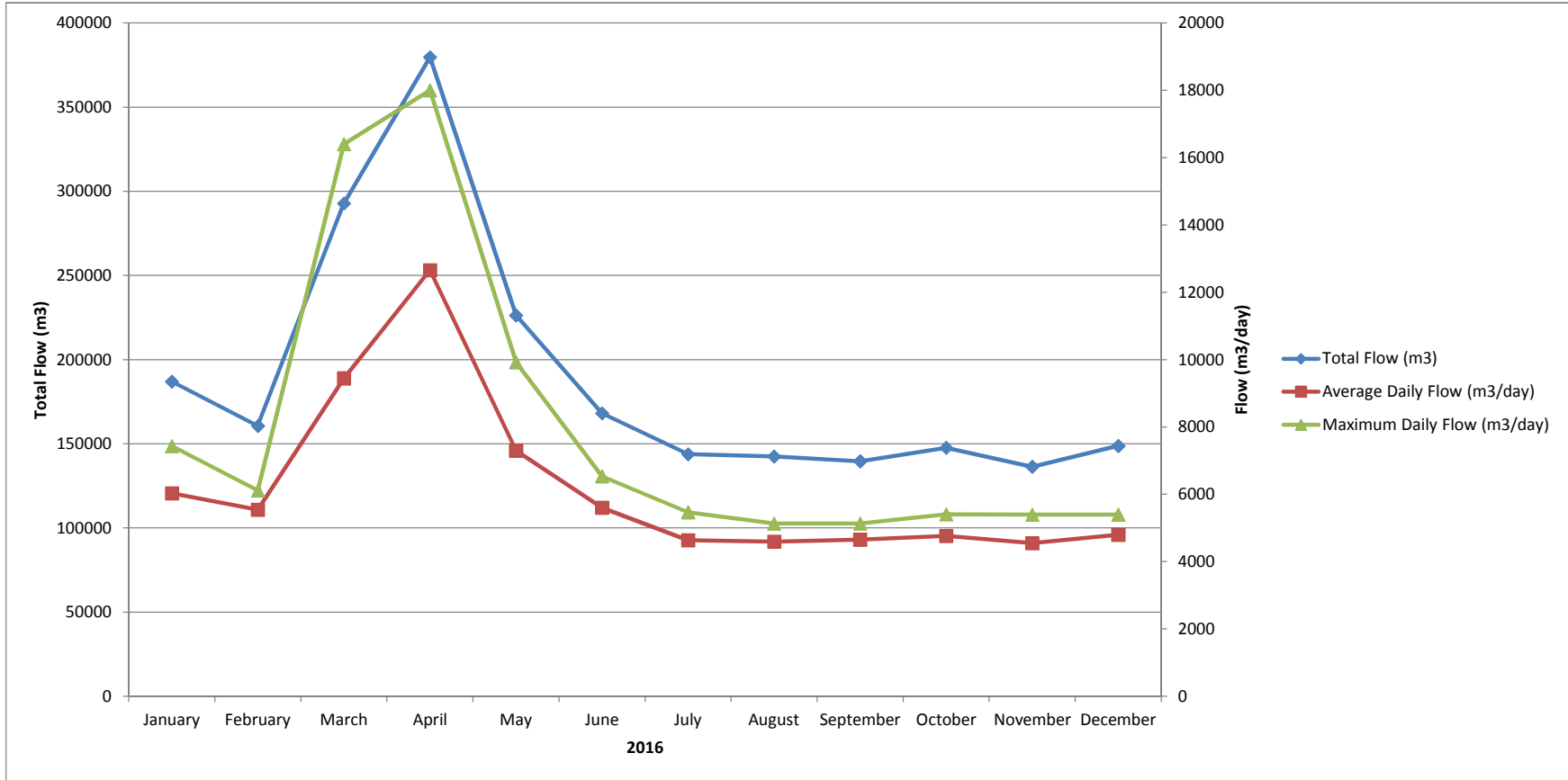
2016 Sudbury Wastewater Treatment Plant - Raw & Effluent Metals Analysis

Parameter (mg/L)	Location	January	February	March	April	May	June	July	August	September	October	November	December	Average
Arsenic	Raw	0.0022	0.0019	0.0017	0.0020	0.0020	0.0010	0.0010	0.0010		0.0010	0.0010	0.0010	0.0014
	Effluent	0.0015	0.0012	0.0018	0.0010	0.0010	0.0010	0.0010			0.0010	0.0010	0.0010	0.0012
Cadmium	Raw	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001		0.0001	0.0002	0.0001	0.0001
	Effluent	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001			0.0001	0.0001	0.0001	0.0001
Chromium	Raw	0.0015	0.0043	0.0013	0.0010	0.0010	0.0010	0.0010	0.0010		0.0020	0.0010	0.0010	0.0015
	Effluent	0.0010	0.0028	0.0010	0.0020	0.0010	0.0010	0.0010			0.0010	0.0010	0.0010	0.0013
Cobalt	Raw	0.0019	0.0014	0.0046	0.0031	0.0022	0.0017	0.0014	0.0007		0.0016	0.0013	0.0014	0.0019
	Effluent	0.0016	0.0014	0.0023	0.0028	0.0019	0.0020	0.0024			0.0019	0.0014	0.0018	0.0019
Copper	Raw	0.0245	0.0017	0.0400	0.0020	0.0036	0.0145	0.0215	0.0103		0.0240	0.0193	0.0381	0.0181
	Effluent	0.0126	0.0087	0.0084	0.0135	0.0064	0.0088	0.0090			0.0111	0.0091	0.0112	0.0099
Lead	Raw	0.0014	0.0001	0.0014	0.0011	0.0005	0.0011	0.0015	0.0002		0.0017	0.0019	0.0013	0.0011
	Effluent	0.0004	0.0002	0.0004	0.0002	0.0003	0.0004	0.0005			0.0004	0.0002	0.0003	0.0003
Mercury	Raw	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001		0.0001	0.0001	0.0001	0.0001
	Effluent	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001			0.0001	0.0001	0.0001	0.0001
Molybdenum	Raw	0.0017	0.0180	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010		0.0010	0.0010	0.0010	0.0026
	Effluent	0.0011	0.0125	0.0010	0.0010	0.0010	0.0010	0.0020			0.0010	0.0010	0.0010	0.0023
Nickel	Raw	0.0473	0.0357	0.1140	0.0782	0.0555	0.0447	0.0348	0.0158		0.0356	0.0317	0.0339	0.0479
	Effluent	0.0411	0.0378	0.0404	0.0802	0.0462	0.0387	0.0350			0.0351	0.0303	0.0365	0.0421
Selenium	Raw	0.0010	0.0016	0.0016	0.0010	0.0010	0.0010	0.0010	0.0010		0.0010	0.0010	0.0010	0.0011
	Effluent	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010			0.0010	0.0010	0.0010	0.0010
Zinc	Raw	0.0471	0.0027	0.0422	0.0425	0.0265	0.0500	0.0671	0.0052		0.0643	0.0660	0.0472	0.0419
	Effluent	0.0333	0.0291	0.0317	0.0292	0.0212	0.0222	0.0239			0.0241	0.0273	0.0301	0.0272



2016 Valley East Wastewater Treatment Plant Performance

Month	Flows			CBOD5				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-Ionized	TKN		Nitrite	Nitrate	pH		Alkalinity		Sludge			Chlorine		E.Coli	
	Total	Avg Day	Max Day	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Ammonia	Raw	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total m³	Conc.	Total	Total	Residual	Geomean	
	m³	m³/d	m³/d	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	µg/L	mg/L	mg/L	mg/L	mg/L			mg/L	mg/L	Hauled	%	m³	Kg	mg/L	# Col./100mL	
January	186947	6031	7430	126	2.5	15.08	98.0%	94	2.9	17.49	96.9%	5.6	0.61	3.68	89.1%	N/A	7.80	47.04	N/A	32.4	33.7	8.7	1.30	10.50	7.5	7.2	190	72	1120	2.0	22.4	239.5	0.46	164	
February	160605	5538	6113	164	2.2	12.18	98.7%	172	17.3	95.81	89.9%	6.6	0.67	3.71	89.8%	N/A	3.20	17.72	N/A	15.0	39.0	3.7	0.03	17.60	7.8	6.9	39	22	1080	1.7	18.36	103.4	0.32	52	
March	292804	9445	16400	77	1.3	12.28	98.3%	120	12.0	113.34	90.0%	4.0	0.61	5.76	84.8%	N/A	3.40	32.11	N/A	7.02	33.4	3.5	0.03	16.20	7.5	7.3	183	45	1560	4.2	65.52	190.7	0.38	42	
April	379722	12657	18000	80	1.0	12.66	98.8%	100	6.7	84.80	93.3%	1.8	0.47	5.95	73.9%	17.20	8.21	103.92	52.3%	77.3	26.8	8.8	0.03	9.72	7.6	7.5	167	90	1680	2.9	48.72	153.0	0.35	59	
May	226263	7299	9923	76	0.8	5.84	98.9%	144	4.7	34.30	96.7%	4.8	0.39	2.85	91.9%	16.20	19.90	145.25	-22.8%	136.7	20.8	18.2	0.03	1.57	7.4	7.5	163	147	1480	2.7	39.96	194.5	0.59	5	
June	168143	5605	6537	160	5.4	30.27	96.6%	124	3.3	18.50	97.3%	2.6	0.50	2.80	80.8%	22.20	13.70	76.79	38.3%	263.0	29.3	15.5	1.17	7.65	7.4	7.5	170	91	86	N/A	N/A	158.0	0.46	37	
July	143797	4639	5468	150	0.7	3.25	99.5%	89	4.7	21.80	94.7%	3.0	0.32	1.48	89.3%	42.10	1.30	6.03	96.9%	2.89	48.0	1.8	0.42	23.40	7.3	6.8	18	17	292	3.3	9.64	436.6	0.42	68	
August	142494	4597	5131	85	2.4	11.03	97.2%	115	5.9	27.12	94.9%	2.4	0.70	3.22	70.8%	28.20	0.96	4.41	96.6%	1.33	33.3	2.5	1.22	22.90	7.4	6.8	184	17	143	2.2	3.15	644.9	0.46	87	
September	139645	4655	5131	180	3.9	18.15	97.8%	128	9.6	44.69	92.5%	4.3	0.59	2.75	86.3%	45.20	20.60	95.89	54.4%	2143.7	55.0	20.8	0.75	8.41	7.5	7.3	222	94	125	3.9	4.88	272.7	0.62	57	
October	147651	4763	5402	60	4.0	19.05	93.3%	142	6.6	31.44	95.4%	1.2	0.52	2.48	56.7%	28.60	6.19	29.48	78.4%	42.6	40.7	6.4	0.03	21.90	7.5	7.4	181	25	223	1.8	4.01	421.6	0.64	10	
November	136387	4546	5393	50	0.5	2.27	99.0%	148	5.1	23.19	96.6%	5.1	0.66	3.00	87.1%	31.30	9.70	44.10	69.0%	219.1	36.5	10.6	0.55	18.60	7.4	8.1	182	38	347	2.5	8.68	277.5	0.69	13	
December	148744	4798	5398	87	3.6	17.27	95.9%	136	6.9	33.11	94.9%	1.6	0.67	3.21	58.1%	35.10	1.84	8.83	94.8%	7.0	35.5	2.0	0.03	26.10	7.5	7.3	204	12	906	1.6	14.5	173.4	0.48	13	
Total	2273202																												9042		239.8				
Average		6228		108	2.36	13.28	97.7%	126	7.14	45.47	94.4%	3.58	0.56	3.41	79.9%	29.57	8.07	51.0	0.6	245.67	36.00	8.55	0.47	15.38	7.48	7.30	159	56		2.62		272.15	0.49	51	



Plant Type: Extended Aeration

Design Capacity: 11,400 m³/day

Population Served: 17,365

Compliance Parameters:

	Conc.	Loading	
CBOD ₅	25 mg/L	284 kg/day	Annual Average
TSS	25 mg/L	284 kg/day	Annual Average
Total Phosphorus	1.0 mg/L	11.4 kg/day	Monthly Average
pH	6.0 to 9.5 inclusive, at all times		
E.Coli	200 col/100 mL		Monthly Geometric Mean



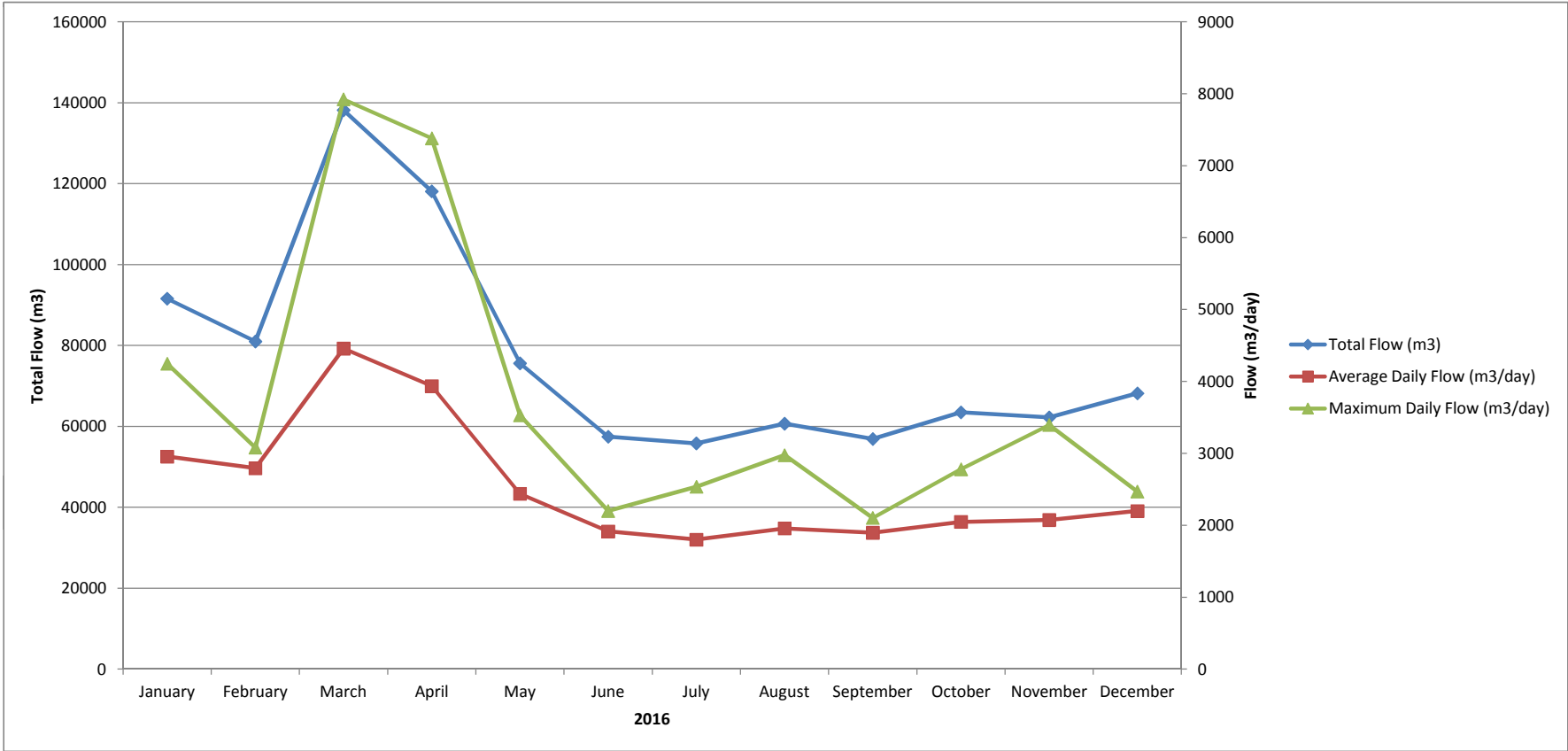
2016 Valley East Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	33.9	29.8	27	18.5	239	34.9	195	229	287	286	318	42.3	145.0
Nitrate (as N)	0.1	0.1	0.1	0.1	0.1	1.45	0.1	0.1	1.49	1	1	1.38	0.59
Nitrite (as N)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	13.2	8.39	10.4	0.1	2.69
Potassium	61.5	48.3	77.5	80.3	76	51.4	83	57	57	46	56	56	62.5
TKN	331	995	953	1200	2200	1490	1790	1030	2000	728	1550	747	1251.2
Total Phosphorus	102	341	478	333	1290	496	674	281	546	208	481	406	469.7
Total Solids	22200	15400	27200	18000	34700	40200	34300	20000	38000	19500	35700	34200	28283
Arsenic	0.0242	0.0112	0.0416	0.017	0.0332	0.0165	0.104	0.069	0.142	0.06	0.095	0.087	0.0584
Cadmium	0.0057	0.0021	0.0064	0.0049	0.0116	0.0011	0.0204	0.0123	0.0373	0.0138	0.0223	0.0147	0.0127
Chromium	0.1280	0.0548	0.1510	0.1590	0.3240	0.0586	0.3850	0.2780	0.5340	0.1930	0.3090	0.2190	0.2328
Cobalt	0.0335	0.0276	0.0518	0.0391	0.1060	0.0351	0.1530	0.0821	0.1920	0.0909	0.1720	0.0875	0.0892
Copper	3.1	0.275	4.83	0.402	1.21	0.711	12	7.17	17.8	6.28	11.9	7.31	6.08
Lead	0.1390	0.0346	0.1500	0.0538	0.1920	0.0152	0.3090	0.2120	0.6920	0.1650	0.3110	0.2230	0.2081
Mercury	0.0037	0.0001	0.0001	0.0001	0.0006	0.0002	0.0054	0.0010	0.0124	0.0036	0.0075	0.0095	0.0037
Molybdenum	0.0237	0.0073	0.0069	0.0078	0.0285	0.0065	0.0770	0.0580	0.1210	0.0430	0.0760	0.0520	0.0423
Nickel	0.399	0.10	0.27	0.28	0.51	0.08	0.86	0.63	1.66	0.47	1.33	0.83	0.62
Selenium	0.0133	0.0052	0.0073	0.0099	0.0185	0.0111	0.0540	0.0360	0.0670	0.0300	0.0490	0.0310	0.0277
Zinc	3.46	1.57	4.28	2.41	8.71	0.60	10.40	6.33	18.30	5.23	13.10	8.40	6.90
Sample Date	Jan.6/16	Feb.10/16	Mar.10/16	Apr.13/16	May 12/16	June 1/16	July 12/16	Aug.3/16	Sep.14/16	Oct.5/16	Nov.9/16	Dec.7/16	



2016 Walden Wastewater Treatment Plant Performance

Month	Flows			BOD ₅	CBOD ₅			Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-ionized	TKN		Nitrite	Nitrate	pH		Alkalinity		Sludge			Chlorine		E.Coli	
	Total	Avg Day	Max Day	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Raw	Effluent	Loading	Plant	Ammonia	Raw	Effluent	Effluent	Effluent	Raw	Effluent	Raw	Effluent	Total m ³	Conc.	Total	Total	Residual	Geomean	
	m ³	m ³ /d	m ³ /d	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	mg/L	mg/L	kg/d	Efficiency	µg/L	mg/L	mg/L	mg/L	mg/L	Raw	Effluent	mg/L	mg/L	Hauled	%	m ³	Kg	mg/L	# Col./100mL	
January	91612	2955	4248	50	3.8	11.23	92.4%	250	9.1	26.89	96.4%	5.0	0.50	1.48	90.0%	N/A	3.37	9.96	N/A	1.39	34.4	4.2	0.98	8.76	7.2	6.7	142	65	490	1.2	5.88	139.7	0.55	78	
February	81009	2793	3080	398	0.7	1.96	99.8%	383	8.0	22.35	97.9%	4.8	0.41	1.15	91.5%	N/A	1.98	5.53	N/A	0.82	49.2	2.6	0.03	8.01	7.0	6.6	143	60	360	1.6	5.76	152.0	0.52	5	
March	138195	4458	7923	131	0.5	2.23	99.6%	510	8.1	36.11	98.4%	2.7	0.32	1.43	88.1%	15.70	7.06	31.47	55.0%	2.87	26.6	10.5	0.03	13.90	7.1	6.5	221	100	440	2.4	10.56	269.0	0.42	21	
April	118105	3937	7382	40	0.8	3.15	98.0%	154	5.2	20.47	96.6%	2.4	0.50	1.97	79.2%	13.10	0.15	0.59	98.9%	0.08	15.0	1.2	0.03	9.42	7.1	6.7	124	53	400	2.6	10.4	232.0	0.54	7	
May	75586	2438	3529	190	1.5	3.66	99.2%	320	5.9	14.39	98.2%	4.9	0.37	0.90	92.4%	19.00	0.07	0.17	99.6%	0.12	26.7	0.2	0.03	17.80	6.9	6.7	155	23	440	0.8	3.52	156.1	0.43	10	
June	57446	1915	2200	150	1.9	3.64	98.7%	385	9.3	17.81	97.6%	5.5	0.44	0.84	92.0%	24.40	0.20	0.38	99.2%	0.24	32.6	0.4	0.03	22.00	6.9	6.6	162	19	240	1.7	4.08	217.0	0.45	6	
July	55819	1801	2536	424	0.9	1.62	99.8%	408	8.8	15.85	97.8%	6.9	0.43	0.77	93.8%	18.90	0.18	0.32	99.0%	0.07	72.7	0.3	0.03	24.50	6.9	6.3	133	22	280	N/A	N/A	215.0	0.71	2	
August	60688	1958	2975	40	0.5	0.98	98.8%	438	10.3	20.16	97.6%	4.3	0.39	0.76	90.9%	20.70	0.31	0.61	98.5%	0.35	25.4	0.4	0.03	24.50	7.1	6.4	146	31	520	N/A	N/A	249.0	0.72	17	
September	56912	1897	2103	120	0.5	0.95	99.6%	318	7.3	13.85	97.7%	4.9	0.26	0.49	94.7%	23.10	0.45	0.85	98.1%	2.03	27.3	1.2	0.03	18.70	7.1	6.6	169	43	440	N/A	N/A	249.0	0.94	5	
October	63482	2048	2779	45	0.8	1.64	98.2%	177	8.6	17.61	95.1%	3.3	0.35	0.72	89.4%	25.55	0.26	0.53	99.0%	0.16	28.1	0.7	0.03	22.50	7.3	6.5	167	36	480	N/A	N/A	222.0	0.63	8	
November	62227	2074	3395	160	1.0	2.07	99.4%	195	12.0	24.89	93.8%	3.4	0.48	1.00	85.9%	21.10	0.04	0.08	99.8%	0.04	26.3	0.3	0.03	21.50	7.3	6.8	156	28	400	1.0	4.0	257.0	0.59	20	
December	68165	2199	2469	80	1.0	2.20	98.8%	263	9.8	21.55	96.3%	4.6	0.43	0.95	90.7%	12.50	9.69	21.31	22.5%	42.86	23.1	9.9	0.21	9.32	7.0	6.8	190	69	400	1.5	6.0	346.0	0.52	53	
Total	929246																												4890		50.2				
Average		2546		152	1.16	2.94	98.5%	317	8.53	20.99	97.0%	4.39	0.41	1.04	89.9%	19.41	1.98	6.0	87.0%	4.25	32.28	2.66	0.12	16.74	7.08	6.60	159	46		1.60			0.59	19	



Plant Type: Extended Aeration
Design Capacity: 4500 m³/day
Population Served: 3,313

Compliance Parameters:

	Conc.	Loading	
CBOD ₅	25 mg/L	112.5 kg/day	Annual Average
TSS	25 mg/L	112.5 kg/day	Annual Average
Total Phosphorus	1.0 mg/L	4.5 kg/day	Monthly Average
E.Coli	200 col/100 mL		Monthly Geometric Mean



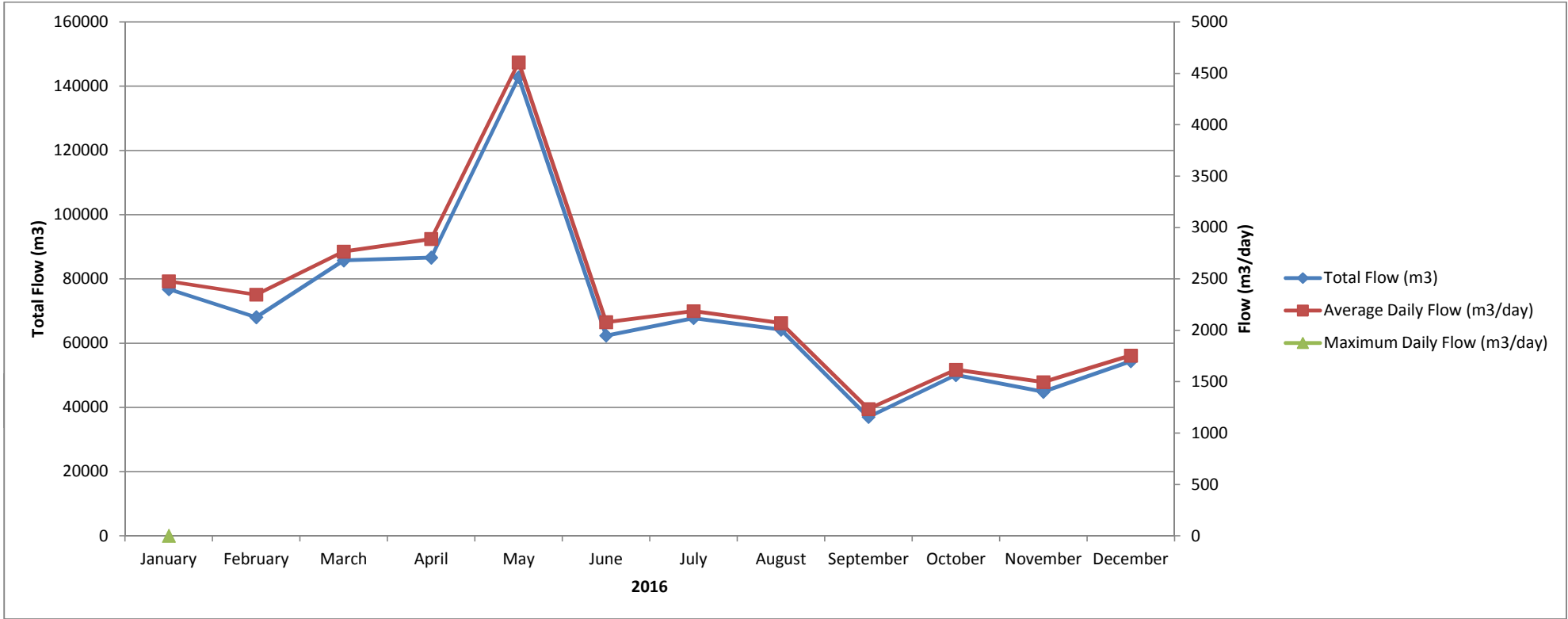
2016 Walden Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	12.2	26.6	130	48.2	20.9	6.6	1.18	12.1	3.67	10.2	7.3	11.2	24.2
Nitrate (as N)	0.1	0.1	0.1	0.1	0.62	0.2	0.1	0.1	2.77	0.1	0.1	1.89	0.52
Nitrite (as N)	0.03	0.03	0.03	1.19	0.03	0.03	0.03	0.03	0.1	0.03	0.45	0.2	0.18
Potassium	57.8	66.8	84.1	90.3	42.9	41.1	48.4	63	21.2	22.8	22.5	16.3	48.1
TKN	688	1260	946	2510	476	539	388	926	14.3	243	159	48.6	683.2
Total Phosphorus	193	393	251	663	208	104	185	240	57.6	96.2	76.6	1030	291.5
Total Solids	11100	19600	20700	2810	7780	8810	11300	20400	3880	3920	3310	1060	9556
Arsenic	0.007	0.0163	0.0347	0.0453	0.0055	0.051	0.069	0.117	0.03	0.03	0.03	0.01	0.0372
Cadmium	0.0079	0.0072	0.0069	0.0091	0.0067	0.0150	0.0169	0.0347	0.0068	0.0066	0.0068	0.0010	0.0105
Chromium	0.0629	0.0348	0.1170	0.1110	0.0535	0.1520	0.2080	0.4040	0.0720	0.0930	0.0530	0.0100	0.1143
Cobalt	0.0896	0.0610	0.1060	0.2770	0.1750	0.3320	0.3570	0.9040	0.1470	0.1810	0.1930	0.0334	0.2380
Copper	0.0443	0.909	4.23	2.38	0.0296	4.17	5.31	9.21	1.94	2.19	1.55	0.372	2.69
Lead	0.0767	0.0638	0.1010	0.0897	0.1270	0.7600	0.9510	1.1300	0.1850	0.4530	0.2980	0.0950	0.3609
Mercury	0.0001	0.0002	0.0001	0.0011	0.0001	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0007
Molybdenum	0.0016	0.0117	0.0093	0.0252	0.0010	0.0560	0.0710	0.1280	0.0010	0.0300	0.0200	0.0100	0.0304
Nickel	1.15	0.55	0.45	1.30	0.88	1.40	2.23	4.37	0.97	1.10	0.78	0.24	1.29
Selenium	0.0084	0.0116	0.0134	0.0289	0.0060	0.3410	0.8970	1.7700	0.1250	0.1000	0.1900	0.0320	0.2936
Zinc	2.16	0.99	3.65	1.01	1.52	2.77	3.55	6.92	1.38	1.67	1.17	0.36	2.26
Sample Date	Jan.6/16	Feb.17/16	Mar.8/16	Apr.6/16	May 11/16	June 15/16	July 6/16	Aug.3/16	Sep.7/16	Oct.5/16	Nov.2/16	Dec.1/16	



2016 Capreol Wastewater Treatment Lagoon Performance

Month	Flows		CBOD5						Total Suspended Solids						Total Phosphorus						Total Ammonia						Un-ionized	TKN	
	Total m ³	Avg Day m ³ /d	Raw mg/L	Effluent mg/L	Loading kg/d	Raw Loading kg/day	Removed kg/day	Plant Efficiency	Raw mg/L	Effluent mg/L	Loading kg/d	Raw Loading kg/day	Removed kg/day	Plant Efficiency	Raw mg/L	Effluent mg/L	Loading kg/d	Raw Loading kg/day	Removed kg/day	Plant Efficiency	Raw mg/L	Effluent mg/L	Loading kg/d	Raw Loading kg/day	Removed kg/day	Plant Efficiency	Ammonia µg/L	Raw mg/L	Effluent mg/L
January	76802	2477	63	8.6	21.31	4839	4817	99.6%	52.7	16.3	40.38	131	90	92.7%	1.7	1.55	3.84	4.26	0.42	9.9%	N/A	8.99	22.27	N/A	N/A	N/A	15.24	12.2	11.2
February	68081	2348	39	31.7	74.42	2655	2581	97.2%	82	19.0	44.60	193	148	76.8%	2.5	1.93	4.53	5.94	1.41	23.7%	N/A	10.90	25.59	N/A	N/A	N/A	19.25	15.5	13.2
March	85765	2767	30	28.6	79.13	2573	2494	96.9%	142	16.3	45.10	393	348	88.5%	3.2	2.13	5.89	8.74	2.85	32.6%	N/A	13.00	35.97	N/A	N/A	N/A	24.31	16.6	15.5
April	86661	2889	44	20.0	57.77	3813	3755	98.5%	220	15.3	44.20	636	591	93.0%	1.6	1.40	4.04	4.59	0.55	11.9%	7.03	8.10	23.40	20.31	-3.09	-15.2%	0.04	11.7	11.7
May	142830	4607	50	12.0	55.29	7142	7086	99.2%	40	47.0	216.55	184	-32	-17.5%	1.5	1.34	6.17	6.91	0.74	10.7%	N/A	2.84	13.09	N/A	N/A	N/A	99.23	11.6	7.0
June	62368	2079	140	31.9	66.32	8732	8665	99.2%	65.5	20.0	41.58	136	95	69.5%	1.7	1.10	2.29	3.62	1.33	36.8%	9.60	3.64	7.57	19.96	12.39	62.1%	40.46	13.7	7.9
July	67799	2187	77	12.0	26.24	5221	5194	99.5%	126	23.3	50.96	276	225	81.5%	3.0	1.01	2.21	6.50	4.29	66.0%	N/A	1.23	2.69	N/A	N/A	N/A	5.89	24.5	6.8
August	64197	2071	60	6.0	12.43	3852	3839	99.7%	64	34.7	71.86	133	61	45.8%	2.0	1.14	2.36	4.06	1.70	41.8%	N/A	5.39	11.16	N/A	N/A	N/A	165.24	18.5	10.0
September	37020	1234	51.6	11.0	13.57	1910	1897	99.3%	73	30.7	37.88	90	52	57.9%	2.2	1.90	2.34	2.76	0.42	15.2%	15.00	6.79	8.38	18.51	10.13	54.7%	21.44	19.5	8.2
October	50100	1616	46.9	4.0	6.46	2350	2343	99.7%	64	42.7	69.01	103	34	33.3%	2.7	1.90	3.07	4.43	1.36	30.7%	15.70	7.98	12.90	25.37	12.48	49.2%	15.32	21.7	12.5
November	44889	1496	73	7.4	11.07	3277	3266	99.7%	142	11.0	16.46	212	196	92.3%	3.4	1.57	2.35	5.12	2.77	54.1%	19.70	9.84	14.72	29.48	14.75	50.1%	29.65	25.6	12.7
December	54386	1754	50	11.0	19.30	2719	2700	99.3%	108	16.3	28.60	189	161	84.9%	3.0	2.02	3.54	5.26	1.72	32.7%	N/A	13.30	23.33	N/A	N/A	N/A	39.83	23.3	13.7
Total	840898																												
Average		2304	60	15.35	36.94	4090	4053	99.0%	98	24.38	58.93	223	164	66.6%	2.38	1.58	3.55	5.18	1.63	30.5%	13.41	7.67	16.76	22.73	9.33	40.2%	39.66	17.9	10.9



Lagoon Type: Exfiltration

Design Capacity: 5000 m³/day

Population Served: 3,408

Compliance Parameters:

	Concentration	
CBOD ₅	30 mg/L	Annual Avg
TSS	40 mg/L	Annual Avg
Total Phosphorus	1.38 mg/L	Annual Avg

Note: Effluent = North to South Cell Effluent
Annual Average of T.P. measured at the overflow culvert located between the north and south cell.

2016 Capreol Lagoon Groundwater Monitoring Wells

Parameter (mg/L)	OW #2		OW #3		OW #5		OW #8		OW #12a		OW #15		OW #16	
	June	November	June	November	June	November	June	November	June	November	June	November	July	November
E.Coli (CFU/100 mL)	2	2	2	2	2	2	2	2	2	10	2	2	2	2
Alkalinity	101.0	98.9	128.0	127.0	20.1	24.3	49.2	95.5	95.1	80.8	19.0	25.5	17.1	23.2
Ammonia (as N)	1.76	3.95	10.60	10.40	0.04	0.02	2.22	4.00	0.05	0.37	0.04	0.01	0.01	0.04
Nitrate (as N)	1.35	0.20	3.93	1.62	0.10	0.10	2.49	0.20	0.51	0.10	0.10	0.10	0.10	0.10
Nitrite (as N)	0.335	0.03	0.369	0.09	0.03	0.03	0.314	0.03	0.03	0.03	0.03	0.03	0.03	0.03
CBOD ₅	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
D.O.C.	1.90	5.43	4.87	3.90	0.70	1.70	3.60	8.39	4.09	4.00	1.50	1.60	1.00	1.00
Hardness (as CaCO ₃)	73.0	90.5	78.8	84.5	13.1	11.2	66.6	56.1	101.0	108.0	26.5	22.6	9.5	12.6
Aluminum	0.0090	0.0146	0.0034	0.0020	0.1410	0.2730	0.0076	0.0327	0.1470	0.2230	0.0150	0.0165	0.0096	0.0954
Antimony	0.0005	0.0005	0.0005	0.0006	0.0005	0.0005	0.0005	0.0006	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Arsenic	0.001	0.003	0.002	0.004	0.001	0.001	0.003	0.007	0.002	0.006	0.001	0.001	0.001	0.001
Barium	0.0521	0.0628	0.0759	0.0871	0.0093	0.0121	0.0220	0.0210	0.0822	0.1240	0.0110	0.0138	0.0045	0.0081
Beryllium	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Cadmium	0.0002	0.0002	0.0002	0.0005	0.0001	0.0001	0.0001	0.0001	0.0003	0.0003	0.0001	0.0001	0.0001	0.0001
Calcium	20.10	26.10	21.70	24.10	3.43	3.08	17.90	15.20	29.80	32.60	7.06	5.92	2.60	3.56
Chromium	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Cobalt	0.0020	0.0023	0.0010	0.0115	0.0001	0.0006	0.0020	0.0095	0.0009	0.0127	0.0001	0.0002	0.0002	0.0004
Copper	0.0020	0.0020	0.0010	0.0010	0.0020	0.0056	0.0162	0.0369	0.0121	0.0085	0.0010	0.0020	0.0010	0.0020
Iron	3.17	4.38	4.35	7.47	0.12	0.37	0.17	0.29	1.90	18.60	0.02	0.07	0.02	0.10
Lead	0.0001	0.0001	0.0003	0.0036	0.0001	0.0005	0.0001	0.0001	0.0005	0.0005	0.0001	0.0001	0.0001	0.0002
Magnesium	5.53	6.14	5.98	5.91	1.10	0.84	5.32	4.41	6.42	6.50	2.15	1.90	0.72	0.89
Manganese	0.421	0.575	0.049	1.050	0.002	0.011	0.131	0.424	0.302	2.830	0.001	0.009	0.003	0.008
Mercury	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Molybdenum	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Nickel	0.0031	0.0030	0.0036	0.0041	0.0035	0.0035	0.0093	0.0169	0.0044	0.0102	0.0010	0.0010	0.0010	0.0010
Potassium	3.95	6.11	5.66	6.82	0.57	0.80	5.25	6.85	4.73	4.75	0.78	1.10	0.49	0.79
Selenium	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Silver	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Sodium	49.00	64.30	52.10	61.90	6.48	7.56	50.10	71.20	45.00	54.10	2.62	4.04	4.18	5.41
Tellurium	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Tin	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Zinc	0.0020	0.0030	0.0052	0.0132	0.0030	0.0043	0.0020	0.0020	0.0033	0.0047	0.0020	0.0020	0.0061	0.0020
pH	7.06	7.00	7.07	7.03	6.77	6.62	6.70	6.68	7.33	7.05	6.90	6.80	6.83	6.48
T.K.N.	1.80	4.27	10.30	14.30	0.20	0.20	2.50	4.14	0.50	0.90	0.20	0.20	0.20	0.20
Total Phosphorus	0.4260	0.6970	0.2010	0.1040	0.0020	0.0132	4.1600	3.8300	0.0484	0.1580	0.0020	0.0083	0.0170	0.0109

2016 Vermillion River Sampling

Parameter (mg/L)	July		November		Annual Average		Monthly Phosphorus Sampling		
	Upstream	Downstream	Upstream	Downstream	Upstream	Downstream	Sample Date	Upstream	Downstream
Alkalinity	23.6	24.1	30.8	31.8	27.2	28.0	May 12/16	0.0150	0.0040
Ammonia (as N)	0.05	0.04	0.02	0.03	0.04	0.04	June 28/16	0.0020	0.0020
Chloride	3.06	3.50	0.89	1.50	1.98	2.50	July 12/16	0.0088	0.0063
Sulphate	8.50	8.30	6.20	6.40	7.35	7.35	Sep.14/16	0.0140	0.0130
CBOD ₅	0.50	0.50	0.50	0.50	0.50	0.50	Oct.5/16	0.0050	0.0020
Aluminum	0.0109	0.0125	0.0083	0.0090	0.0096	0.0108	Nov.3/16	0.0080	0.0079
Antimony	0.0010	0.0007	0.0005	0.0005	0.0008	0.0006			
Arsenic	0.001	0.001	0.001	0.001	0.001	0.001			
Barium	0.0122	0.0124	0.0118	0.0117	0.0120	0.0121			
Beryllium	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005			
Cadmium	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001			
Calcium	7.73	7.79	8.51	8.70	8.12	8.25			
Chromium	0.001	0.001	0.001	0.001	0.001	0.001			
Cobalt	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001			
Copper	0.0020	0.0010	0.0010	0.0010	0.0015	0.0010	Annual Average	0.0088	0.0059
Iron	0.06	0.08	0.14	0.16	0.10	0.12	Compliance Parameters: Downstream Total Phosphorus, 0.03 mg/L Annual average. Annual average of CBOD5 and TKN can not exceed 15% of the Upstream annual average value.		
Lead	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001			
Magnesium	1.70	1.77	2.11	2.17	1.91	1.97			
Manganese	0.0074	0.0123	0.0125	0.0186	0.0100	0.0155			
Mercury	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001			
Molybdenum	0.001	0.001	0.001	0.001	0.001	0.001			
Nickel	0.0020	0.0020	0.0010	0.0020	0.0015	0.0020			
Potassium	0.66	0.67	0.95	0.96	0.81	0.82			
Selenium	0.001	0.001	0.001	0.001	0.001	0.001			
Silver	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001			
Sodium	1.72	2.21	1.84	2.32	1.78	2.27			
Tellurium	0.001	0.001	0.001	0.001	0.001	0.001			
Tin	0.001	0.001	0.001	0.001	0.001	0.001			
Zinc	0.0010	0.0020	0.0010	0.0010	0.0010	0.0015			
pH	7.18	7.28	7.25	7.24	7.22	7.26			
T.D.S.	50	80	60	60	55	70			
T.K.N.	0.20	0.20	0.40	0.40	0.30	0.30			
Total Phosphorus	0.0020	0.0020	0.0080	0.0079	0.0050	0.0050			

2016 Capreol Lagoon Ground/Surface Water Levels

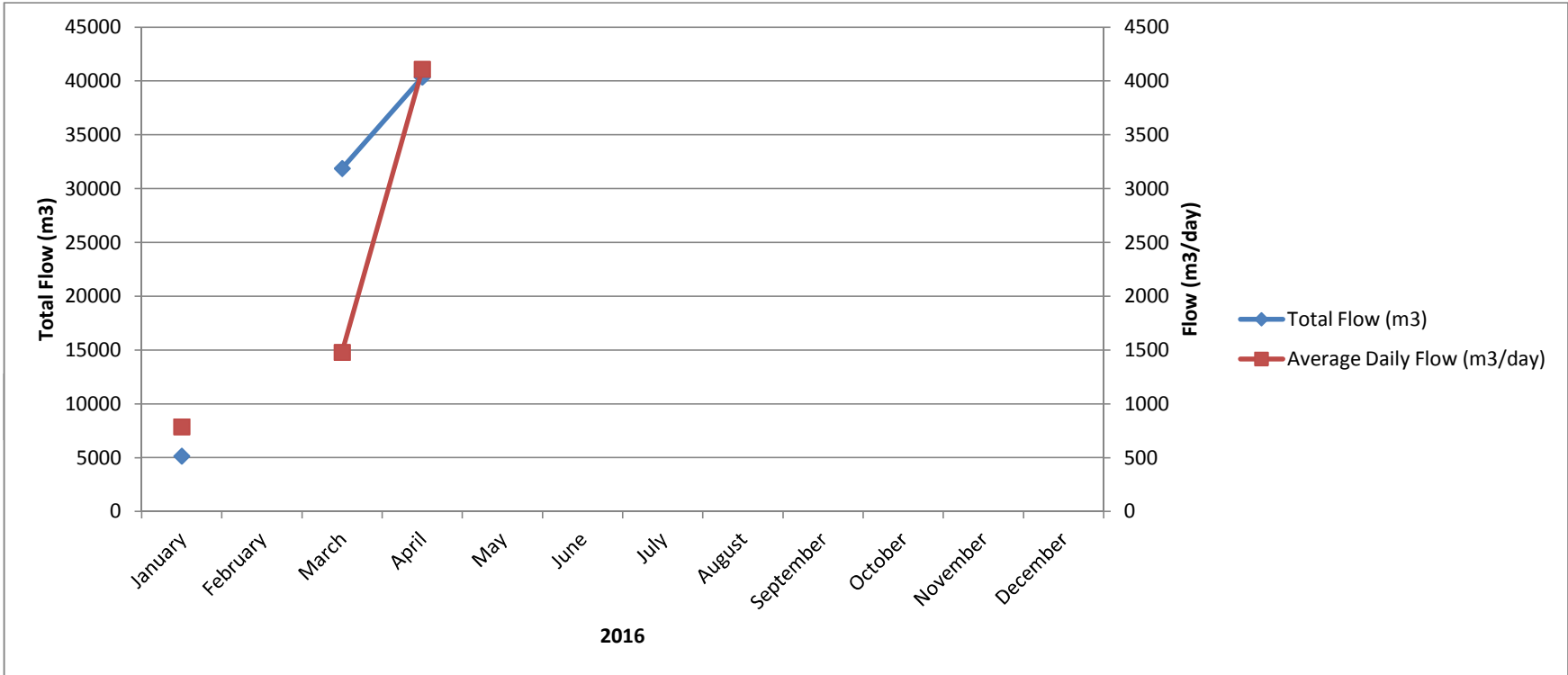
* Depth in metres from top of casing to water

Well I.D.	Water Level (m)*	Measure Date	Water Level (m)*	Measure Date
OW#1	3.80	June 29/16	4.50	Nov.18/16
OW#2	3.20	June 29/16	3.50	Nov.18/16
OW#3	3.60	June 29/16	4.05	Nov.18/16
OW#5	6.55	June 29/16	7.05	Nov.18/16
OW#7	deeper than measuring device	June 29/16	deeper than measuring device	Nov.18/16
OW#8	5.10	June 29/16	5.85	Nov.18/16
OW#10a	6.90	June 29/16	7.30	Nov.18/16
OW#10b	6.25	June 29/16	6.90	Nov.18/16
OW#11	5.35	June 29/16	5.75	Nov.18/16
OW#12	capped	June 29/16	capped	Nov.18/16
OW#12a	1.95	June 29/16	2.00	Nov.18/16
OW#13a	5.50	June 29/16	6.10	Nov.18/16
OW#13b	5.50	June 29/16	6.15	Nov.18/16
OW#14	ant infestation	June 29/16	2.55	Nov.18/16
OW#15	dry	June 29/16	7.45	Nov.18/16
OW#16	5.80	June 29/16	6.25	Nov.16/16
OW#21	4.90	June 29/16	4.30	Nov.16/16
OW#22	5.15	June 29/16	Dry	Nov.16/16
OW#23	8.85	June 29/16	6.40	Nov.16/16
OW#24	7.75	June 29/16	4.65	Nov.18/16
OW#25	dry	June 29/16	6.50	Nov.18/16
OW#26	5.75	June 29/16	6.20	Nov.16/16
OW#28	2.60	June 29/16	2.60	Nov.16/16
OW#30	2.40	June 29/16	2.80	Nov.18/16
River at Bridge	0.25	June 29/16	0.25	Nov.18/16



2016 Chelmsford Wastewater Treatment Lagoon Performance

Month	Flows		CBOD ₅			Total Suspended Solids			Total Phosphorus			Total Ammonia		TKN	
	Total	Avg Day	Raw	Effluent	Loading	Raw	Effluent	Loading	Raw	Effluent	Loading	Effluent	Loading	Raw	Effluent
	m ³	m ³ /d	mg/L	mg/L	kg/d	mg/L	mg/L	kg/d	mg/L	mg/L	kg/d	mg/L	kg/d	mg/L	mg/L
January	5157	787	170		0.00	108		0.00	3.2		0.00		0.00	24.8	
February					0.00			0.00			0.00		0.00		
March	31871	1479	22		0.00	20.7		0.00	0.65		0.00		0.00	5.80	
April	40347	4109			0.00			0.00			0.00		0.00		
May			30		0.00	58.3		0.00	0.97		0.00		0.00	4.36	
June					0.00			0.00			0.00		0.00		
July					0.00			0.00			0.00		0.00		
August					0.00			0.00			0.00		0.00		
September					0.00			0.00			0.00		0.00		
October					0.00			0.00			0.00		0.00		
November					0.00			0.00			0.00		0.00		
December					0.00			0.00			0.00		0.00		
Total	77375														
Average		212	74	#DIV/0!	0.00	62	#DIV/0!	0.00	1.62	#DIV/0!	0.00	#DIV/0!	0	11.7	#DIV/0!

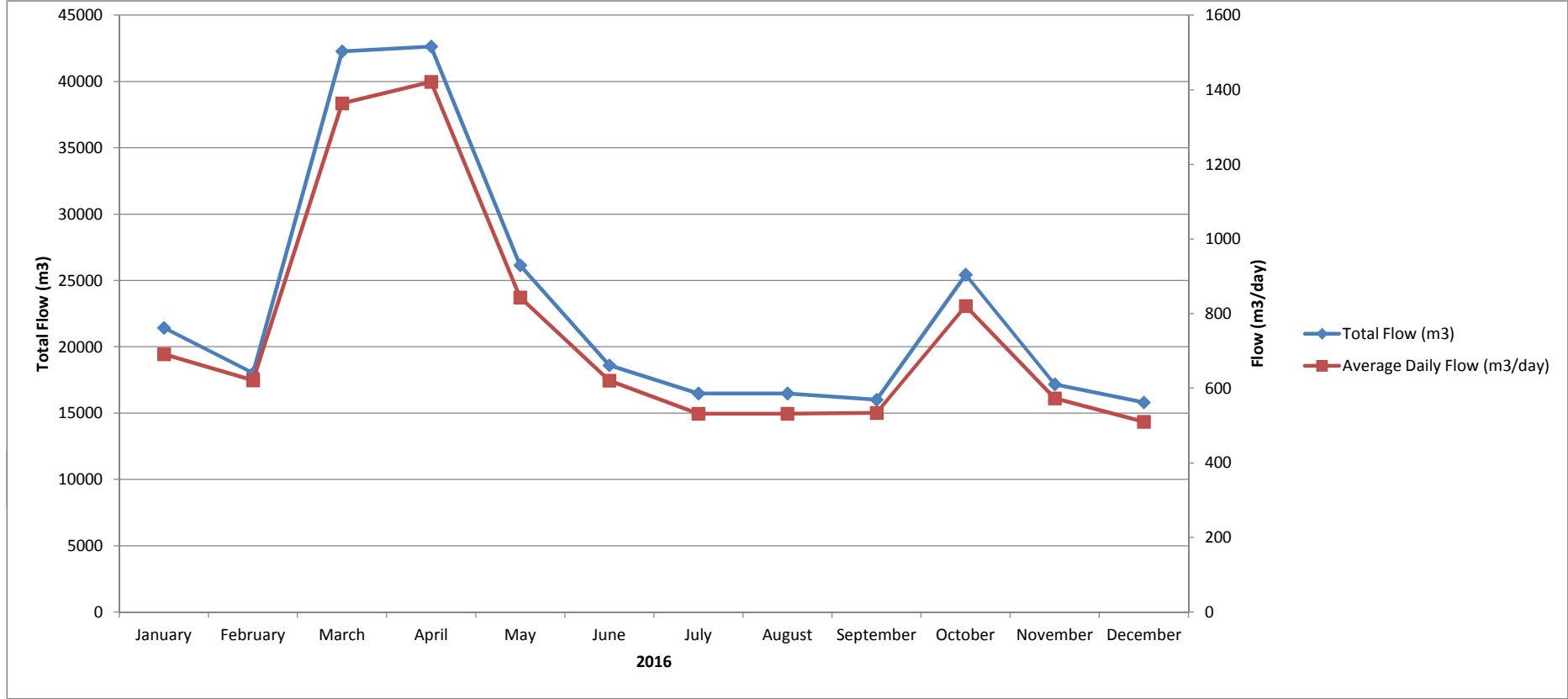


Lagoon Type: Seasonal Retentional
Design Capacity: 824 m³/day
Population Served: Delivery to Chelmsford WWTP

Compliance Parameters:		
	Concentration	
BOD ₅	30 mg/L	Annual Average
TSS	40 mg/L	Annual Average

2016 Wahnapiatae Wastewater Treatment Lagoon Performance

Month	Flows		BOD ₅	CBOD ₅					Total Suspended Solids						Total Phosphorus						Total Ammonia						Un-ionized	TKN	pH	H ₂ S	E.Coli
	Total	Avg Day	Raw	Effluent	Loading	Raw Loading	Removed	Plant	Raw	Effluent	Loading	Raw Loading	Removed	Plant	Raw	Effluent	Loading	Raw Loading	Removed	Plant	Raw	Effluent	Loading	Raw Loading	Removed	Plant	Ammonia	Raw	Effluent	Pre-Discharge	Average
	m ³	m ³ /d	mg/L	mg/L	kg/d	kg/day	kg/day	Efficiency	mg/L	mg/L	kg/d	kg/day	kg/day	Efficiency	mg/L	mg/L	kg/d	kg/day	kg/day	Efficiency	mg/L	mg/L	kg/d	kg/day	kg/day	Efficiency	µg/L	mg/L	Effluent	mg/L	# Col./100ml
January	21431	691	56						196						4.2													24.3			
February	18016	621	20						208						5.1													45.4			
March	42277	1364																													
April	42641	1421		6.3	9.01					4.7	6.64					0.06	0.08					5.84	8.31				37.18		7.3	0.04	10
May	26145	843	64	3.3	2.81	54	51	94.8%	275	6.4	5.38	232	227	97.7%	9.0	0.06	0.05	7.62	7.57	99.3%	12.4	4.23	3.56	10.46	6.89	65.9%	125.4	28.3	7.8	0.02	5
June	18607	620		4.2	2.60					29.7	18.42					0.79	0.49					9.30	5.77				777.09		8.4		92
July	16485	532	20						715						26.3													24.4			
August	16485	532																													
September	16014	534																													
October	25436	821	60						460						11.0						28.4							38.0			
November	17176	573	150	1.3	0.74	86	85	99.1%	1170	42.1	24.13	670	646	96.4%	10.9	0.23	0.13	6.24	6.11	97.9%	33.0	1.25	0.72	18.89	18.18	96.2%	12.58	42.5	7.7	0.02	3
December	15803	510		0.8	0.41					4.4	2.22					0.03	0.02					8.57	4.37				15.04		7.2		121
Total	276516																														
Average		758	62	3.19	3.12	70	68	97.0%	504	17.45	11.36	451	436	97.0%	11.10	0.23	0.15	6.93	6.84	98.6%	24.6	5.84	4.54	14.68	12.54	0.81	193.46	33.8	7.7	0.03	46



Lagoon Type: Seasonal Retention
Design Capacity: 1246 m³/day
Population Served: 1,136

Compliance Parameters:
Concentration
CBOD₅ 30 mg/L Seasonal Average
TSS 40 mg/L Seasonal Average
pH 6.0 to 9.5 inclusive at all times

Spring Discharge:
Cell 1 Pre-Discharge sampled May 10, 2016.
Cell 2 Pre-Discharge sampled May 22, 2016.
Cell 3 Pre-Discharge sampled May 25, 2016.
Cell 1 Discharged May 17 through to June 1, 2016.
Cell 2 Discharged April 25 to May 10, 2016.
Cell 3 Discharged May 3 to May 19, 2016.
Total amount discharged approximately 90,000 m³.

Fall Discharge:
Cell 1 Pre-Discharge sampled November 23, 2016.
Cell 2 Pre-Discharge sampled November 7, 2016.
Cell 3 Pre-Discharge sampled November 3, 2016.
Cell 1 Discharged Nov.30 through to Dec.14, 2016.
Cell 2 Discharged November 17 to November 30, 2016.
Cell 3 Discharged November 10 to November 23, 2016.
Total amount discharged approximately 100,000 m³.