2018

Annual Wastewater Report

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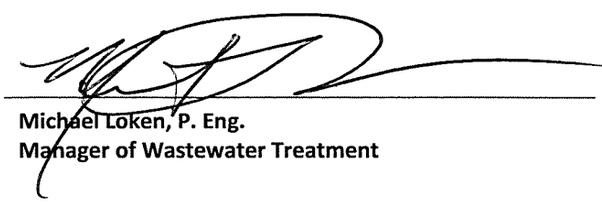
v. 1.0

Reviewed by:

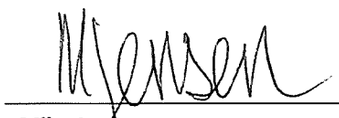


Michael Loken, P. Eng.
Manager of Wastewater Treatment

20-MAR-2019

Date

Approved by:



Mike Jensen
Director, Water/Wastewater Treatment & Compliance

20 MARCH, 2019

Date

2018 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) $CBOD_5$ – 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
10-May-18	Azilda Plant	TSS	Operators to stop Auto Sampler when hosing
11-May-18	Chelmsford Plant	Ammonia	Increase DO in aeration tank
04-Jun-18	Chelmsford Plant	E.Coli	New UV system, increase sampling and cleaning
13-Jun-18	Wahnapitae Lagoon	Seasonal Discharge Time	Must wait till ice thaw
20-Jun-18	Wahnapitae Lagoon	TSS	Clean out chamber prior to release
11-July-18	Azilda Plant	Ph	Added lime , decrease retention time
25-July-18	Azilda Plant	Ph	Added lime , increase wasting
14-Aug-18	Azilda Plant	Ph	Added lime , monitor
24-Aug-18	Chelmsford Plant	TP	Repair chemical feed pump and hose line
28-Aug-18	Lively Plant	Ph	Added lime monitor
30-Aug-18	Azilda Plant	Ph	Fix lime pump, added lime
05-Sept-18	Chelmsford Plant	E-coli	Put another clarifier on line to help in water clarity
02-Oct-18	Chelmsford Plant	TP	Plant upgrades, causing water quality issues
12-Oct-18	Valley East Plant	E-coli	Increase cl2 rate, monitor
30-Nov-18	Azilda Plant	TSS	Process adjustments, seed plant
12-Dec-18	Azilda Plant	TP	Process adjustments, increase chemicals
13-Dec-18	Wahnapitae Lagoon	TSS	Sample must be taken before Lagoon freezes over
31-Dec-18	Azilda Plant	TSS	Process adjustments, Vactor solids in chambers
Dec. 2018	Capreol Lagoon	TP	Assessment and solution monitored by consultants

2. MAJOR MAINTENANCE COMPLETED, BY PLANT

- Azilda WWTP
    - Completion of 2017 capital upgrades
    - Added liquid lime system
- Dowling WWTP
    - No modifications
- Capreol Lagoons
    - No modifications
- Chelmsford WPCP
    - Completion of 2017 upgrades
    - Refurbishing of blowers
    - New UV system
    - Heating system in UV room
    - Replaced diffusers in Aeration tanks
    - New RAW flow meter installed
- Chelmsford Lagoons
    - Installed flow meter to monitor flows to lagoon
- Coniston WPCP
    - New grit auger system
    - Clarifier #1 new lip seal

- Levack WWT
    - New grit auger
    - New WAS pump
    - New WAS flow meter
- Lively WWTP
    - Replace hand railing around contact chamber
    - Concrete work at contact chamber
- Sudbury WWTP
    - Clean and install new diffusers in aeration tank #4,half of #2
    - Installed two new RAS pumps
    - Repair clarifier #3
    - Working on clarifier #5
- Valley East Plant
    - Replaced chains and sprockets on secondary clarifier
- Walden WWTP
    - Rebuild clarifier #3
- Wahnapitae Lagoons
    - No modifications
- Lift Stations
    - Nickel Lift station over haul, new pumps and building, new force main to Sudbury Plant
    - Laurier Lift Station started over hauling

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

Sludge produced and removed from all Wastewater Treatment Plants in the City of Greater Sudbury, along with hauled liquid waste is processed at the Sudbury Biosolids facility. Hauled liquid waste is any domestic sewage collected & transported by licensed haulers that is suitable for treatment, including:

- Waste removed from cesspools, septic tanks, privy pits, chemical toilets, portable toilets or sewage holding tanks and grey water from residential activities;
- Sewage from on-board holding tanks (e.g. RVs, tour buses, boats, etc.), and;
- Sludge from wastewater treatment facilities in neighbouring municipalities.

This Biosolids facility, operated by Walker Industries and located on the grounds of the Sudbury Wastewater Treatment Plant, produces a soil amendment by mixing dewatered septage & sludge with cement kiln dust and/or quicklime, to attain pathogen pasteurization. The product is a granular material, which is applied to agricultural soils for nutrient and pH enhancement.

In 2018, the Sudbury Wastewater Treatment Plant received a total of 20,563 m^3 of septage and 45,363 m^3 of sludge from other wastewater treatment facilities. A total of 130,589 m^3 of material, containing approximately 3,526 tonnes of solids, was processed at the Biosolids facility in 2018.

5. CUSTOMER COMPLAINTS (ACR)

DATE	LOCATION	ISSUE	RESOLUTION
11-Jan-2018	Kincora Lift Station	Potential flooding of basement	Director checked SCADA pumps were cycling properly, sent crew to verify that the station was functioning correctly.
26-Feb-2018	Valley East WWTP	Resident concerned of effluent discharge as a potential hazard	Director spoke with resident and citizen satisfied with response
01-Mar-2018	Kincora Court Sudbury	Caller concerned about large trucks on street night after night.	Acting Manager spoke to resident and let him know that this force main lining can only be done at night during low flows.
08-Mar-2018	Moonlight Lift Station	Hydro advising power outage at Lift Station.	Acting Manager advised utility that we have a diesel backup generator at site.
30-Apr-2018	Chelmsford WWTP	Lots of dust from sweeper at plant	Was a one-time event and will not occur again
29-May-2018	Marcel Bouchard Lift Station	Wants the City to cut grass up to white shed	Sent contractor to cut grass next day
04-Jun-2018	Chelmsford WWTP - RV Dump Station	Resident suggest signage at beginning of street to remind motorists that dump station is closed	Signs have been posted appropriately
26-Jun-2018	Lloyd Lift Station Capreol	Pumps constantly running	Sent crew to investigate, found sticky float.
27-Jun-2018	Orford Lift Station Copper Cliff	Resident wanted grass to be cut	Called contractor and contractor went back to cut grass to residents satisfaction.
28-Jun-2018	Moonlight Lift Station	Resident called about noises from station	Sent crew out to fix problem, resident sent email back and was very pleased
30-Jul-2018	Valley East WWTP	Concerned about effluent in Vermillion River	Staff contacted the resident and gave him the necessary information. Resident was happy with the response.
07-Aug-2018	Valley East WWTP - RV Dump Station	Resident not happy that we are closed on Statutory weekends	Called resident and let her know that the sign states ”Closed on Saturdays and on Statutory Weekends”
13-Aug-2018	Simon Lake East Lift Station	Place is emitting foul smell	Called resident and sent out crew to clean flush well.
20-Aug-2018	Lively WWTP	Strong odor coming from plant	Acting Supervisor coordinated clean up the scum at Lively Plant which took care of the odor. Message was sent to resident.
31-Aug-2018	Falconbridge WWTP	Resident requested fencing at plant to stop unwanted traffic.	Resident was informed that new fencing would be a capital project, and was being examined.
13-Dec-2018	Laurier Lift Station Azilda	Resident complain about construction work at night	Complaint was passed on to the appropriate Project Manager. The resident was advised that in the future there will be a PSA so to inform citizens of construction.
18-Dec-2018	Brenda Lift Station	Resident frustrated that plow has damage his lawn	Called resident and agreed with his concern, called contractor to deal with his problem. Contractor and resident came to an agreement.

6. PLANT BYPASSES

DATE	TIME (24H clock)	DURATION	LOCATION	TYPE OF OCCURRENCE
11-Jan-18	19:00	12 hrs.	Lively WWTP	Plant bypass: flow exceeds design capacity
27-Jan -18	12:20	9 hrs.	Coniston WWTP	Plant bypass: flow exceeds design capacity
22-Apr-18	20:30	8 hrs.	Sudbury WWTP	Plant bypass: flow exceeds design capacity
23-Apr-18	22:00	2.25 hrs.	Sudbury WWTP	Plant bypass: flow exceeds design capacity
24-Apr-18	00:15	4 hrs.	Sudbury WWTP	Plant bypass: high flows
25-Apr-18	12:00	16 hrs.	Sudbury WWTP	Plant bypass: flow exceeds design capacity
21-Apr-18	2:25	214 hrs.	Lively WWTP	Plant bypass: flow exceeds design capacity
22-Apr-18	12:30	168 hrs.	Coniston WWTP	Plant bypass: flow exceeds design capacity
2-May-18	17:35	8.5 hrs.	Sudbury WWTP	Plant bypass: flow exceeds design capacity
1-May-18	8:30	132 hrs.	Coniston WWTP	Plant bypass: flow exceeds design capacity
2-May-18	11:30	120 hrs.	Lively WWTP	Plant bypass: flow exceeds design capacity
4-May-18	13:08	24 hrs.	Azilda WWTP	Plant bypass: flow exceeds design capacity
4-May-18	19:50	2.8 hrs.	Sudbury WWTP	Plant bypass: flow exceeds design capacity
4-May-18	22:30	5.5 hrs.	Sudbury WWTP	Plant bypass: high flows
3-May-18	24:00	96 hrs.	Valley East WWTP	Plant bypass: flow exceeds design capacity
26-May-18	00:33	2.5 hrs.	Lively WWTP	Plant bypass: flow exceeds design capacity
2-Aug-18	3:00	8.5 hrs.	Coniston WWTP	Plant bypass: flow exceeds design capacity
4-Oct-18	03:15	6 hrs.	Coniston WWTP	Plant bypass: flow exceeds design capacity
4-Oct-18	12:30	2 hrs.	Levack WWTP	Plant bypass: flow exceeds design capacity
4-Oct-18	2:00	9 hrs.	Walden WWTP	Plant bypass: flow exceeds design capacity
4-Oct-18	2:00	6 hrs.	Lively WWTP	Plant bypass: flow exceeds design capacity
5-Oct-18	6:00	9.5 hrs.	Sudbury WWTP	Plant bypass: high flows
10-Oct-18	23:20	41.1 hrs.	Lively WWTP	Plant bypass: flow exceeds design capacity
10-Oct-18	6:00	19 hrs.	Coniston WWTP	Plant bypass: flow exceeds design capacity
11-Oct-18	01:00	11.1 hrs.	Coniston WWTP	Plant bypass: flow exceeds design capacity
9-Oct-18	00:00	24 hrs.	Valley East WWTP	Plant bypass: flow exceeds design capacity
11-Oct-18	01:02	17.1 hrs.	Sudbury WWTP	Plant bypass: high flows
11-Oct-18	02:15	1.5 hrs.	Walden WWTP	Plant bypass: high flows
10-Oct-18	12:00	24 hrs.	Valley East WWTP	Plant bypass: flow exceeds design capacity
10-Oct-18	21:57	34.5 hrs.	Chelmsford WWTP	Plant bypass: flow exceeds design capacity
10-Oct-18	22:02	33.5 hrs.	Azilda WWTP	Plant bypass: flow exceeds design capacity
12-Oct-18	05:15	120 hrs.	Valley East WWTP	Plant bypass: flow exceeds design capacity
26-Oct-18	03:00	7.5 hrs.	Valley East WWTP	Plant bypass: flow exceeds design capacity
6-Nov-18	17:30	8 hrs.	Coniston WWTP	Plant bypass: flow exceeds design capacity
6-Nov-18	11:59	24 hrs.	Valley East WWTP	Plant bypass: flow exceeds design capacity
14-Nov-18	15:30	360 hrs.	Coniston WWTP	Plant bypass: flow exceeds design capacity
18-Nov-18	7:40	48 hrs.	Valley East WWTP	Plant bypass: flow exceeds design capacity

7. SUMMARY OF EFFLUENT QUALITY AND CONTROL MEASURES

Azilda Wastewater Treatment Plant

Flows - This plant experienced an average daily flow of 1,758 m^3/day with a design capacity of 3,300 m^3/day.

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

From the ECA the Monthly Average Concentration for release of $CBOD_5$ 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 237 kg/day of CBOD;
2) The CBOD effluent monthly average concentration ranged from 1.60 mg/L to 5.70 mg/L with an average of 3.22 mg/L and annual average effluent loading was 5.93 kg/day.
3) 233 kg/day was removed, showing 98.3% 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 290 kg/day of TSS;
2) The TSS effluent monthly average concentration ranged from 4 mg/L to 29.20 mg/L with an average of 9.23 mg/L and annual average effluent loading was 17.33 kg/day.
3) 273 kg/day was removed, showing 94 % 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 6.47 kg/day of phosphorous;
2) The phosphorous effluent monthly average concentration ranged from 0.17 mg/L to 0.62 mg/L with an average of 0.32 mg/L and annual average effluent loading was 0.56 kg/day.
3) 5.91 kg/day was removed, showing 91.4 % 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 35.34 kg/day;
2) The monthly average concentration of ammonia (as nitrogen) in the effluent ranged from 0.04 mg/L to 1.58 mg/L with an average of 0.39 mg/L and annual average effluent loading was 0.64 kg/day.
3) 34.71 kg/day was removed, showing 98.2 % 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 7.48;
2) The effluent pH ranged from 6.30 to 7.00 throughout the reporting period with an annual average of 6.60.

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 69 CFU's/100ml sample with an average annual E.Coli of 18 CFU's/100ml.

Capreol Lagoon Wastewater Treatment

Flows – The lagoon experienced normal average day flows of 2,007 m3/d when compared to the design capacity of 5,500 m^3/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 BOD_5 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 loading sewage from the community contained 210 kg/day of CBOD;
2) The CBOD effluent monthly average concentration ranged from 3.00 mg/L to 41.00 mg/L with an average of 22.79 mg/L and annual average effluent loading was 45 kg/day.
3) 165 kg/day was removed, showing 78.6 % 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 loading sewage from the community contained 441 kg/day of TSS;
2) The TSS effluent monthly average concentration ranged from 10.30 mg/L to 30.30 mg/L with an average of 18.15 mg/L and annual average effluent loading was 35.39 kg/day.
3) 406 kg/day was removed, showing 92.0% 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 loading from the community contained 6.70 kg/day of Phosphorous;
2) The phosphorous effluent monthly average concentration ranged from 1.07 mg/L to 2.76 mg/L with an average of 1.89 mg/L and annual average effluent loading was 3.65 kg/day.
3) 3.05 kg/day was removed, showing 45.5 % treatment efficiency of phosphorous removal.

Chelmsford Water Pollution Control Plant

Flows - This plant experienced an average day flow of 3,487 m^3/day with a design capacity of 7,100 m^3/day.

$CBOD_5$ - Monthly Average Concentration, Seasonal Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of $CBOD_5$ to the environment has two seasonal reporting requirements.

From November 1 – April 30, the concentration of $CBOD_5$ 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 season average incoming raw sewage from the community contained 463 kg/day of CBOD;
2) The CBOD effluent seasonal average concentration ranged from 2.00 mg/L to 6.90 mg/L with an average of 4.12 mg/L and seasonal average effluent loading was 14.67 kg/day.
3) 448 kg/day was removed, showing 96.8 % plant efficiency of CBOD removal.

From May 1 – October 31, the concentration of $CBOD_5$ 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 season average incoming raw sewage from the community contained 403 kg/day of CBOD;
2) The CBOD effluent seasonal average concentration ranged from 1.70 mg/L to 13.40 mg/L with an average of 5.17 mg/L and seasonal average effluent loading was 15.48 kg/day.
3) 388 kg/day was removed, showing 96.2 % plant efficiency of CBOD removal.

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

From November 1 – April 30, the concentration of TSS 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 the reporting period:

1) The season average incoming raw sewage from the community contained 491 kg/day of TSS;
2) The TSS effluent monthly average concentration ranged from 4.20 mg/L to 12.30 mg/L with an average of 8.00 mg/L and season average effluent loading was 31.47 kg/day.
3) 460 kg/day was removed, showing 93.6 % plant efficiency of TSS removal.

From May 1 – October 31, the concentration of TSS 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 season average incoming raw sewage from the community contained 522 kg/day of TSS;
2) The TSS effluent seasonal average concentration ranged from 3.90 mg/L to 14.00 mg/L with an average of 7.92 mg/L and seasonal average effluent loading was 25.47 kg/day.
3) 496 kg/day was removed, showing 95.1 % plant efficiency of TSS removal.

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

From November 1 – April 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 3.55 kg/day.

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

1) The season average incoming raw sewage from the community contained 11.4 kg/day of Phosphorous;
2) The Phosphorous effluent monthly average concentration for the season ranged from 0.20 mg/L to 0.44 mg/L with an average of 0.34 mg/L and season average effluent loading was 1.22 kg/day.
3) 10.18 kg/day was removed showing 89.3 % plant efficiency of Phosphorous removal.

From May 1 – October 31, the concentration of Phosphorous is to be less than 0.3 mg/L and the Seasonal Average Loading in the effluent is to be less than 2.13 kg/day.

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

4) The season average incoming raw sewage from the community contained 11.35 kg/day of Phosphorous;
5) The Phosphorous effluent seasonal average concentration ranged from 0.14 mg/L to 0.42 mg/L with an average of 0.26 mg/L and seasonal average effluent loading was 0.81 kg/day.
6) 10.54 kg/day was removed, showing 92.9 % plant efficiency of Phosphorous removal.

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

From November 1 – April 30, the concentration of Total Ammonia (as Nitrogen) is to be less than 4.0 mg/L and the Seasonal Average Loading in the effluent is to be less than 28.4 kg/day.

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

1) The season average incoming raw sewage from the community contained 68.49 kg/day of Total Ammonia (as Nitrogen);
2) The Total Ammonia (as Nitrogen) effluent monthly average concentration for the season ranged from 0.80 mg/L to 12.08 mg/L with an average of 5.20 mg/L and season average effluent loading was 16.64 kg/day.
3) 51.86 kg/day was removed, showing 75.7% plant efficiency of Total Ammonia (as Nitrogen) removal.

From May 1 – October 31, the concentration of Total Ammonia (as Nitrogen) is to be less than 2.0 mg/L and the Seasonal Average Loading in the effluent is to be less than 14.2 kg/day.

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

4) The season average incoming raw sewage from the community contained 73.38 kg/day of Total Ammonia (as Nitrogen);
5) The Total Ammonia (as Nitrogen) effluent seasonal average concentration ranged from 0.28 mg/L to 5.42 mg/L with an average of 2.46 mg/L and seasonal average effluent loading was 7.23 kg/day.
6) 66.15 kg/day was removed, showing 90.1 % plant efficiency of Total 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 7.51;
2) The effluent pH ranged from 6.50 to 7.50 throughout the reporting period with an annual average of 6.96.

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 44 CFU's/100ml sample to 488 CFU's/100ml sample with an average annual E.Coli of 181 CFU's/100ml.

Coniston Wastewater Treatment Plant

Flows - This plant experienced an average day flow of 1,415 m^3/day and the design capacity is 3,000 m^3/day.

BOD_5 - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of BOD_5 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 loading from the community contained 149 kg/day of BOD;
2) The BOD effluent monthly average concentration ranged from 1.10 mg/L to 30.60 mg/L with an average of 9.16 mg/L and average effluent loading was 12.37 kg/day.
3) 137 kg/day was removed, showing 91.7% 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 loading from the community contained 172 kg/day of TSS;
2) The TSS effluent monthly average concentration ranged from 4.80 mg/L to 25.80 mg/L with an average of 12.30 mg/L and annual average effluent loading was 17.51 kg/day.
3) 155 kg/day was removed, showing 89.8% 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 7.31;
2) The effluent pH ranged from 6.70 to 7.20 throughout the reporting period with an annual average of 6.98.

E.Coli - Monthly Geometric Mean

From the ECA the E.Coli, on a yearly 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 992 CFU's/100ml sample with an average annual E.Coli of 41 CFU's/100ml.

Dowling Wastewater Treatment Plant

Flows - This plant experienced an average day flow of 1,890 m^3/day and the design capacity is 3,200 m^3/day.

$CBOD_5$ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of $CBOD_5$ 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 53 kg/day of CBOD:

2) The CBOD effluent monthly average concentration ranged from 3.70 mg/L to 6.30 mg/L with an average of 4.88 mg/L and average effluent loading was 9.18 kg/day.

3) 44 kg/day was removed, showing 82.8 % 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 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 83 kg/day of TSS;

2) The TSS effluent monthly average concentration ranged from 3.60 mg/L to 11.10 mg/L with an average of 5.51 mg/L and annual average effluent loading was 10.52 kg/day.

3) 73 kg/day was removed, showing 87.3 % 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 2.32 kg/day of phosphorous;

2) The phosphorous effluent monthly average concentration ranged from 0.52 mg/L to 0.70 mg/L with an average of 0.61 mg/L and annual average effluent loading was 1.14 kg/day.

3) 1.18 kg/day was removed, showing 50.9 % 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 6.74;

2) The effluent pH ranged from 6.50 to 7.20 throughout the reporting period with an annual average of 6.68.

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 11 CFU's/100ml.

Falconbridge Wastewater Treatment Plant

Flows - This plant experienced an average day flow of 364 m^3/day and the design capacity is 909 m^3/day.

BOD_5 - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of BOD_5 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 81.78 kg/day of BOD;

2) The BOD effluent monthly average concentration ranged from 0.50 mg/L to 5.70 mg/L with an average of 1.49 mg/L and average effluent loading was 0.44 kg/day.

3) 81.33 kg/day was removed, showing 99.5 % 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 14.47 kg/day of TSS;

2) The TSS effluent monthly average concentration ranged from 2.00 mg/L to 9.00 mg/L with an average of 3.83 mg/L and annual average effluent loading was 1.29 kg/day.

3) 13.18 kg/day was removed, showing 91.1 % plant efficiency of TSS removal.

Levack Wastewater Treatment Plant

Flows - This plant experienced an average day flow of 720 m^3/day and the design capacity is 2,270 m^3/day.

$CBOD_5$ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of $CBOD_5$ 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 94.87 kg/day of CBOD;
2) The CBOD effluent monthly average concentration ranged from 0.50 mg/L to 5.00 mg/L with an average of 2.85 mg/L and average effluent loading was 2.13 kg/day.
3) 93 kg/day was removed, showing 97.8 % 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 119 kg/day of TSS;
2) The TSS effluent monthly average concentration ranged from 3.70 mg/L to 8.70 mg/L with an average of 6.00 mg/L and annual average effluent loading was 4.39 kg/day.
3) 114 kg/day was removed, showing 96.3 % 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 3.1 kg/day.

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

1) The average annual incoming raw sewage loading from the community contained 2.67 kg/day of phosphorous;
2) The phosphorous effluent monthly average concentration ranged from 0.30 mg/L to 0.58 mg/L with an average of 0.40 mg/L and annual average effluent loading was 0.29 kg/day.
3) 2.38 kg/day was removed, showing 89.3 % 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 7.13;
2) The effluent pH ranged from 6.40 to 7.30 throughout the reporting period with an annual average of 6.75.

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 0 CFU's/100ml sample to 88 CFU's/100ml sample with an average annual E.Coli of 20 CFU's/100ml.

Lively Wastewater Treatment Plant

Flows - This plant experienced an average day flow of 1,602 m^3/day and the design capacity is 1,600 m^3/day.

$CBOD_5$ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of $CBOD_5$ 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 140 kg/day of BOD;
2) The CBOD effluent monthly average concentration ranged from 0.50 mg/L to 6.10 mg/L with an average of 2.54 mg/L and average effluent loading was 3.80 kg/day.
3) 136 kg/day was removed, showing 97.1 % 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 322 kg/day of TSS;
2) The TSS effluent monthly average concentration ranged from 5.40 mg/L to 15.60 mg/L with an average of 8.26 mg/L and annual average effluent loading was 13.17 kg/day
3) 309 kg/day was removed, showing 95.9 % 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 9.26 kg/day of phosphorous;
2) The phosphorous effluent monthly average concentration ranged from 0.25 mg/L to 0.58 mg/L with an average of 0.36 mg/L and annual average effluent loading was 0.56 kg/day.
3) 8.70 kg/day was removed, showing 93.9 % 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 7.20;
2) The effluent pH ranged from 6.50 to 7.30 throughout the reporting period with an annual average of 6.94.

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 1 CFU's/100ml sample to 67 CFU's/100ml sample with an average annual E.Coli of 22 CFU's/100ml.

Sudbury Wastewater Treatment Plant

Flows - This plant experienced an average day flow of 49,334 m^3/day and the design capacity is 79,625 m^3/day.

$CBOD_5$ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of $CBOD_5$ 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 6,502 kg/day of CBOD;
2) The CBOD effluent monthly average concentration ranged from 3.50 mg/L to 21.50 mg/L with an average of 8.23 mg/L and average effluent loading was 399.45 kg/day.
3) 6,102 kg/day was removed, showing 93.9% 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 10,750 kg/day of TSS;
2) The TSS effluent monthly average concentration ranged from 6.10 mg/L to 37.10 mg/L with an average of 14.72 mg/L and annual average effluent loading was 708.69 kg/day.
3) 10,041 kg/day was removed showing 93.1 % plant efficiency of TSS removal.

Total Phosphorous - Monthly Average Concentration, Seasonal 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 176.41 kg/day of phosphorous;
2) The phosphorous effluent concentration ranged from 0.37 mg/L to 0.86 mg/L with an average of 0.57 mg/L and annual average effluent loading was 28.23 kg/day.
3) 148.19 kg/day was removed, showing 84.0 % 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 162.53 kg/day of Phosphorous;
2) The phosphorous effluent concentration ranged from 0.23 mg/L to 0.53 mg/L with an average of 0.32 mg/L and seasonal average effluent loading was 16.24 kg/day.
3) 146.30 kg/day was removed, showing 90.0 % 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 7.03;
2) The effluent pH ranged from 6.70 to 6.80 throughout the reporting period with an annual average of 6.79.

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 4 CFU's/100ml sample to 40 CFU's/100ml sample with an average annual E.Coli of 14 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 5,436 m^3/day and the design capacity is 11,400 m^3/day.

$CBOD_5$ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of $CBOD_5$ 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 702 kg/day of CBOD:
2) The CBOD effluent monthly average concentration ranged from 4.40 mg/L to 16.70 mg/L with an average of 9.29 mg/L and average effluent loading was 50.78 kg/day.
3) 651 kg/day was removed, showing 92.8 % 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 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 867 kg/day of TSS;

2) The TSS effluent monthly average concentration ranged from 4.10 mg/L to 10.10 mg/L with an average of 7.11 mg/L and annual average effluent loading was 37.72 kg/day.

3) 829 kg/day was removed, showing 95.7 % 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 14.09 kg/day of phosphorous;

2) The phosphorous effluent monthly average concentration ranged from 0.35 mg/L to 0.79 mg/L with an average of 0.60 mg/L and annual average effluent loading was 3.17 kg/day.

3) 10.92 kg/day was removed, showing 77.5% 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 7.00 to 7.50 throughout the reporting period with an annual average of 7.25.

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 284 CFU's/100ml sample with an average annual E.Coli of 64 CFU's/100ml.

Wahnapitae Lagoons

Flows - This plant experienced an average day flow of 759 m^3/day and the design capacity is 1,246 m^3/day.

$CBOD_5$ - Seasonal Average Concentration, Seasonal Average Effluent Loading and Plant Removal Amounts

From the ECA the Monthly Average Concentration for release of $CBOD_5$ to the environment has two seasonal reporting requirements.

For fall discharge, defined as any discharge with a minimum duration of 14 days starting not before November 1st and not after December 15th, the concentration of $CBOD_5$ is to be less than 30 mg/L.

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

4) The season average incoming raw sewage from the community contained 8.03 kg/day of CBOD;

5) The CBOD effluent seasonal average concentration average of 5.75 mg/L and seasonal average effluent loading was 1.69 kg/day.

6) 6.34 kg/day was removed, showing 79.0 % plant efficiency of CBOD removal.

For spring discharge, defined as any discharge with a minimum duration of 14 days starting not before March 15th and not after April 30th, the concentration of $CBOD_5$ is to be less than 30 mg/L.

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

4) The season average incoming raw sewage from the community contained 1.30 kg/day of CBOD;

5) The CBOD effluent seasonal average concentration average of 3.0 mg/L and seasonal average effluent loading was 0.88 kg/day.

6) 0.43 kg/day was removed, showing 32.7 % plant efficiency of CBOD removal.

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

For fall discharge, the concentration of TSS is to be less than 40 mg/L. Using the laboratory results and given the plant flows experienced throughout the reporting period:

4) The season average incoming raw sewage from the community contained 42.44 kg/day of TSS;

5) The TSS effluent monthly average concentration average of 45.45 mg/L and season average effluent loading was 13.13 kg/day.

6) 29.31 kg/day was removed, showing 69.1 % plant efficiency of TSS removal.

For spring discharge, the concentration of TSS is to be less than 40 mg/L.

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

4) The season average incoming raw sewage from the community contained 33.26 kg/day of TSS;
5) The TSS effluent seasonal average concentration average of 28.94 mg/L and seasonal average effluent loading was 8.79 kg/day.
6) 29.31 kg/day was removed, showing 69.1 % 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 6.5 to 7.1 throughout the reporting period with an annual average of 6.8.

Walden Wastewater Treatment Plant

Flows - This plant experienced an average day flow of 1,947 m^3/day and the design capacity is 4,500 m^3/day.

$CBOD_5$ - Monthly Average Concentration, Annual Average Effluent Loading and Plant Removal Amounts

From the ECA the Annual Average Concentration for release of $CBOD_5$ 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 209 kg/day of CBOD;
2) The CBOD effluent monthly average concentration ranged from 0.70 mg/L to 15.00 mg/L with an average of 3.43 mg/L and average effluent loading was 7.99 kg/day.
3) 199 kg/day was removed, showing 95.2 % 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 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 343 kg/day of TSS;
2) The TSS effluent monthly average concentration ranged from 6.40 mg/L to 16.60 mg/L with an average of 9.48 mg/L and annual average effluent loading was 18.75 kg/day.
3) 324 kg/day was removed, showing 94.5 % 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 6.30 kg/day of phosphorous;
2) The phosphorous effluent monthly average concentration ranged from 0.16 mg/L to 0.50 mg/L with an average of 0.37 mg/L and annual average effluent loading was 0.70 kg/day.
3) 5.60 kg/day was removed, showing 88.9 % 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 7.21;
2) The effluent pH ranged from 6.40 to 7.10 throughout the reporting period with an annual average of 6.85.

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 33 CFU's/100ml sample with an average annual E.Coli of 19 CFU's/100ml.

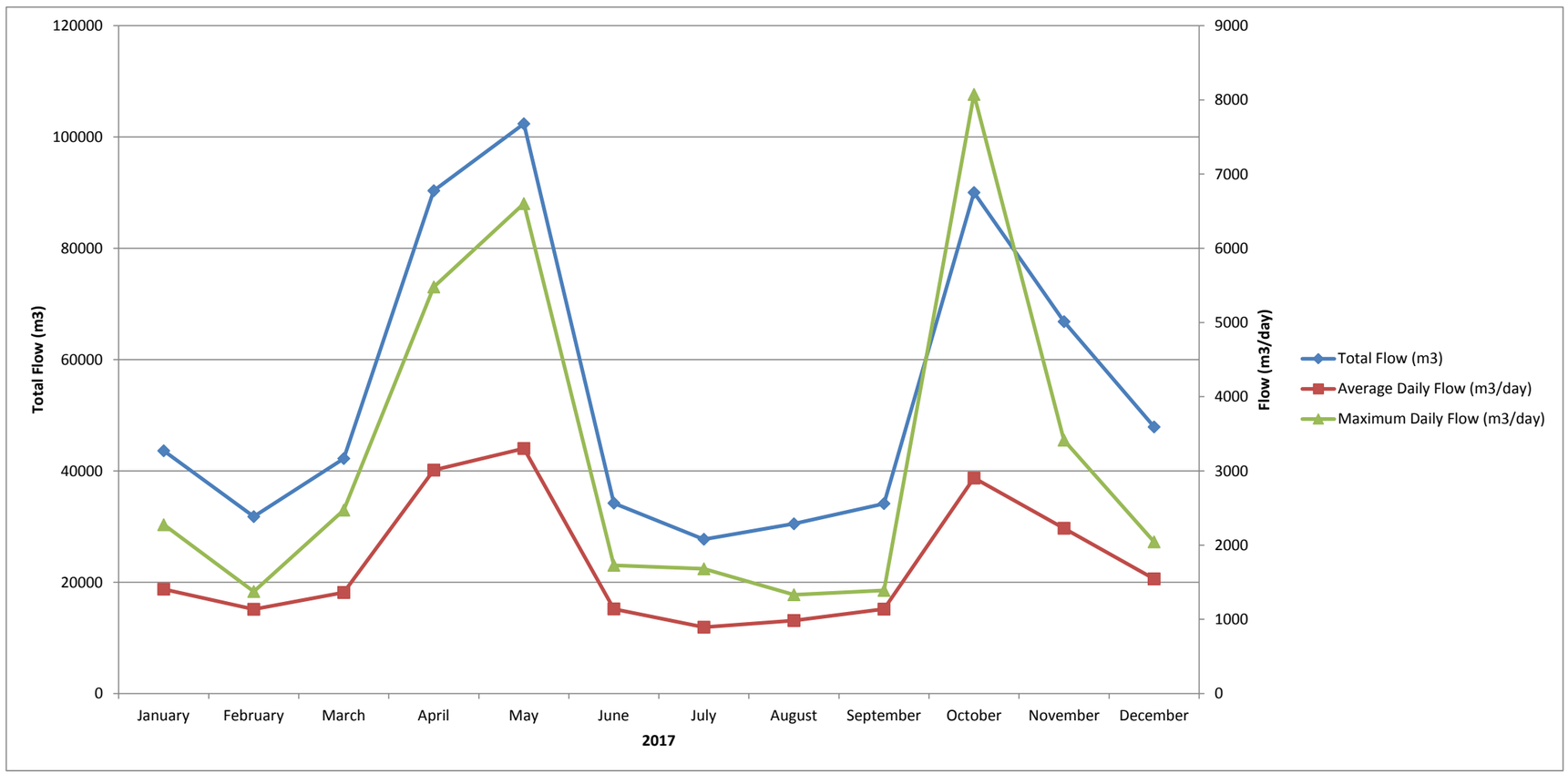
SECTION 8:

INDIVIDUAL PLANT ANNUAL DATA REPORTS

See previous (Section 7) for explanation of data following

2018 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	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	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	CFU/100mL
January	43615	1407	2275	208	N/A	3.8	5.35	N/A	219	8.2	11.54	96.3%	5.3	0.32	0.45	94.0%	34.60	0.51	0.72	98.5%	0.19	39.1	1.20	0.09	24.1	7.5	6.5	348	47	160	3.2	5.1	180.5	0.84	3
February	31786	1135	1375	208	N/A	3.2	3.63	N/A	300	8.8	9.99	97.1%	5.7	0.41	0.47	92.8%	31.43	1.58	1.79	95.0%	0.56	39.2	2.15	0.21	25.1	7.6	6.3	241	31	240	4.3	10.3	93.0	0.93	2
March	42223	1362	2472	245	N/A	5.3	7.22	N/A	243	7.3	9.94	97.0%	4.3	0.39	0.53	90.9%	22.50	0.45	0.61	98.0%	0.21	32.2	1.79	0.18	22.8	7.5	6.4	258	49	280	2.8	7.8	143.1	0.83	4
April	90343	3011	5479	81	N/A	5.7	17.17	N/A	107	10.2	30.72	90.5%	2.7	0.32	0.96	88.1%	9.55	0.14	0.42	98.5%	0.21	10.1	1.35	0.08	12.9	8.1	6.9	272	142	160	3.2	5.1	229.8	0.71	21
May	102368	3302	6602	112	108	2.3	7.60	97.9%	128	6.0	19.81	95.3%	2.2	0.17	0.56	92.3%	9.14	0.69	2.28	92.5%	1.56	12.0	1.34	0.13	10.5	7.9	7.0	256	165	160	3.9	6.2	238.3	0.67	52
June	34214	1140	1728	215	190	1.7	1.94	99.1%	190	4.0	4.56	97.9%	4.5	0.29	0.33	93.6%	28.25	0.13	0.15	99.5%	0.08	36.9	0.33	0.10	27.0	7.6	6.4	264	41	200	2.2	4.4	143.4	0.78	4
July	27717	894	1681	210	183	3.0	2.68	98.4%	197	6.1	5.45	96.9%	5.9	0.28	0.25	95.3%	31.08	0.50	0.45	98.4%	0.32	35.6	0.56	0.53	26.1	7.5	6.3	238	45	200	2.9	5.8	167.7	0.87	7
August	30500	984	1332	192	147	2.1	2.07	98.6%	185	6.1	6.00	96.7%	5.4	0.29	0.29	94.6%	30.16	0.17	0.17	99.4%	0.16	37.8	0.37	0.26	28.9	7.1	6.3	251	38	320	2.3	7.4	167.5	0.80	7
September	34126	1138	1390	165	150	1.6	1.82	98.9%	177	5.6	6.37	96.8%	5.1	0.26	0.30	94.9%	30.78	0.14	0.16	99.5%	0.15	28.9	1.25	0.23	25.5	6.8	6.6	261	56	240	2.4	5.8	188.7	0.79	9
October	90020	2904	8073	115	105	2.1	6.10	98.0%	131	6.4	18.58	95.1%	2.9	0.28	0.81	90.3%	17.04	0.23	0.67	98.7%	0.32	19.5	0.70	0.35	14.5	7.4	7.0	278	154	160	2.8	4.5	261.7	0.63	25
November	66818	2227	3415	126	106	5.2	11.58	95.1%	120	29.2	65.04	75.7%	2.7	0.62	1.38	77.0%	16.90	0.04	0.09	99.8%	0.09	19.6	1.57	0.01	18.6	7.5	6.9	314	164	200	2.8	5.6	255.9	0.78	69
December	47897	1545	2044	268	198	2.6	4.02	98.7%	214	12.9	19.93	94.0%	4.2	0.24	0.37	94.3%	24.83	0.09	0.14	99.6%	0.06	32.0	0.43	0.16	26.2	7.3	6.6	281	64	190	1.9	3.6	198.7	0.84	17
Total	641627																													2510		71.65			
Average		1758		179		3.22	5.93	98.3%	184	9.23	17.33	94.0%	4.24	0.32	0.56	91.4%	23.86	0.39	0.64	98.2%	0.3	28.58	1.09	0.19	21.85	7.48	6.60	272	83		2.89			0.79	18



Plant Type: Extended Aeration
Design Capacity: 3300 m^3/day
Population Served: 4,105

Compliance Parameters:

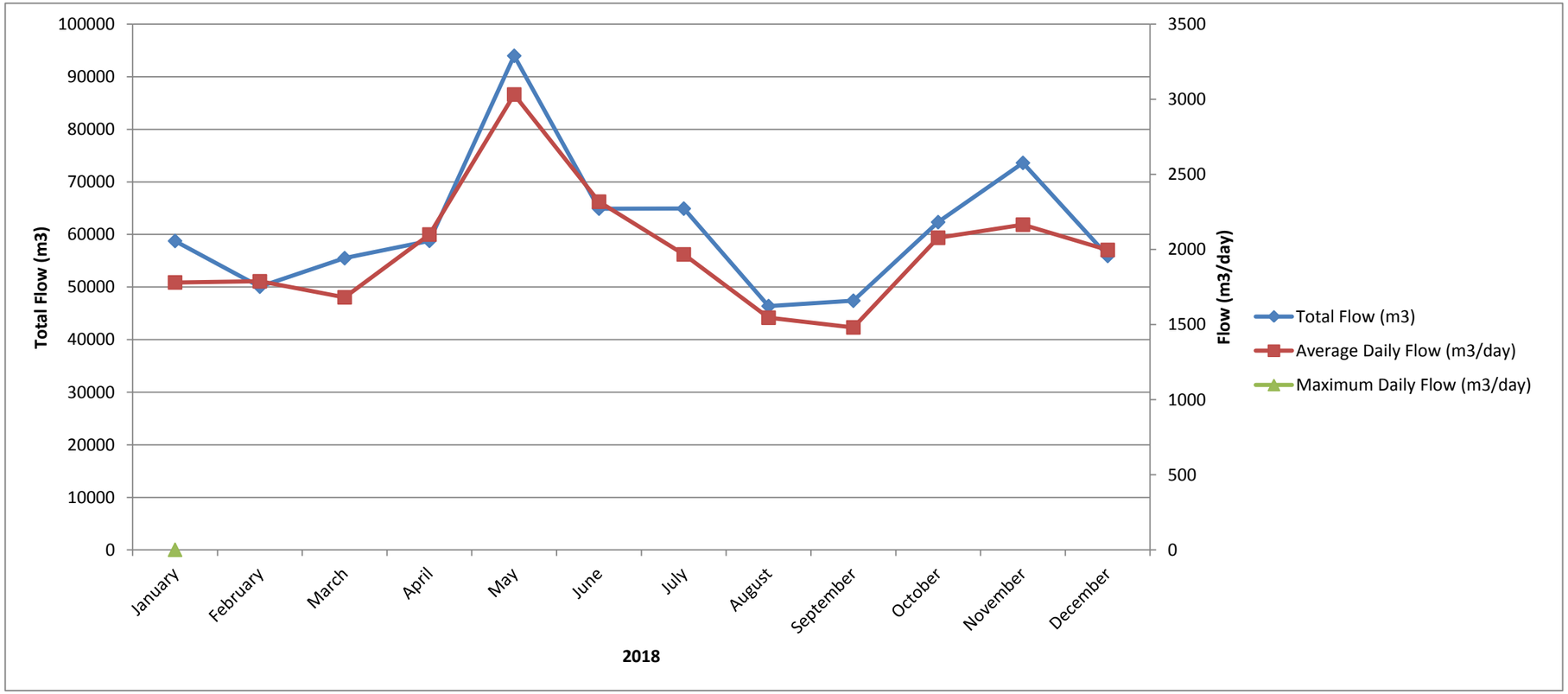
	Concentration	Loading	
$CBOD_5$	10 mg/L	33 kg/day	*Monthly Avg (Concentration)
TSS	10 mg/L	33 kg/day	
Total Phosphorus	0.6 mg/L	2.0 kg/day	*Annual Avg (Loading)
Total Ammonia (as N)	5 mg/L	16.5 kg/day	
pH	6.0 to 9.5 inclusive, at all times		
E.Coli	200 col/100 mL		Monthly Geometric Mean

2018 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)	6.3	1	326	127	116	10.6	365	11.7	16.8	17.5	192	0.1	99.17
Nitrate (as N)	6.2	3.86	0.1	0.1	0.1	0.1	1	0.1	0.1	0.02	0.008	0.008	0.97
Nitrite (as N)	0.03	0.03	7.28	0.992	1.63	0.609	13.6	0.03	0.979	0.008	0.2	0.02	2.12
Potassium	48	48.3	84	58	71	53	88.7	22.5	31.9	20	68	29	51.87
TKN	541	1030	2150	919	983	799	2100	377	253	193	1440	373	930
Total Phosphorus	203	335	560	350	556	283	1050	263	103	110	443	204	372
Total Solids	10800	15600	28300	16400	30300	20900	39500	11500	5210	4090	25200	8310	18009
Arsenic	0.0400	0.0600	0.1220	0.0870	0.1500	0.1200	0.2560	0.0400	0.0250	0.0100	0.1600	0.0400	0.0925
Cadmium	0.0056	0.0094	0.0237	0.0119	0.0190	0.0179	0.0439	0.0069	0.0039	0.0017	0.0275	0.0054	0.0147
Chromium	0.1060	0.1710	0.3800	0.2030	0.2840	0.2920	0.8760	0.1330	0.0740	0.0300	0.3500	0.1100	0.2508
Cobalt	0.1220	0.1980	0.3300	0.2410	0.5730	0.4160	1.1500	0.1450	0.0730	0.0300	0.2230	0.0960	0.2998
Copper	3.37	3.65	10.2	5.71	6.22	5.55	20.6	4.21	1.92	0.91	10.2	3.1	6.30
Lead	0.0710	0.1040	0.2390	0.1310	0.1700	0.3650	0.4290	0.1100	0.0538	0.0220	0.2530	0.0790	0.1689
Mercury	0.0010	0.0010	0.0032	0.0010	0.0010	0.0024	0.0088	0.0010	0.0010	0.0010	0.0010	0.0010	0.0020
Molybdenum	0.0390	0.0470	0.1430	0.0460	0.0790	0.0570	0.2150	0.0400	0.0240	0.0100	0.1100	0.0300	0.0700
Nickel	0.326	0.480	1.050	0.747	2.560	1.210	2.460	0.384	0.214	0.100	1.500	0.440	0.956
Selenium	0.0240	0.0400	0.0650	0.0410	0.0100	0.0640	0.1250	0.0300	0.0120	0.0100	0.1010	0.0280	0.0458
Zinc	2.84	4.30	7.74	4.74	5.80	5.63	18.10	3.48	2.24	0.96	8.50	2.79	5.59
Sample Date	Jan.24/18	Feb.8/18	Mar.6/18	Apr.11/18	May 9/18	Jun.6/18	Jul.4/18	Aug.8/18	Sep.5/18	Oct.9/18	Nov. 7/18	Dec. 5/18	

2018 Capreol Wastewater Treatment Lagoon Performance

Month	Flows		*BOD_5						Total Suspended Solids						Total Phosphorus						Total Ammonia						Un-ionized	TKN	
	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
	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	mg/L
January	58767	1781	64	28.0	49.86	114	64	56.3%	73	15.5	27.60	130	102	78.8%	2.45	2.21	3.94	4.36	0.43	9.8%	14.60	15.90	28.32	26.00	-2.32	-8.9%	31.22	18.1	17.2
February	50072	1788	240	35.3	63.13	429	366	85.3%	1950	22.7	40.59	3487	3447	98.8%	7.89	2.54	4.54	14.11	9.57	67.8%	17.40	14.80	26.47	31.12	4.65	14.9%	17.33	47.4	17.7
March	55499	1682	140	36.2	60.88	235	175	74.1%	109	21.0	35.32	183	148	80.7%	4.10	2.76	4.64	6.90	2.25	32.7%	19.70	16.80	28.25	33.13	4.88	14.7%	28.18	23.8	22.0
April	58797	2100	140	41.0	86.10	294	208	70.7%	52	16.0	33.60	109	76	69.2%	2.34	2.51	5.27	4.91	-0.36	-7.3%	10.40	16.80	35.28	21.84	-13.44	-61.5%	36.92	13.7	18.8
May	93993	3032	49	15.0	45.48	149	103	69.4%	80	17.3	52.45	243	190	78.4%	6.12	1.07	3.24	18.56	15.31	82.5%	7.59	3.70	11.22	23.01	11.79	51.3%	28.33	23.4	8.3
June	64919	2319	73	26.0	60.28	169	109	64.4%	106	10.3	23.88	246	222	90.3%	1.69	1.08	2.50	3.92	1.41	36.1%	8.69	3.13	7.26	20.15	12.89	64.0%	21.73	12.7	6.3
July	64924	1967	110	18.0	35.41	216	181	83.6%	51.3	30.3	59.61	101	41	40.9%	2.21	1.36	2.68	4.35	1.67	38.5%	11.90	3.76	7.40	23.41	16.01	68.4%	28.82	13.4	6.5
August	46379	1546	87	20.0	30.92	134	104	77.0%	55.7	21.0	32.47	86	54	62.3%	2.93	1.60	2.47	4.53	2.06	45.4%	6.27	2.15	3.32	9.69	6.37	65.7%	7.34	13.8	5.9
September	47402	1481	170	3.0	4.44	252	247	98.2%	67	22.0	32.59	99	67	67.2%	3.24	2.02	2.99	4.80	1.81	37.7%	14.30	7.59	11.24	21.18	9.94	46.9%	49.63	20.9	10.8
October	62354	2078	30	14.0	29.10	62	33	53.3%	30.7	10.3	21.41	64	42	66.4%	1.13	2.00	4.16	2.35	-1.81	-77.0%	6.60	13.20	27.44	13.72	-13.72	-100.0%	54.68	9.7	13.2
November	73623	2165	160	13.0	28.15	346	318	91.9%	202	14.4	31.18	437	406	92.9%	3.32	1.69	3.66	7.19	3.53	49.1%	13.00	10.20	22.09	28.15	6.06	21.5%	32.20	17.2	11.5
December	55918	1997	62	24.0	47.93	124	76	61.3%	55	17.0	33.95	110	76	69.1%	2.23	1.88	3.75	4.45	0.70	15.7%	11.00	11.70	23.37	21.97	-1.40	-6.4%	26.32	12.1	11.7
Total	732647																												
Average		2007	110	22.79	45.14	210	165	78.6%	236	18.15	35.39	441	406	92.0%	3.30	1.89	3.65	6.70	3.05	45.5%	11.79	9.98	19.30	22.78	3.48	15.3%	30.22	18.9	12.5



Lagoon Type: Exfiltration
Design Capacity: 5000 m^3/day
Population Served: 3,408

Compliance Parameters:

	Concentration	
BOD_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.

*CBOD analyzed until April 2018, then changed to BOD_5 per C of A.

2018 Capreol Lagoon Groundwater Monitoring Wells

Parameter (mg/L)	OW #2		OW #3		OW #5		OW #8		OW #12a		OW #15		OW #16	
	May	Sept/Oct	May	Sept/Oct	May	Sept/Oct	May	Sept/Oct	May	Sept/Oct	May	Sept/Oct	May	Sept/Oct
Total Coliform	1	OG/75	1	OG/OG	1	134 / 64	1	OG/62	1	OG/OG	1	63 / 45	1	23 / 1
Alkalinity	122.0	120.0	141.0	15.0	13.0	94.0	142.0	94.0	83.3	135.0	12.0	15.0	16.0	16.0
Ammonia (as N)	4.94	4.27	9.42	0.01	0.05	5.68	9.13	5.68	0.27	1.37	0.01	0.03	0.01	0.01
Nitrate (as N)	0.10	0.10	4.61	0.10	0.10	0.10	0.31	0.10	0.21	0.10	0.11	0.10	0.10	0.10
Nitrite (as N)	0.26	0.29	1.34	0.03	0.03	0.03	0.03	0.03	0.14	0.03	0.03	0.03	0.03	0.03
BOD_5	2	1.3	2.4	20	0.5	3.9	5.1	3.9	2.4	1.3	0.5	0.8	0.5	0.6
D.O.C.	3.00	5.20	3.20	1.40	1.40	4.20	3.60	4.20	3.00	4.60	0.99	1.20	1.10	1.00
Hardness (as $CaCO_3$)	78.7	89.6	90.4	8.0	4.5	73.8	87.8	73.8	63.4	103.0	24.2	17.1	6.6	9.8
Aluminum	0.0107	0.0040	0.0037	0.1560	0.1860	0.0370	0.0315	0.0370	0.3580	0.0520	0.1040	0.1250	0.1550	0.1450
Antimony	0.0005	0.0011	0.0005	0.0005	0.0005	0.0008	0.0005	0.0008	0.0005	0.0006	0.0005	0.0005	0.0005	0.0005
Arsenic	0.0027	0.0040	0.0016	0.0010	0.0010	0.0040	0.0058	0.0040	0.0043	0.0070	0.0010	0.001	0.001	0.001
Barium	0.0620	0.1300	0.1130	0.0090	0.0062	0.0310	0.0261	0.0310	0.0586	0.0780	0.0126	0.0130	0.0054	0.0070
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	0.0001	0.0003	0.0003	0.0001	0.0001	0.0002	0.0003	0.0002	0.0002	0.0001	0.0001	0.0002	0.0001	0.0001
Calcium	22.70	29.10	25.60	2.09	1.15	22.00	26.30	22.00	18.90	30.90	6.37	4.46	1.75	2.63
Chromium	0.0011	0.0020	0.0012	0.0010	0.0010	0.0010	0.0012	0.0010	0.0016	0.0010	0.0010	0.0010	0.0010	0.0010
Cobalt	0.0021	0.0165	0.0187	0.0005	0.0007	0.0147	0.0158	0.0147	0.0074	0.0072	0.0003	0.0004	0.0006	0.0005
Copper	0.0022	0.0010	0.0017	0.0040	0.0041	0.0270	0.0323	0.0270	0.0079	0.0040	0.0028	0.0030	0.0031	0.0030
Iron	5.44	9.30	5.34	0.19	0.25	0.80	0.65	0.80	7.71	1.40	0.24	0.51	0.22	0.21
Lead	0.0001	0.0021	0.0014	0.0003	0.0005	0.0001	0.0002	0.0001	0.0007	0.0001	0.0002	0.0004	0.0003	0.0003
Magnesium	5.35	7.77	6.46	0.67	0.39	4.57	5.34	4.57	3.94	6.19	2.01	1.45	0.54	0.78
Manganese	0.576	1.210	1.140	0.008	0.011	0.880	1.050	0.880	1.390	3.340	0.011	0.015	0.010	0.011
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	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.001	0.001	0.001
Nickel	0.0037	0.0080	0.0088	0.0040	0.0031	0.0100	0.0132	0.0100	0.0052	0.0070	0.0016	0.0020	0.0011	0.0010
Potassium	4.52	6.20	4.60	0.60	0.41	4.80	4.82	4.80	3.58	5.00	0.72	0.90	0.45	0.60
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	47.70	49.00	45.90	6.60	4.66	53.00	51.10	53.00	40.30	48.00	2.52	2.90	5.25	4.20
Tellurium	0.0010	0.001	0.0010	0.001	0.0010	0.001	0.0010	0.001	0.0010	0.001	0.0010	0.001	0.001	0.001
Tin	0.0010	0.001	0.0010	0.001	0.0010	0.001	0.0010	0.001	0.0010	0.001	0.0010	0.001	0.0010	0.001
Zinc	0.0027	0.0110	0.0177	0.0020	0.0023	0.0040	0.0058	0.0040	0.0053	0.0030	0.0027	0.0040	0.0028	0.0020
pH	7.29	6.91	7.48	6.85	6.83	6.80	7.36	6.80	7.53	7.29	6.96	6.72	7.14	6.77
T.K.N.	4.10	4.00	9.79	11.20	0.20	0.20	9.12	5.50	0.50	1.50	0.20	0.20	0.20	0.20
Total Phosphorus	0.5490	0.6320	0.0301	0.0120	0.0035	1.7100	1.4200	1.7100	0.0790	0.0710	0.0036	0.0170	0.0022	0.0070

*OG = Overgrown plate count

2018 Vermillion River Sampling

Parameter (mg/L)	May		September		Annual Average	
	Upstream	Downstream	Upstream	Downstream	Upstream	Downstream
Alkalinity	14.0	16.0	29.0	29.0	21.5	22.5
Ammonia (as N)	0.01	0.01	0.01	0.01	0.01	0.01
Chloride	1.30	1.30	1.60	2.60	1.45	1.95
Sulphate	6.40	5.90	7.00	7.00	6.70	6.45
BOD_5	0.70	0.60	1.20	1.10	0.95	0.85
Aluminum	0.0442	0.0512	0.0140	0.0120	0.0291	0.0316
Antimony	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Arsenic	0.001	0.001	0.001	0.001	0.001	0.001
Barium	0.0110	0.0114	0.0140	0.0140	0.0125	0.0127
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	4.49	4.61	8.16	8.32	6.33	6.47
Chromium	0.001	0.001	0.001	0.001	0.001	0.001
Cobalt	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001
Copper	0.0022	0.0022	0.0010	0.0010	0.0016	0.0016
Iron	0.17	0.20	0.22	0.21	0.20	0.21
Lead	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001
Magnesium	1.06	1.06	1.92	1.98	1.49	1.52
Manganese	0.0196	0.0300	0.0270	0.0260	0.0233	0.0280
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	0.0027	0.0029	0.0020	0.0020	0.0024	0.0025
Potassium	0.45	0.46	0.80	0.80	0.63	0.63
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	1.13	1.28	1.90	2.50	1.52	1.89
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	0.0021	0.0027	0.0020	0.0010	0.0021	0.0019
pH	7.25	7.14	7.37	7.28	7.31	7.21
T.D.S.	30	30	60	30	45	30
T.K.N.	0.20	0.20	0.30	0.30	0.25	0.25
Total Phosphorus	0.0020	0.0033	0.0040	0.0050	0.0030	0.0042

Monthly Phosphorus Sampling		
Sample Date	Upstream	Downstream
May 16/18	0.0150	0.0140
Jun.14/18	0.0140	0.0140
Jul.18/18	0.0050	0.0054
Aug.2/18	0.0100	0.0110
Sep.19/18	0.0070	0.0070
Oct.16/18	0.0090	0.0100
Annual Average	0.0100	0.0102

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.

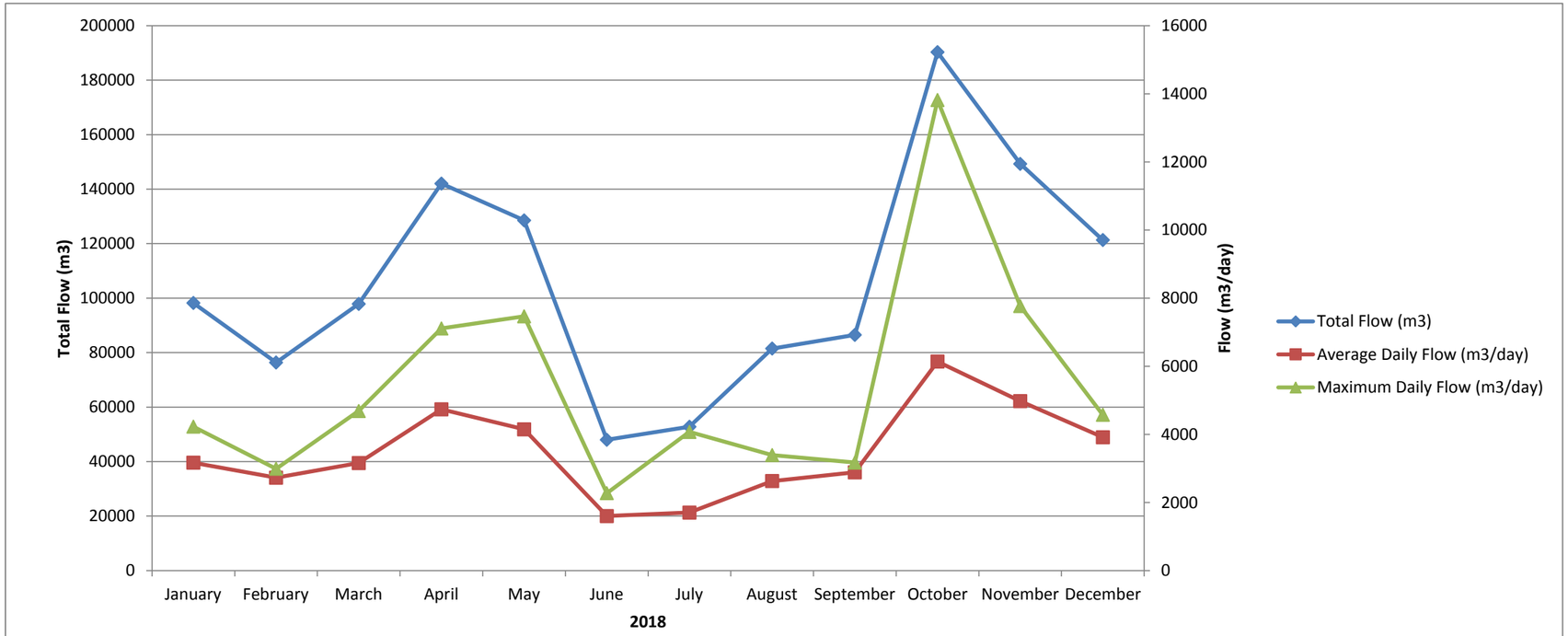
2018 Capreol Lagoon Ground/Surface Water Levels

* Depth in metres from top of casing to water

Well I.D.	Water Level (m)*	Measure Date	Water Level (m)*	Measure Date
OW#1	3.20	June 11/18		
OW#2	1.65	"		
OW#3	3.25	"		
OW#5	6.00	"		
OW#7	Deeper than measuring device	"		
OW#8	5.45	"		
OW#10a	7.15	"		
OW#10b	7.15	"		
OW#11	5.22	"		
OW#12a	1.65	"		
OW#13a	5.70	"		
OW#13b	5.70	"		
OW#14	2.50	"		
OW#15	Dry	"		
OW#16	6.10	"		
OW#21	4.50	"		
OW#22	5.10	"		
OW#23	6.40	"		
OW#24	4.70	"		
OW#25	6.40	"		
OW#26	6.50	"		
OW#28	2.50	"		
OW#30	2.00	"		
River at Bridge	0.20	"		

2018 Chelmsford Wastewater Treatment Plant Performance

Month	Flows			BOD_5	CBOD				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-Ionized	TKN		Nitrite	Nitrate	pH		Alkalinity		Sludge			E.Coli
	Total	Avg Day	Max Day	Raw	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	Geomean
	m^3	m^3/d	m^3/d	mg/L	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	CFU/100mL
January	98224	3169	4227	N/A	72	3.9	12.36	94.6%	133	4.2	13.31	96.8%	3.2	0.43	1.36	86.6%	25.30	6.96	22.05	72.5%	20.47	31.90	8.92	0.34	9.4	7.6	7.0	259	122	1320	1.0	13.2	12736
February	76368	2727	2991	N/A	114	6.9	18.82	93.9%	131	5.5	15.00	95.8%	2.9	0.44	1.20	84.8%	19.60	12.08	32.95	38.4%	30.93	31.30	13.23	2.20	8.2	7.7	7.1	187	102	960	1.3	12.5	19905
March	97867	3157	4685	N/A	190	4.6	14.52	97.6%	176	8.0	25.26	95.5%	3.4	0.40	1.26	88.2%	23.10	6.26	19.76	72.9%	22.24	36.50	7.27	0.25	11.6	7.7	7.1	212	80	1080	1.3	14.0	26491
April	142041	4735	7109	N/A	120	4.6	21.78	96.2%	95	10.1	47.82	89.4%	2.4	0.20	0.95	91.7%	19.40	0.80	3.79	95.9%	1.82	25.60	1.25	0.22	11.3	7.6	7.1	253	104	1040	1.4	14.6	1561
May	128542	4147	7466	2.1	45	4.8	19.90	89.3%	84	7.8	32.34	90.7%	3.1	0.24	1.00	92.3%	10.30	5.42	22.47	47.4%	36.95	15.90	6.42	0.57	4.1	7.8	7.5	295	191	920	1.3	12.0	488
June	48002	1600	2274	140	110	1.7	2.72	98.5%	132	4.1	6.56	96.9%	3.5	0.14	0.22	96.0%	19.20	2.42	3.87	87.4%	19.11	26.20	2.11	0.42	14.0	7.6	6.9	251	80	960	1.9	18.2	44
July	52791	1703	4071	170	170	2.3	3.92	98.6%	252	3.9	6.64	98.5%	4.1	0.33	0.56	92.0%	25.50	3.34	5.69	86.9%	21.49	31.50	3.65	0.76	10.8	7.4	6.9	216	70	760	1.8	13.7	54
August	81504	2629	3391	160	130	7.5	19.72	94.2%	164	11.9	31.29	92.7%	4.3	0.26	0.68	94.0%	24.70	2.80	7.36	88.7%	13.42	26.80	3.93	8.60	8.3	7.3	6.5	222	17	1240	1.8	22.3	232
September	86505	2884	3170	336	290	13.4	38.64	95.4%	327	14.0	40.37	95.7%	4.7	0.42	1.21	91.1%	36.00	0.28	0.81	99.2%	0.32	53.90	2.75	5.83	9.5	7.3	6.6	255	23	920	1.8	16.6	170
October	190299	6139	13818	120	96	1.3	7.98	98.6%	125	5.8	35.60	95.4%	2.9	0.19	1.17	93.4%	25.20	0.52	3.19	97.9%	0.86	29.00	0.87	0.20	12.8	7.4	7.0	279	145	1040	0.6	6.2	99
November	149269	4976	7767	110	79	2.0	9.95	97.5%	133	7.9	39.31	94.1%	3.0	0.34	1.69	88.7%	8.70	1.35	6.72	84.5%	4.10	13.00	2.45	0.01	10.3	7.3	7.0	278	193	1040	0.5	5.2	69
December	121331	3914	4574	130	173	2.7	10.57	98.4%	128	12.3	48.14	90.4%	3.4	0.22	0.86	93.5%	17.70	3.72	14.56	79.0%	7.11	18.20	4.80	0.63	9.35	7.4	6.8	252	163	800	1.5	12.0	5688
Total	1272743							96.5%				94.4%				91.1%				83.2%										12080		160.5	
Average		3487			132	4.64	15.07	96.1%	157	7.96	28.47	94.3%	3.41	0.30	1.01	91.0%	21.23	3.83	11.9	79.2%	14.9	28.32	4.80	1.67	9.97	7.51	6.96	247	108		1.35		5628
Summer						5.17	15.48	96.2%		7.92	25.47	95.1%		0.26	0.81	92.9%	2348.3%	2.46	7.23	90.1%													
Winter						4.12	14.67	96.8%		8.00	31.47	93.6%		0.34	1.22	89.3%	1896.7%	5.20	16.64	75.7%													



Plant Type: Extended Aeration w/modified activated sludge for denitrification
Design Capacity: 7100 m^3/day
Population Served: 7,147 (Plant & Lagoon)
Compliance Parameters: 232

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

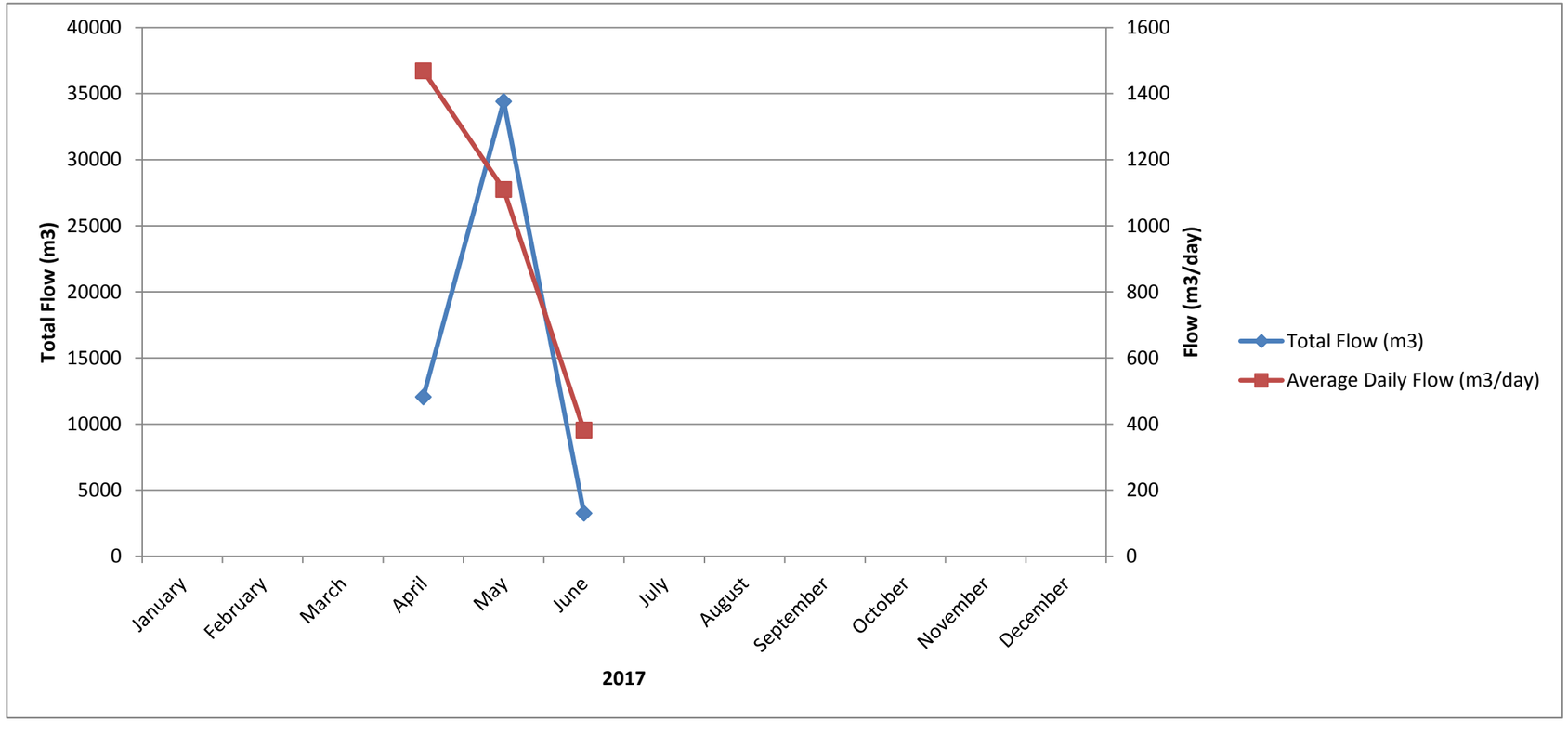
UV Disinfection turned off.

2018 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)	20.8	10.8	38.8	36.4	19.8	155.0	9.41	28.7	17.2	14.2	2.1	14.3	30.6
Nitrate (as N)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.02	0.02	0.02	0.08
Nitrite (as N)	0.03	0.03	0.03	0.53	0.03	2.11	0.03	0.75	2.61	0.01	0.008	0.008	0.51
Potassium	58.0	84.0	72.0	55.0	35.0	51.0	21.3	46.6	29.0	38.0	14.0	61.0	47.1
TKN	399	821	745	72	656	901	29.9	642	456	370	146	846	507
Total Phosphorus	198	236	14	211	209	349	56.8	361	170	97	38	297	186
Total Solids	8730	14200	8720	15900	17000	17900	4310	24600	9210	5690	2410	13400	11839
Arsenic	0.0240	0.0440	0.0410	0.0570	0.0490	0.0890	0.011	0.0820	0.0100	0.0200	0.0100	0.0700	0.0423
Cadmium	0.0045	0.0061	0.0062	0.0073	0.0092	0.0202	0.0021	0.0094	0.0028	0.0036	0.0013	0.0069	0.0066
Chromium	0.105	0.184	0.189	0.159	0.209	0.288	0.046	0.323	0.060	0.070	0.030	0.170	0.153
Cobalt	0.037	0.064	0.099	0.096	0.105	0.191	0.063	0.112	0.029	0.040	0.043	0.152	0.086
Copper	3.37	4.08	3.90	3.54	3.43	6.21	1.23	5.47	0.460	1.90	0.89	4.20	3.22
Lead	0.0920	0.1310	0.1280	0.1170	0.1260	0.2390	0.0340	0.2500	0.0550	0.0640	0.0260	0.1270	0.1158
Mercury	0.0010	0.0019	0.0045	0.0049	0.0012	0.0100	0.0010	0.0076	0.0010	0.0030	0.0010	0.0030	0.0033
Molybdenum	0.0310	0.0330	0.0430	0.0510	0.0290	0.0360	0.0110	0.0950	0.0100	0.0200	0.0100	0.0600	0.0358
Nickel	0.40	0.59	0.55	0.75	2.34	1.63	0.16	0.80	0.16	0.25	0.26	0.88	0.73
Selenium	0.0210	0.0270	0.0210	0.0260	0.0340	0.0600	0.0100	0.0360	0.0100	0.0100	0.0070	0.0280	0.0242
Zinc	2.18	3.92	3.20	3.00	3.83	6.06	0.96	3.87	2.03	1.58	0.65	3.49	2.90
Sample Date	Jan.3/18	Feb.7/18	Mar.7/18	Apr.4/18	May 9/18	Jun.6/18	Jul.4/18	Aug.8/18	Sep.5/18	Oct.3/18	Nov.7/18	Dec.4/18	

2018 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					0.00			0.00			0.00		0.00		
February					0.00			0.00			0.00		0.00		
March					0.00			0.00			0.00		0.00		
April	12056	1469	130		0.00	40		0.00	1.25		0.00	6.38	0.00		
May	34407	1110	280		0.00	276		0.00	4.70		0.00	18.10	0.00		
June	3259	382	20		0.00	39.3		0.00	1.9		0.00	1.41	0.54		
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	49722														
Average		136	143		0.00	118		0.00	2.61		0.00	8.63	0.04		



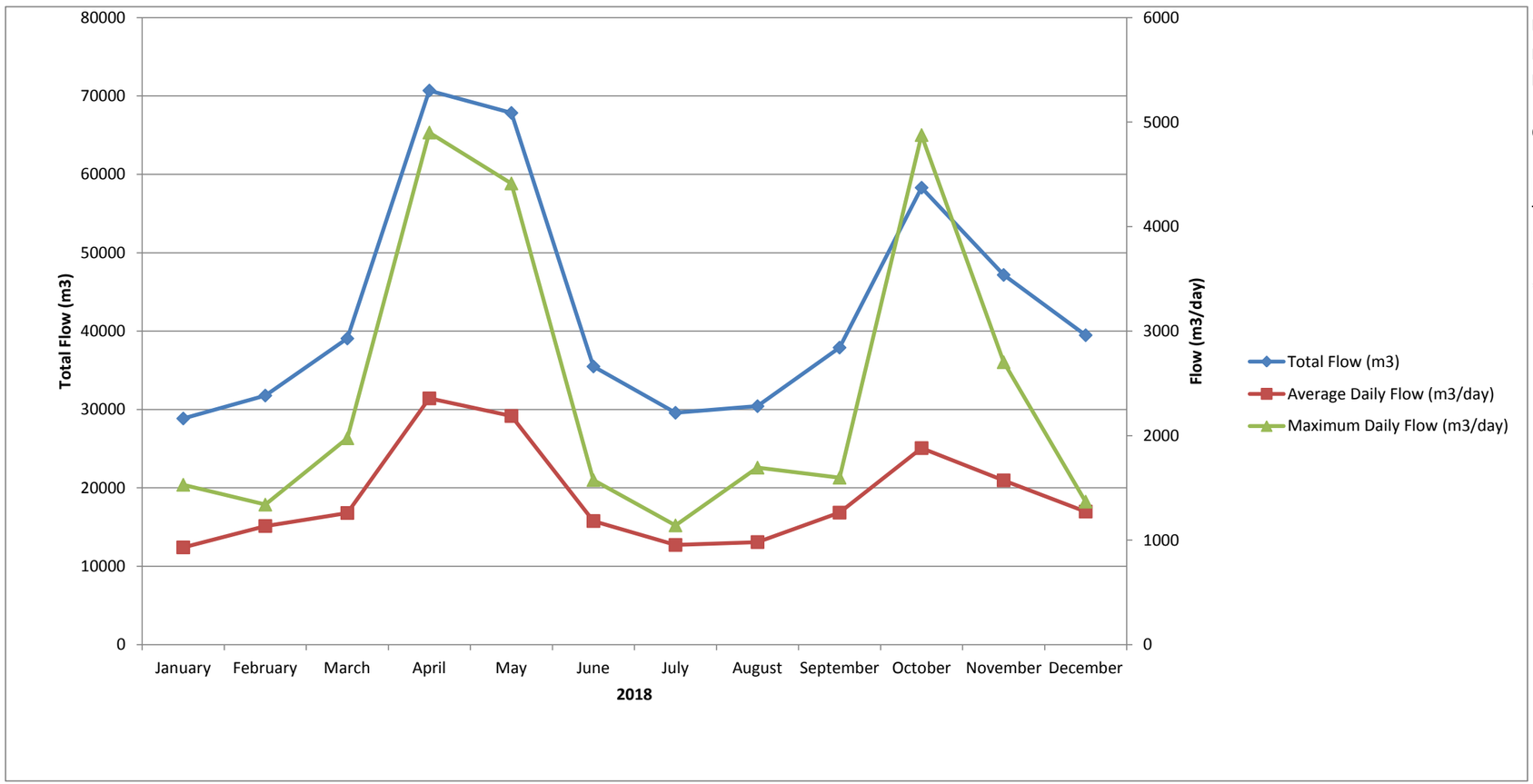
Lagoon Type: Seasonal Retentional
Design Capacity: 824 m^3/day
Population Served: Delivery to Chelmsford WWTP

Compliance Parameters:

	Concentration	
BOD_5	30 mg/L	Annual Average
TSS	40 mg/L	Annual Average

2018 Coniston Wastewater Treatment Plant Performance

Month	Flows			BOD_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	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	Hauled	%	m^3	Kg	mg/L	# Col./100mL
January	28853	931	1530	140	30.6	28.48	78.1%	133	25.8	24.01	80.6%	4.2	2.12	1.97	49.5%	22.20	15.90	14.80	28.4%	29.4	18.20	0.03	0.12	7.7	7.2	178	145	80	1.2	1.0	55.8	0.81	145
February	31779	1135	1340	120	14.0	15.89	88.3%	136	20.6	23.38	84.9%	4.8	2.42	2.75	49.6%	21.90	16.60	18.84	24.2%	25.9	19.10	0.03	0.16	7.5	7.0	180	143	80	0.8	0.6	49.1	0.90	150
March	39056	1260	1975	140	16.0	20.16	88.6%	121	15.9	20.01	86.9%	4.8	2.03	2.56	57.7%	28.00	15.00	18.90	46.4%	21.8	15.50	0.03	0.15	7.6	7.0	193	144	280	1.2	3.4	56.3	0.66	666
April	70690	2356	4900	100	4.8	11.31	95.2%	103	14.4	33.88	86.0%	3.6	1.41	3.32	60.8%	15.40	9.11	21.47	40.8%	17.2	9.70	0.28	0.19	7.2	7.0	163	164	160	1.9	3.0	64.1	0.86	700
May	67837	2188	4413	81	14.0	30.64	82.7%	144	18.1	39.54	87.5%	2.7	1.06	2.32	60.7%	48.20	0.17	0.37	99.6%	0.39	0.38	0.03	1.48	7.1	7.1	190	124	160	0.8	1.3	80.0	0.87	2
June	35487	1183	1575	110	7.2	8.52	93.5%	114	12.3	14.55	89.2%	3.8	2.12	2.51	44.2%	20.40	13.80	16.32	32.4%	37.4	12.60	0.20	0.28	7.2	7.1	201	151	240	1.1	2.6	38.3	0.66	2
July	29582	954	1141	170	3.0	2.86	98.2%	147	6.9	6.57	95.3%	5.9	2.53	2.41	57.1%	28.10	1.51	1.44	94.6%	7.0	2.56	0.31	1.43	7.3	6.9	212	92	320	1.0	3.2	47.0	0.53	8
August	30425	981	1694	100	1.1	1.08	98.9%	156	5.8	5.72	96.3%	3.6	2.06	2.02	42.8%	20.90	0.33	0.33	98.4%	1.3	1.20	0.03	1.92	7.5	6.9	171	76	280	1.3	3.6	51.1	0.46	2
September	37896	1263	1598	160	3.0	3.79	98.1%	155	4.8	6.01	96.9%	3.4	1.75	2.21	48.5%	9.40	0.12	0.15	98.7%	0.3	1.50	0.03	6.00	7.4	6.9	163	83	240	1.8	4.3	54.5	0.48	2
October	58300	1881	4876	33	5.3	9.97	83.9%	89	8.5	15.91	90.5%	1.9	0.96	1.81	49.5%	8.20	0.08	0.15	99.0%	0.2	1.50	0.01	10.10	7.1	7.0	123	107	240	1.8	4.3	104.3	0.64	160
November	47165	1572	2703	88	6.2	9.75	93.0%	82	6.4	10.05	92.2%	3.3	1.06	1.67	67.9%	21.30	0.06	0.09	99.7%	0.1	1.40	0.01	8.68	7.0	6.7	180	102	320	2.2	7.0	111.1	0.48	118
December	39476	1273	1368	110	4.7	5.99	95.7%	122	8.2	10.44	93.3%	3.9	1.36	1.73	65.1%	19.60	0.86	1.10	95.6%	1.3	2.70	3.31	6.41	7.1	6.9	200	96	160	2.1	3.4	140.9	0.73	992
Total	516546																											17.2		852.5			
Average		1415		113	9.16	12.37	91.7%	125	12.30	17.51	89.8%	3.83	1.74	2.27	55.6%	21.97	6.13	7.83	75.3%	11.86	7.20	0.36	3.08	7.31	6.98	180	119		3.15			0.67	41



Plant Type: Extended Aeration
Design Capacity: 3000 m^3/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

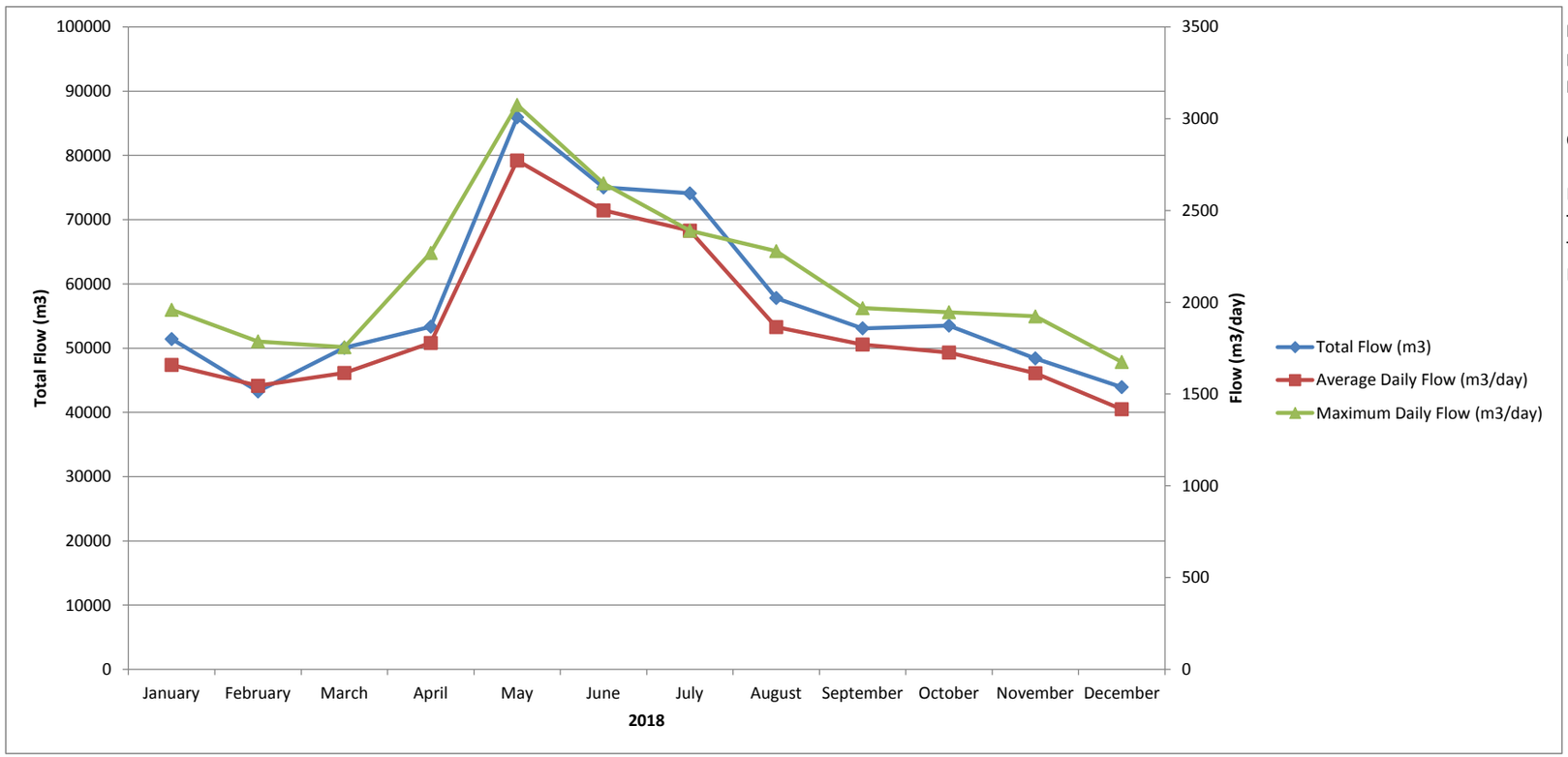
* Average of any 12 consecutive month period.

2018 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)	37.8	22.5	173	70.5	125	23.3	27.9	4.24	0.9	23.8	3.8	10.8	43.6
Nitrate (as N)	0.1	0.1	0.64	0.1	0.1	0.12	0.1	0.1	0.1	0.02	0.02	0.02	0.13
Nitrite (as N)	0.711	0.03	7.73	0.818	1.26	0.03	0.731	0.03	0.03	1.93	0.008	0.008	1.11
Potassium	15.6	10	44.3	63	31.7	25.3	32.1	37.8	49	110	44	38	41.7
TKN	123	49.1	990	833	620	321	39.7	353	1160	1260	416	410	548
Total Phosphorus	37.1	12	222	280	149	84.7	154	96.3	136	269	114	13.7	130.7
Total Solids	2290	980	19600	19100	9300	5860	10100	8680	9970	17400	7980	8180	9953
Arsenic	0.01	0.01	0.014	0.044	0.026	0.02	0.01	0.019	0.04	0.07	0.03	0.03	0.0269
Cadmium	0.0025	0.0010	0.0065	0.0247	0.0146	0.0115	0.0045	0.0099	0.0130	0.0231	0.0105	0.0096	0.0109
Chromium	0.0280	0.0100	0.0740	0.2500	0.1120	0.0880	0.0590	0.1000	0.1600	0.2700	0.1200	0.1100	0.1151
Cobalt	0.0189	0.0046	0.0459	0.1120	0.0586	0.0641	0.0424	0.0688	0.1400	0.2850	0.1900	0.2040	0.1029
Copper	1.04	0.231	2.64	8.71	3.53	3.49	1.8	4.45	6.5	10.9	4.3	3.7	4.274
Lead	0.0320	0.0100	0.1040	0.3030	0.1280	0.1290	0.0625	0.1760	0.2580	0.4110	0.1470	0.1300	0.1575
Mercury	0.0010	0.0010	0.0010	0.0014	0.0010	0.0010	0.0010	0.0010	0.0010	0.0020	0.0010	0.0010	0.0011
Molybdenum	0.0100	0.0100	0.0130	0.0140	0.0160	0.0100	0.0100	0.0250	0.0100	0.0700	0.0300	0.0200	0.0198
Nickel	0.52	0.14	1.18	4.75	2.81	2.11	0.80	1.27	2.50	4.50	3.00	2.30	2.16
Selenium	0.0100	0.0100	0.0160	0.0390	0.0230	0.0280	0.0170	0.0220	0.0400	0.0700	0.0310	0.0270	0.0278
Zinc	0.75	0.22	2.60	9.68	3.56	3.68	1.71	4.13	5.67	8.30	3.17	3.11	3.88
Sample Date	Jan.11/18	Feb.13/18	Mar.7/18	Apr.10/18	May 15/18	Jun.5/18	Jul.3/18	Aug.9/18	Sep.5/18	Oct.4/18	Nov.6/18	Dec.4/18	

2018 Dowling Wastewater Treatment Plant Performance

Month	Flows			BOD_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	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	Hauled	%	m^3	Kg	mg/L	CFU/100mL
January	51416	1658.6	1959	34	4.4	7.30	87.1%	28	3.6	5.97	87.1%	1.2	0.61	1.01	49.2%	3.54	1.51	2.50	57.3%	1.26	1.93	0.21	3.65	6.7	6.6	71	50	160	1.3	2.1	152.5	0.76	9
February	43254	1544.8	1787	31	4.4	6.80	85.8%	38	4.8	7.41	87.4%	1.1	0.54	0.83	50.9%	4.01	1.60	2.47	60.1%	1.99	1.70	0.03	4.13	6.8	7.2	72	48	120	1.2	1.4	127.4	0.86	6
March	50060	1614.8	1755	31	5.0	8.07	83.9%	35	3.8	6.14	89.1%	1.4	0.69	1.11	50.7%	4.10	1.70	2.75	58.5%	1.24	2.81	0.03	3.92	6.8	6.6	73	50	160	1.0	1.6	134.0	0.74	2
April	53344	1778.1	2269	27	6.3	11.20	76.7%	43	4.0	7.11	90.7%	1.2	0.61	1.08	49.2%	4.00	1.98	3.52	50.5%	1.34	2.81	0.29	3.38	6.8	6.7	75	53	160	1.1	1.8	135.0	0.71	29
May	85938	2772.2	3075	26	5.0	13.86	80.8%	26	5.2	14.42	80.0%	1.2	0.58	1.61	51.7%	2.83	0.93	2.58	67.1%	0.58	1.60	0.75	3.50	6.8	6.7	71	48	200	1.0	2.0	155.2	0.75	5
June	75013	2500.4	2648	33	4.9	12.25	85.2%	73	5.6	14.00	92.3%	1.2	0.52	1.30	56.7%	2.70	0.94	2.35	65.2%	1.24	1.45	0.25	4.45	6.7	6.7	67	45	120	1.9	2.3	135.9	0.70	5
July	74098	2390.3	2390	48	4.6	11.00	90.4%	56	6.3	15.06	88.8%	1.4	0.57	1.36	59.3%	2.80	0.52	1.24	81.4%	0.70	2.00	0.24	4.79	6.7	6.5	73	45	160	1.1	1.8	146.2	0.68	8
August	57809	1864.8	2279	0.5	5.0	9.32	-900.0%	41	11.1	20.70	72.9%	1.2	0.70	1.31	41.7%	3.10	0.24	0.45	92.3%	0.25	1.30	0.29	5.17	6.8	6.7	70	44	160	0.7	1.1	147.4	0.75	5
September	53089	1769.6	1968	50	3.7	6.55	92.6%	55	5.3	9.38	90.4%	1.3	0.66	1.17	49.2%	2.90	0.05	0.09	98.3%	0.05	1.50	0.03	5.30	6.7	6.6	66	40	160	0.8	1.3	148.5	0.73	8
October	53507	1726	1946	27	4.5	7.77	83.3%	46	6.1	10.53	86.7%	1.0	0.59	1.02	41.0%	3.40	0.10	0.17	97.1%	0.12	1.00	0.01	6.06	6.7	6.7	73	41	120	0.9	1.1	136.8	0.64	20
November	48407	1613.6	1923	3	4.7	7.58	-56.7%	37	5.0	8.07	86.5%	1.2	0.65	1.05	45.8%	2.60	0.12	0.19	95.4%	0.11	1.30	0.22	5.20	6.7	6.5	77	44	120	1.5	1.8	153.0	0.65	15
December	43933	1417.2	1675	20	6.0	8.50	70.0%	41	5.3	7.51	87.1%	1.3	0.56	0.79	56.9%	2.50	0.16	0.23	93.6%	0.14	0.90	0.39	5.17	6.7	6.6	67	40	80	1.8	1.4	147.3	0.63	16
Total	689868																											1720		19.6			
Average		1890		28	4.88	9.18	82.8%	43	5.51	10.52	87.3%	1.23	0.61	1.14	50.9%	3.21	0.82	1.55	74.1%	0.75	1.69	0.23	4.56	6.74	6.68	71	46		1.19			0.72	11



Plant Type: Extended Aeration
Design Capacity: 3200 m^3/day
Population Served: 1,857

Compliance Parameters:

	Conc.	Loading	
BOD_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

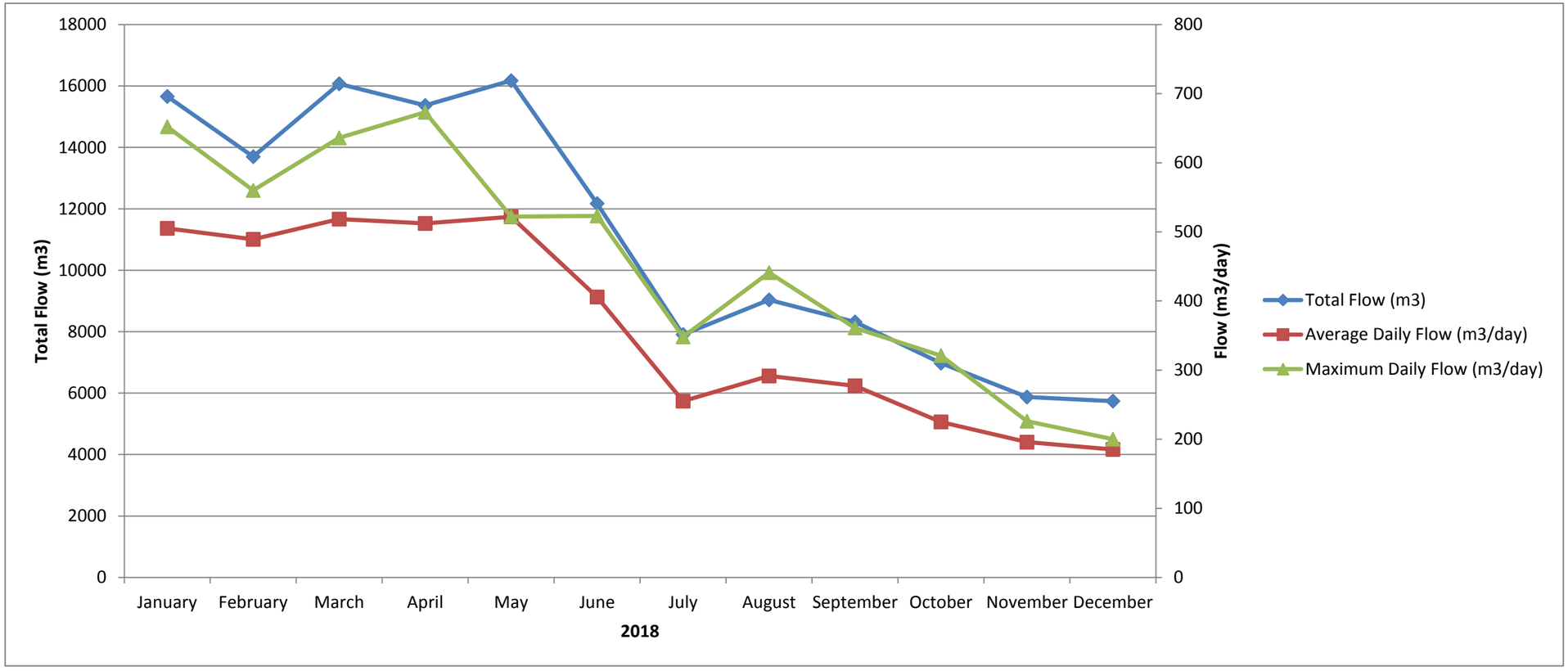
2018 Dowling Wastewater Treatment Plant Waste Sludge Analysis

Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	1.695	1.18	2.23	9.76	0.841	0.623	0.322	0.265	1.04	0.3	0.8	0.82	1.7
Nitrate (as N)	0.9	1.76	1.83	1.34	1.62	2.72	2.63	3.33	3.97	3.57	0.296	0.506	2.04
Nitrite (as N)	0.274	0.27	0.03	0.25	0.538	0.542	0.28	0.03	0.03	0.008	2.81	1.65	0.56
Potassium	14.15	7.5	12	10.9	8.6	7.6	7.6	6.8	9	9	10	12	9.60
TKN	138.9	64.7	106	88.6	99.8	19.5	57.5	62.4	103	79	116	97.8	86.10
Total Phosphorus	16.6	12.2	21.2	21.6	19	13.6	12.9	11	13.3	16.3	20	26.9	17.05
Total Solids	1670	1310	1980	3170	1640	1140	1000	1060	1530	1080	1900	1230	1559.17
Arsenic	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Cadmium	0.0012	0.0010	0.0010	0.0010	0.0010	0.0010	0.0006	0.0008	0.0005	0.0006	0.0008	0.0060	0.00
Chromium	0.0245	0.0130	0.0170	0.0240	0.0140	0.0130	0.0160	0.0260	0.0230	0.0200	0.0300	0.0200	0.02
Cobalt	0.0032	0.0016	0.0024	0.0026	0.0019	0.0015	0.0017	0.0029	0.0025	0.0030	0.0030	0.0020	0.00
Copper	1.8645	0.79	0.874	1.11	0.824	0.691	0.773	1.16	1.11	1.03	1.3	1.02	1.05
Lead	0.0240	0.0110	0.0170	0.0200	0.0110	0.0130	0.0120	0.0505	0.0130	0.0190	0.0200	0.0130	0.02
Mercury	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.00
Molybdenum	0.0110	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.01
Nickel	0.0623	0.0280	0.0430	0.0480	0.0390	0.0310	0.0290	0.0570	0.0520	0.0500	0.0600	0.0300	0.04
Selenium	0.0105	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0050	0.0050	0.01
Zinc	0.41	0.28	0.33	0.42	0.27	0.26	0.28	0.43	0.36	0.34	0.47	0.27	0.34
Sample Date	Jan.3/18	Feb.21/18	Mar.7/18	Apr.4/18	May 9/18	Jun.6/18	Jul.3/18	Aug.15/18	Sep.4/18	Oct.3/18	Nov.5/18	Dec.5/18	

Jan.31/18

2018 Falconbridge Wastewater Treatment Plant Performance

Month	Flows			BOD_5				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			CFU/100mL
January	15658	505	652	170	1.0	0.51	99.4%	159	2.1	1.06	92.2%	7.0	0.02	0.01	99.7%	43.8	1.00	0.51	97.7%	0.53	1.00	0.03	0.43	7.6	6.9	120
February	13697	489	560	220	0.5	0.24	99.8%	131	2.6	1.27	91.0%	10.0	0.03	0.01	99.7%	71.7	0.49	0.24	99.3%	0.46	1.10	0.30	1.00	7.5	6.9	30
March	16070	518	636	260	1.2	0.62	99.5%	194	2.0	1.04	96.0%	7.7	0.03	0.02	99.6%	48.8	0.32	0.17	99.3%	0.37	0.59	0.30	1.20	7.5	7.0	200
April	15366	512	673	313	1.0	0.51	99.7%	267	4.0	2.05	95.2%	10.3	0.02	0.01	99.8%	59.8	0.24	0.12	99.6%	0.26	0.64	0.03	0.88	7.5	7.0	160
May	16172	522	522	200	1.1	0.57	99.5%	193	3.2	1.67	91.7%	6.7	0.02	0.01	99.7%	6.1	4.97	2.59	18.4%	N/A	6.85	0.03	0.29	7.4	7.0	8
June	12172	406	523	334	0.5	0.20	99.9%	230	3.5	1.42	95.4%	8.4	0.03	0.01	99.6%	49.6	0.10	0.04	99.8%	0.29	0.23	0.03	0.10	7.3	7.0	4
July	7908	255	348	160	1.3	0.33	99.2%	131	9.0	2.30	56.7%	5.7	0.19	0.05	96.7%	44.6	0.01	0.00	100.0%	0.04	0.71	0.03	0.10	7.3	6.8	22
August	9035	291	441	180	1.2	0.35	99.3%	84	4.9	1.43	67.4%	6.5	0.05	0.01	99.2%	43.4	0.21	0.06	99.5%	0.80	0.53	0.03	0.10	7.3	6.9	2890
September	8318	277	361	170	0.8	0.22	99.5%	87	3.1	0.86	78.9%	2.9	0.04	0.01	98.6%	49.3	0.12	0.03	99.8%	0.24	0.91	0.30	1.00	7.2	6.8	1000
October	6975	225	321	140	0.5	0.11	99.6%	93	5.9	1.33	54.5%	5.8	0.02	0.00	99.7%	34.9	0.10	0.02	99.7%	0.14	0.40	0.01	0.02	7.3	6.8	60
November	5872	196	226	130	3.1	0.61	97.6%	110	3.1	0.61	77.8%	8.1	0.02	0.00	99.8%	49.1	0.12	0.02	99.8%	0.09	0.30	0.01	0.32	6.9	6.7	10
December	5740	185	200	300	5.7	1.06	98.1%	124	2.5	0.46	93.1%	9.6	0.01	0.00	99.9%	53.4	0.11	0.02	99.8%	0.09	0.40	0.01	0.51	7.1	6.8	10
Total	132983																									
Average		364		215	1.49	0.44	99.5%	150	3.83	1.29	91.1%	7.39	0.04	0.01	99.5%	46.21	0.65	0.32	98.1%	0.30	1.14	0.09	0.50	7.33	6.88	376



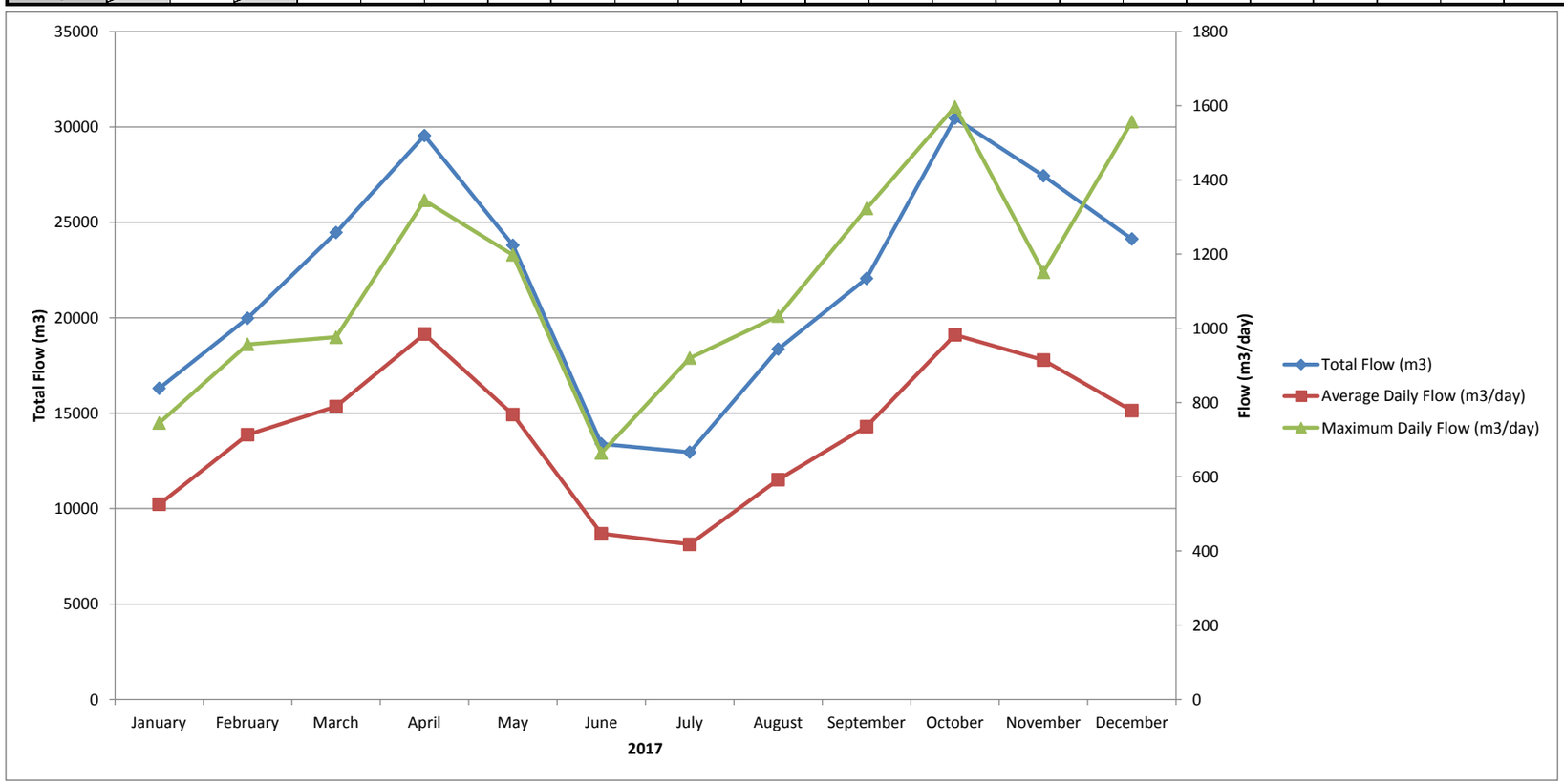
Plant Type: Trickling Filter
Design Capacity: 909 m^3/day
Population Served: 754

Compliance Parameters:

	Conc.	Loading	
BOD_5	15 mg/L	46 kg/day	Annual Avg.
TSS	15 mg/L	46 kg/day	Annual Avg.

2018 Levack Wastewater Treatment Plant Performance

Month	Flows			CBOD				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	CFU/100mL
January	16303	526	745	135	3.1	1.63	97.7%	133	6.7	3.52	95.0%	2.9	0.36	0.19	87.6%	24.20	18.45	9.70	23.8%	33.39	28.4	20.20	0.11	3.6	7.2	7.0	156	154	200	2.5	5.0	19.8	0.81	33
February	19976	713	957	120	2.6	1.85	97.8%	148	5.6	4.00	96.2%	5.4	0.43	0.31	92.0%	21.50	18.70	13.34	13.0%	60.04	27.7	23.00	0.03	2.2	7.3	7.3	139	141	160	2.3	3.68	15.4	0.64	12
March	24466	789	976	120	2.1	1.66	98.3%	134	4.8	3.79	96.4%	2.9	0.33	0.26	88.6%	22.60	16.10	12.71	28.8%	16.38	23.4	17.60	0.03	3.1	7.3	7.1	146	131	160	2.1	3.4	20.9	0.91	6
April	29545	985	1345	120	3.7	3.64	96.9%	124	8.7	8.57	93.0%	3.5	0.55	0.54	84.3%	17.40	15.90	15.66	8.6%	47.08	24.3	17.30	0.42	1.4	7.2	7.2	140	138	160	2.2	3.5	25.8	0.73	19
May	23799	768	1198	85	5.0	3.84	94.1%	139	5.5	4.22	96.0%	2.2	0.32	0.25	85.5%	11.60	11.20	8.60	3.4%	18.80	13.1	12.10	1.35	2.0	7.1	7.0	108	98	200	2.0	4.0	27.8	0.73	88
June	13393	446	664	130	1.8	0.80	98.6%	235	7.7	3.44	96.7%	5.3	0.58	0.26	89.1%	23.00	3.27	1.46	85.8%	5.14	26.2	6.56	0.65	13.1	7.2	6.5	161	52	120	1.9	2.3	46.1	0.74	46
July	12953	418	920	260	1.2	0.50	99.5%	246	3.7	1.55	98.5%	5.6	0.41	0.17	92.7%	28.40	0.27	0.11	99.0%	0.33	42.9	0.60	0.03	24.2	7.1	6.4	177	46	200	1.9	3.8	68.9	0.75	24
August	18359	592	1033	180	2.5	1.48	98.6%	197	5.3	3.14	97.3%	4.6	0.47	0.28	89.8%	38.80	0.27	0.16	99.3%	0.28	46.3	0.65	0.03	21.1	7.2	6.4	214	27	160	0.6	1.0	60.7	0.88	2
September	22056	735	1323	170	2.3	1.69	98.6%	184	4.5	3.31	97.6%	3.0	0.38	0.28	87.3%	25.50	0.30	0.22	98.8%	0.48	36.1	0.37	0.03	19.5	7.0	6.5	165	37	160	1.0	1.6	67.2	0.66	4
October	30458	983	1597	110	0.5	0.49	99.5%	158	4.8	4.72	97.0%	3.6	0.40	0.39	88.9%	22.90	0.09	0.09	99.6%	0.06	27.6	0.90	0.01	20.0	7.0	6.4	138	34	200	1.4	2.8	81.0	0.79	6
November	27436	915	1151	140	4.9	4.48	96.5%	145	7.1	6.49	95.1%	2.9	0.30	0.27	89.7%	21.10	0.05	0.05	99.8%	0.05	29.7	0.20	0.01	19.2	6.9	6.6	152	39	160	0.6	1.0	65.1	0.82	3
December	24127	778	1557	89	4.5	3.50	94.9%	214	7.6	5.92	96.4%	4.4	0.31	0.24	93.0%	34.60	0.24	0.19	99.3%	0.21	48.1	0.30	0.01	20.4	7.1	6.6	173	59	160	2.4	3.8	46.4	0.71	0
Total	262871																												2040		35.8			
Average		720		138	2.85	2.13	97.8%	171	6.00	4.39	96.3%	3.86	0.40	0.29	89.3%	24.30	7.07	5.19	69.5%	15.19	31.15	8.32	0.23	12.48	7.13	6.75	156	80		1.74			0.76	20



Plant Type: Extended Aeration
Design Capacity: 2270 m^3/day
Population Served: 2,320

Compliance Parameters:

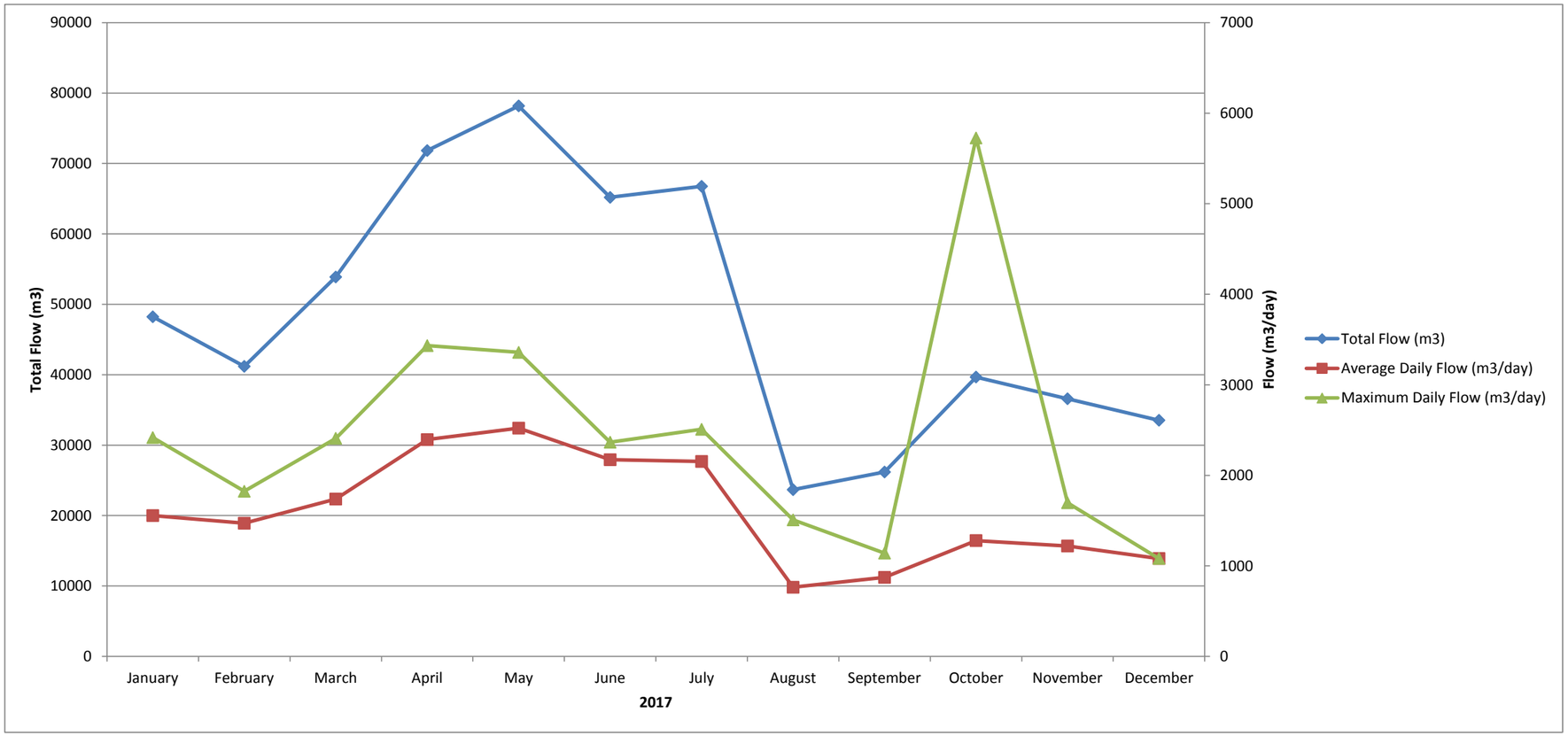
	Conc.	Loading	
CBOD	25 mg/L	56.75 kg/day	Annual Average
TSS	25 mg/L	56.75 kg/day	Annual Average
Total Phosphorus	1.0 mg/L	3.1 kg/day	Monthly Average
pH	6.0 to 9.5 inclusive, at all times		
E.Coli	200 col/100 mL		Monthly Geometric Mean

2018 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)	108.5	21.8	119	16.7	133	138	93.2	14.7	6.9	0.9	0.2	15.5	55.7
Nitrate (as N)	0.295	0.95	0.26	0.8	0.1	0.1	0.1	0.1	4.11	18.3	18.2	0.02	3.61
Nitrite (as N)	3.075	0.03	1.14	0.03	2.93	0.829	0.729	0.03	2	1.89	0.648	1.79	1.26
Potassium	100.5	18.9	80	16.3	72	67	68.6	24.8	18.5	19	15	89	49.1
TKN	944	121	1860	56	1570	1190	1220	31.1	63.2	121	72	917	680.4
Total Phosphorus	459	33.1	509	15.1	503	432	413	107	29.6	46.6	30.5	377	246.2
Total Solids	20150	2220	21400	1200	20700	18000	19700	5720	2430	2510	1460	13700	10766
Arsenic	0.024	0.01	0.031	0.01	0.011	0.048	0.037	0.011	0.01	0.01	0.01	0.04	0.0210
Cadmium	0.0135	0.0011	0.0163	0.0010	0.0171	0.0326	0.0228	0.0059	0.0019	0.0022	0.0007	0.0161	0.0109
Chromium	0.9500	0.0140	0.2830	0.0110	0.2450	0.4480	0.4990	0.1260	0.0450	0.0300	0.0100	0.2600	0.2434
Cobalt	0.0994	0.0075	0.1520	0.0077	0.2370	0.3290	0.1400	0.0332	0.0154	0.0210	0.0160	0.1370	0.0996
Copper	6.935	0.723	7.38	0.334	6.7	11.3	11.8	3.51	1.44	1.23	0.51	9.2	5.09
Lead	0.3345	0.0370	0.4580	0.0170	0.4540	0.7250	0.6580	0.2190	0.0873	0.0820	0.0250	0.4910	0.2990
Mercury	0.0070	0.0010	0.0089	0.0010	0.0069	0.0135	0.0152	0.0010	0.0010	0.0010	0.0010	0.0120	0.0058
Molybdenum	0.1445	0.0100	0.0400	0.0100	0.0330	0.0490	0.0480	0.0180	0.0100	0.0100	0.0100	0.0600	0.0369
Nickel	2.72	0.24	2.63	0.17	4.41	4.60	2.30	0.76	0.35	0.33	0.20	2.50	1.77
Selenium	0.0240	0.0100	0.0300	0.0100	0.0100	0.0610	0.0490	0.0130	0.0100	0.0100	0.0050	0.0380	0.0225
Zinc	5.54	0.50	6.44	0.30	5.83	10.30	8.80	2.48	1.00	0.92	0.45	6.95	4.13
Sample Date	Jan.2/18 Jan.31/18	Feb.21/18	Mar.7/18	Apr.4/18	May 8/18	Jun.5/18	Jul.3/18	Aug.14/18	Sep.4/18	Oct.3/18	Nov.5/18	5-Dec-18	

2018 Lively Wastewater Treatment Plant Performance

Month	Flows				BOD_5	CBOD				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	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	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	CFU/100mL
January	48229	1556	2417	1064	170	N/A	0.5	0.78	N/A	193	5.9	9.18	98.0%	4.2	0.25	0.39	96.2%	39.40	21.90	34.07	64.2%	39.97	42.4	21.70	0.03	0.40	7.2	7.1	213	118	40	3.3	1.3	36.3	0.70	4
February	41188	1471	1824	1750	150	N/A	0.5	0.74	N/A	129	8.5	12.50	94.7%	3.9	0.36	0.53	92.6%	52.50	20.00	29.42	69.3%	43.10	66.8	21.10	0.03	0.37	7.3	7.3	247	112	120	1.9	2.3	22.8	0.74	32
March	53878	1738	2409	2310	120	N/A	3.0	5.21	N/A	184	5.9	10.25	97.7%	4.8	0.32	0.56	95.2%	30.60	24.80	43.10	41.5%	90.51	33.3	26.60	0.03	1.09	7.2	7.2	166	115	120	2.1	2.5	31.5	0.68	13
April	71835	2395	3433	5674	190	N/A	2.9	6.94	N/A	86	9.2	22.03	92.5%	3.6	0.29	0.69	94.4%	32.70	18.50	44.30	60.5%	107.28	32.7	21.40	0.15	1.42	7.5	7.1	168	114	160	2.2	3.5	40.2	0.68	13
May	78174	2522	3358	9261	150	91	2.9	7.31	96.8%	91	7.8	19.67	93.6%	4.0	0.31	0.78	94.2%	13.90	11.60	29.25	37.3%	8.59	19.5	13.10	1.15	2.49	7.3	6.9	148	31	40	2.5	1.0	53.5	0.71	13
June	65185	2173	2366	6169	140	110	1.8	3.91	98.4%	95	7.9	17.17	92.4%	3.7	0.28	0.61	93.1%	34.10	19.80	43.02	46.7%	28.19	41.5	18.10	0.59	0.40	7.3	6.7	187	115	120	2.3	2.8	60.4	0.56	10
July	66756	2153	2508	5188	160	140	1.4	3.01	99.0%	138	12.3	26.49	92.3%	4.5	0.58	1.25	88.9%	36.10	0.29	0.62	99.3%	0.22	49.8	0.81	0.03	17.40	7.1	6.5	201	61	40	2.2	0.9	142.8	0.50	67
August	23675	764	1508	4762	70	58	3.0	2.29	94.8%	200	15.6	11.91	96.0%	3.7	0.44	0.34	94.0%	19.60	1.77	1.35	95.4%	2.65	20.7	2.47	9.96	7.15	7.0	6.6	157	6	320	3.1	9.9	192.4	0.63	48
September	26188	873	1141	3682	170	180	4.4	3.84	97.6%	140	7.4	6.46	96.0%	4.7	0.47	0.41	92.3%	39.40	4.45	3.88	91.4%	20.69	50.3	4.76	1.11	14.80	7.0	7.1	224	42	280	3.3	9.2	85.3	0.53	17
October	39674	1280	5726	7237	28	46	2.3	2.94	95.0%	128	7.4	9.47	98.7%	2.4	0.29	0.37	97.3%	6.50	8.10	10.37	72.1%	24.43	8.5	11.30	0.68	8.16	7.1	7.0	82	68	40	2.9	1.2	101.4	1.03	40
November	36591	1220	1697	7260	69	72	1.7	2.07	97.6%	107	5.4	6.59	96.4%	3.8	0.36	0.44	93.2%	18.30	0.99	1.21	96.1%	3.17	27.9	0.40	0.52	15.40	7.2	6.9	20	24	80	3.6	2.9	88.4	0.59	1
December	33535	1082	1082	1.218	160	110	6.1	6.60	96.2%	159	5.8	6.27	96.4%	4.9	0.36	0.39	92.7%	20.70	3.47	3.75	83.2%	2.05	22.2	3.70	0.44	15.60	7.2	6.9	155	35	160	2.4	3.8	137.4	0.74	9
Total	584908																														1520		41.3			
Average		1602			131	101	2.54	3.80	97.1%	138	8.26	13.17	95.9%	4.02	0.36	0.56	93.9%	28.65	11.31	20.4	67.8%	30.90	34.63	12.12	1.23	7.06	7.20	6.94	164	70		2.65			0.67	22



Plant Type: Extended Aeration
Design Capacity: 1600 m^3/day
Population Served: 2,761

Compliance Parameters:

	Conc.	Loading	
CBOD	25 mg/L	40 kg/day	*
TSS	25 mg/L	40 kg/day	*
Total Phosphorus	1.0 mg/L	1.6 kg/day	Monthly Average
E.Coli	200 col/100 mL		Monthly Geometric Mean

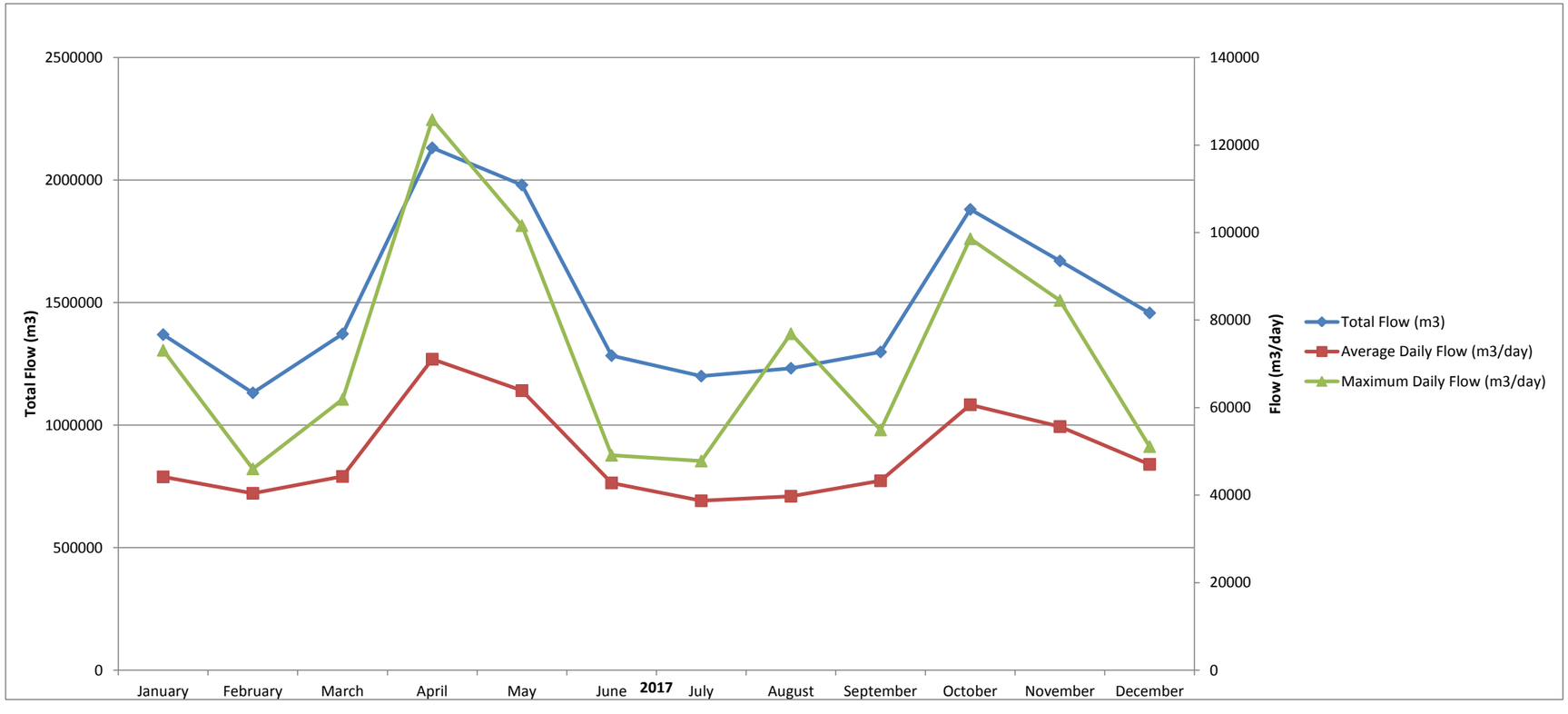
* Annual average of any consecutive 12 month period.

2018 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)	50.9	39.1	4.52	33.5	19	2.04	16.6	43	62	14.9	14.3	32.8	27.7
Nitrate (as N)	0.1	0.1	0.1	0.1	0.1	0.1	0.32	0.1	0.1	0.02	0.02	0.02	0.10
Nitrite (as N)	0.682	0.03	1.73	1.16	0.11	0.03	0.42	1.46	0.03	0.008	0.008	0.008	0.47
Potassium	149	102	100	70	121	79	104	65.7	109	111	112	102	102.1
TKN	1490	1440	925	433	1150	399	1040	93.6	100	998	919	1560	879.0
Total Phosphorus	520	353	383	272	367	156	329	475	559	450	513	781	429.8
Total Solids	27200	16800	20100	17100	20500	24500	27800	28700	29500	25300	26800	27500	24317
Arsenic	0.121	0.079	0.104	0.055	0.151	0.118	0.115	0.111	0.18	0.28	0.15	0.14	0.1337
Cadmium	0.0616	0.0315	0.0384	0.0197	0.0457	0.0520	0.0412	0.0273	0.0656	0.0700	0.0420	0.0330	0.0440
Chromium	0.4920	0.3380	0.4990	0.2070	0.4420	0.4260	0.5280	0.4820	0.5900	0.8800	0.4100	0.4500	0.4787
Cobalt	0.2520	0.1850	0.2840	0.2760	0.6700	0.3100	0.2660	0.1800	0.3620	0.5400	0.3220	0.1600	0.3173
Copper	16.7	10.6	18.6	7.8	14.2	12.4	18.2	13.4	21.4	19.3	11.2	11.9	14.64
Lead	0.6420	0.4260	0.8380	0.3250	0.5610	0.6340	0.6820	0.7640	0.9980	1.0600	0.6790	0.6620	0.6893
Mercury	0.0416	0.0205	0.0193	0.0113	0.0303	0.0321	0.0445	0.0409	0.0550	0.0420	0.0160	0.0300	0.0320
Molybdenum	0.0780	0.0350	0.0760	0.0100	0.0380	0.0470	0.0900	0.0980	0.0600	0.1000	0.0900	0.0900	0.0677
Nickel	4.39	2.70	3.42	2.77	7.48	5.02	3.76	2.75	5.30	6.00	3.00	2.40	4.08
Selenium	0.1090	0.0690	0.1080	0.0500	0.0830	0.0990	0.1070	0.1060	0.1300	0.1400	0.0970	0.0980	0.0997
Zinc	14.00	8.84	10.70	6.26	10.20	10.30	11.10	7.04	18.90	12.80	7.00	7.20	10.36
Sample Date	Jan.4/18	Feb.7/18	Mar.6/18	Apr.11/18	May 1/18	Jun.6/18	Jul.5/18	Aug.9/18	Sep.6/18	Oct.17/18	Nov.6/18	4-Dec-18	

2018 Sudbury Wastewater Treatment Plant Performance

Month	Flows			BOD_5	CBOD				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	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
	m^3	m^3/d	m^3/d	mg/L	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	m^3	%	Kg	mg/L	mg/L	Kg/day	CFU/100mL
January	1369300	44171	73100	N/A	150	10.9	481.5	92.7%	360	18.4	812.7	94.9%	3.8	0.45	19.9	88.2%	18.9	15.80	697.9	16.4%	20.09	27.5	17.4	0.03	0.48	7.2	6.8	156	125	N/A	3.79	2138	0.68	0.000	0.00	21
February	1131600	40414	46000	N/A	205	7.7	311.2	96.2%	359	18.2	735.5	94.9%	4.1	0.50	20.2	87.8%	28.4	18.50	747.7	34.9%	27.63	36.9	19.7	0.03	0.71	7.2	6.8	164	121	N/A	3.57	1655	0.60	0.000	0.00	7
March	1372100	44261	61900	N/A	145	13.5	597.5	90.7%	269	16.8	743.6	93.8%	3.5	0.52	23.0	85.1%	24.5	18.70	827.7	23.7%	21.16	27.1	19.6	0.13	0.56	7.0	6.8	163	130	N/A	3.89	2174	0.52	0.000	0.00	7
April	2131700	71057	125800	N/A	124	7.1	504.5	94.3%	160	11.7	831.4	92.7%	3.0	0.37	26.3	87.7%	12.4	10.47	744.0	15.6%	13.65	17.4	11.6	0.29	0.69	7.0	6.8	141	124	N/A	3.22	3085	0.70	0.000	0.00	13
May	1980100	63874	101600	78	80	4.3	274.7	94.6%	123	9.2	587.6	92.5%	2.6	0.32	20.4	87.7%	12.3	10.04	641.3	18.4%	21.26	17.2	10.5	0.49	0.46	7.1	6.8	154	130	N/A	3.97	2726	0.71	0.000	0.00	14
June	1283500	42783	49100	160	125	3.9	166.9	96.9%	233	10.2	436.4	95.6%	3.8	0.30	12.8	92.1%	16.0	11.05	472.8	30.9%	17.00	23.0	16.6	2.81	0.48	7.0	6.8	148	131	N/A	4.07	1955	0.61	0.000	0.00	4
July	1199900	38706	47800	163	133	3.5	135.5	97.4%	320	16.6	643.3	94.8%	3.6	0.23	8.9	93.6%	19.3	16.62	643.3	13.9%	46.35	24.9	16.5	1.25	0.46	6.9	6.8	151	0.23	N/A	3.83	1863	0.62	0.000	0.00	4
August	1232000	39742	76900	135	160	5.4	214.6	96.6%	247	8.7	345.8	96.5%	3.5	0.32	12.7	90.9%	20.1	14.98	595.3	25.5%	46.70	29.8	14.1	2.02	0.78	6.9	6.8	150	116	N/A	4.80	1922	0.63	0.000	0.00	8
September	1298400	43280	54900	150	130	7.5	324.6	94.2%	188	6.1	264.0	96.8%	3.6	0.24	10.4	93.3%	21.2	15.05	651.4	29.0%	36.46	28.4	15.2	2.80	0.74	6.9	6.8	151	115	N/A	4.59	1869	0.56	0.000	0.00	10
October	1880400	60658	98600	173	147	5.1	309.4	96.5%	153	9.1	552.0	94.1%	3.5	0.53	32.1	84.9%	21.3	11.09	672.7	47.9%	22.20	28.9	10.7	2.24	0.92	7.0	6.8	168	158	N/A	2.70	2658	0.65	0.000	0.00	15
November	1670162	55672	84500	152	108	8.3	462.1	92.3%	163	14.5	807.2	91.1%	3.2	0.71	39.5	77.8%	18.3	14.00	779.4	23.5%	28.49	24.0	14.1	1.07	0.63	7.1	6.8	145	22	N/A	2.95	2333	0.60	0.000	0.00	27
December	1457800	47026	51100	155	114	21.5	1011.1	81.1%	187	37.1	1744.7	80.2%	3.8	0.86	40.4	77.4%	17.7	16.50	775.9	6.8%	18.89	23.8	17.1	0.67	0.60	7	6.7	155	124	N/A	2.81	2542	0.57	0.000	0.00	40
Total	18006962																																			
Average		49334			135	8.23	399.45	93.9%	230	14.72	708.69	93.1%	3.50	0.45	22.23	86.9%	19.20	14.40	687.44	25.2%	26.66	25.74	15.26	1.15	0.63	7	7		108.02		3.68	2243	0.62	0.00	0.00	14
Summer													3.43	0.32	16.24	90.0%																			
Winter													3.57	0.57	28.23	84.0%																			



Plant Type: High Rate
Design Capacity: 79625 m^3/day
Population Served: 84609

Compliance Parameters:

	Conc.	Loading	
CBOD	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 Average

2018 Sudbury Wastewater Treatment Plant Waste Sludge Analysis

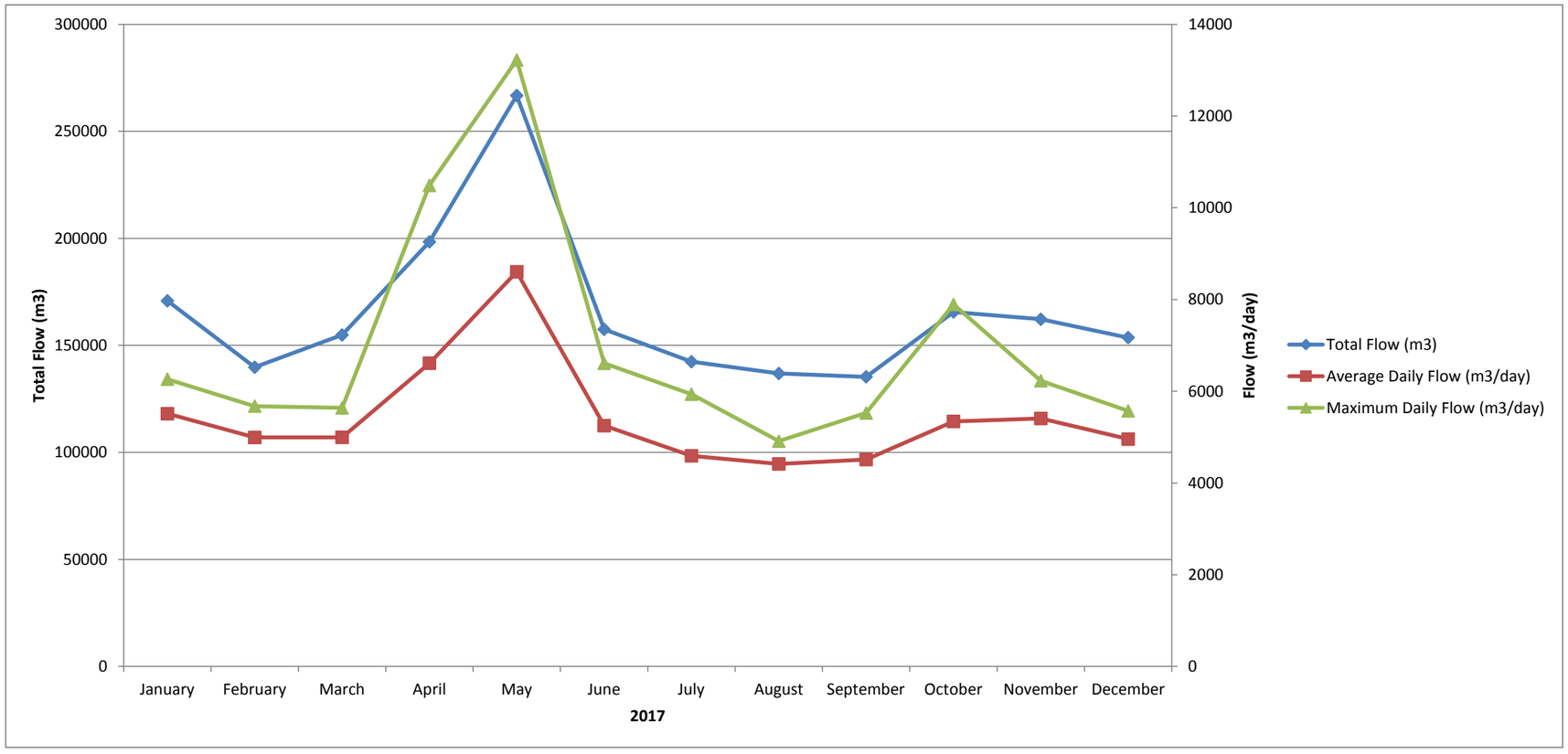
Parameter (mg/L)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Ammonia (as N)	288.5	327	378	277	255	204	362	400	396	210	18	376	291.0
Nitrate (as N)	0.595	0.1	0.1	1	0.1	1	1	1	1	1	0.02	0.2	0.59
Nitrite (as N)	9.375	6.04	0.29	0.3	0.03	0.3	23.2	0.3	0.3	15.9	0.008	0.008	4.67
Potassium	114.5	82	115	104	98	85	92	93	115	93	33	117	95.1
TKN	1550	1450	1680	1040	2000	1870	3990	1470	2330	1460	274	1860	1748
Total Phosphorus	479	524	619	494	609	276	627	7.4	430	701	84.5	563	451
Total Solids	23500	23100	31900	28200	30300	26900	30400	31000	31900	19600	3650	25500	25496
Arsenic	0.091	0.118	0.19	0.405	0.343	0.157	0.143	0.2	0.274	0.1	0.02	0.13	0.1809
Cadmium	0.0190	0.0257	0.0409	0.0620	0.0613	0.0416	0.0325	0.0479	0.0431	0.0202	0.0051	0.0377	0.0364
Chromium	0.2355	0.3440	0.6570	0.8220	0.6100	0.4110	0.4250	0.5680	0.5720	0.2600	0.0500	0.3400	0.4412
Cobalt	0.1474	0.2620	0.4100	0.6910	0.4710	0.3420	0.3690	0.4980	0.5230	0.1510	0.0280	0.2560	0.3457
Copper	8.88	9.38	16.5	33.8	21.6	12.8	17.1	14.5	20.6	9.4	2.1	15.2	15.16
Lead	0.3745	0.4660	0.7020	1.0900	0.8130	0.6460	0.5590	1.2200	0.9330	0.3790	0.0920	0.5340	0.6507
Mercury	0.0029	0.0021	0.0106	0.0162	0.0057	0.0150	0.0061	0.0061	0.0080	0.0050	0.0010	0.0100	0.0074
Molybdenum	0.0555	0.0690	0.1050	0.1570	0.0900	0.0790	0.0870	0.1500	0.1520	0.0700	0.0200	0.1100	0.0954
Nickel	2.10	5.59	8.28	18.30	9.69	8.31	7.91	6.33	9.70	2.20	0.81	4.50	6.98
Selenium	0.0415	0.0600	0.0880	0.1310	0.0870	0.0830	0.0750	0.1010	0.1000	0.0500	0.0100	0.0860	0.0760
Zinc	7.59	6.33	11.20	15.00	13.00	9.88	12.90	11.10	14.90	7.60	1.52	10.40	10.12
Sample Date	Jan.2/18 Jan.29/18	Feb.20/18	Mar.5/18	Apr.3/18	May 7/18	Jun.4/18	Jul.3/18	Aug.8/18	Sep.4/18	Oct.1/18	Nov.6/18	3-Dec-18	

2018 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	0.0016	0.0010	0.0015	0.0019	0.0010	0.0012	0.0013	0.0028	0.0011	0.0010	0.0010	0.0010	0.0014
	Effluent	0.0013	0.0010	0.0011	0.0012	0.0010	0.0011	0.0010	0.0011	0.0010	0.0020	0.0010	0.0010	0.0011
Cadmium	Raw	0.0001	0.0002	0.0001	0.0003	0.0001	0.0002	0.0001	0.0003	0.0001	0.0001	0.0002	0.0001	0.0002
	Effluent	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
Chromium	Raw	0.0019	0.0050	0.0010	0.0027	0.0010	0.0030	0.0017	0.0029	0.0013	0.0020	0.0020	0.0020	0.0022
	Effluent	0.0010	0.0010	0.0010	0.0011	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Cobalt	Raw	0.0017	0.0018	0.0017	0.0033	0.0029	0.0025	0.0017	0.0030	0.0020	0.0018	0.0018	0.0015	0.0021
	Effluent	0.0017	0.0022	0.0030	0.0036	0.0034	0.0026	0.0010	0.0018	0.0018	0.0017	0.0018	0.0019	0.0022
Copper	Raw	0.0248	0.0270	0.0206	0.0684	0.0224	0.0254	0.0196	0.0902	0.0065	0.0130	0.0610	0.0140	0.0327
	Effluent	0.0172	0.0134	0.0204	0.0175	0.0120	0.0090	0.0083	0.0068	0.0073	0.0100	0.0120	0.0130	0.0122
Lead	Raw	0.0016	0.0028	0.0007	0.0027	0.0004	0.0021	0.0019	0.0069	0.0015	0.0027	0.0020	0.0014	0.0022
	Effluent	0.0006	0.0006	0.0008	0.0006	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0008	0.0004	0.0004
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	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	0.0001	0.0001
Molybdenum	Raw	0.0014	0.0010	0.0010	0.0014	0.0010	0.0010	0.0014	0.0010	0.0010	0.0010	0.0020	0.0010	0.0012
	Effluent	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Nickel	Raw	0.0397	0.0433	0.0404	0.0761	0.0695	0.0587	0.0388	0.0658	0.0466	0.0370	0.0410	0.0320	0.0491
	Effluent	0.0316	0.0371	0.0458	0.0696	0.0716	0.0584	0.0326	0.0341	0.0360	0.0340	0.0370	0.0320	0.0433
Selenium	Raw	0.0010	0.0010	0.0010	0.0011	0.0010	0.0011	0.0010	0.0010	0.0010	0.0010	0.0005	0.0005	0.0009
	Effluent	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0005	0.0005	0.0009
Zinc	Raw	0.0690	0.0924	0.0335	0.0765	0.0223	0.0823	0.0714	0.1150	0.0719	0.0730	0.0600	0.0530	0.0684
	Effluent	0.0335	0.0305	0.0414	0.0311	0.0233	0.0203	0.0160	0.0136	0.0214	0.0210	0.0160	0.0150	0.0236

2018 Valley East Wastewater Treatment Plant Performance

Month	Flows			BOD_5	CBOD				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-Ionized	TKN		Nitrite	Nitrate	pH		Alkalinity		Sludge			Chlorine		E.Coli
	Total	Avg Day	Max Day	Raw	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	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	CFU/100mL
January	170815	5510	6264	N/A	85	4.5	24.80	94.7%	133	4.7	25.90	96.5%	3.4	0.59	3.25	82.6%	27.50	25.14	138.53	8.6%	84.9	27.9	25.9	0.76	3.72	7.4	7.1	210	155	N/A	2.4	N/A	209.5	0.77	20
February	139778	4992	5676	N/A	170	4.4	21.97	97.4%	145	4.2	20.97	97.1%	3.0	0.65	3.24	78.3%	31.00	26.03	129.94	16.0%	67.3	42.1	28.1	0.81	3.66	7.3	7.2	200	149	N/A	2.7	N/A	138.6	0.60	23
March	154859	4995	5637	N/A	180	7.4	36.97	95.9%	158	7.4	36.97	95.3%	1.8	0.59	2.95	67.2%	29.10	26.30	131.38	9.6%	162.9	35.6	36.4	0.65	4.28	7.4	7.3	209	184	N/A	N/A	N/A	147.4	0.69	65
April	198351	6612	10488	N/A	150	16.7	110.42	88.9%	115	8.5	56.20	92.6%	2.4	0.50	3.31	79.2%	26.40	23.23	153.59	12.0%	139.9	27.1	24.0	0.86	3.68	7.7	7.5	210	159	N/A	N/A	N/A	171.5	0.59	65
May	266724	8604	13223	4.4	120	7.1	61.09	94.1%	145	4.1	35.28	97.2%	2.1	0.35	3.01	83.3%	14.70	15.46	133.02	-5.2%	134.1	22.5	16.4	1.20	3.70	7.5	7.5	184	148	N/A	2.6	N/A	210.8	0.58	3
June	157500	5250	6609	180	150	8.9	46.73	94.1%	201	5.8	30.45	97.1%	2.7	0.48	2.52	82.2%	26.70	25.60	134.40	4.1%	246.9	29.2	26.1	1.50	3.30	7.7	7.5	200	173	N/A	N/A	N/A	189.4	0.68	27
July	142367	4592	5936	270	130	5.4	24.80	95.8%	256	4.9	22.50	98.1%	3.1	0.76	3.49	75.5%	31.80	12.90	59.24	59.4%	95.9	38.6	13.8	2.00	9.90	7.6	7.3	211	91	N/A	N/A	N/A	201.6	0.60	53
August	136866	4415	4912	240	180	8.2	36.20	95.4%	164	10.1	44.59	93.8%	3.5	0.71	3.13	79.7%	29.90	14.30	63.13	52.2%	71.0	38.6	15.2	1.50	8.30	7.4	7.0	206	96	N/A	2.3	N/A	241.1	0.79	77
September	135326	4511	5526	230	180	15.6	70.37	91.3%	173	9.3	41.95	94.6%	2.9	0.63	2.84	78.3%	32.40	20.80	93.83	35.8%	117.7	43.3	22.7	1.20	5.30	7.4	7.2	217	120	N/A	2.6	N/A	165.6	0.67	284
October	165617	5342	7891	160	72	16.2	86.55	77.5%	148	8.9	47.55	94.0%	2.8	0.63	3.37	77.5%	24.80	16.90	90.29	31.9%	119.4	32.6	17.1	1.40	6.90	7.5	7.2	223	140	N/A	2.8	N/A	225.2	1.40	70
November	162185	5406	6229	140	77	10.4	56.22	86.5%	167	9.0	48.66	94.6%	2.8	0.79	4.27	71.8%	26.80	6.00	32.44	77.6%	26.4	152.0	8.2	1.80	17.50	7.4	7.1	220	140	N/A	2.7	N/A	271.4	0.71	64
December	153659	4957	5572	150	79	6.7	33.21	91.5%	146	8.4	41.64	94.2%	1.1	0.54	2.68	50.9%	28.60	10.10	50.06	64.7%	56.3	31.1	11.9	1.90	17.20	7.4	7.1	206	106	N/A	N/A	N/A	256.2	0.91	21
Total	1984047																													0		0.0			
Average		5436			131	9.29	50.78	92.8%	163	7.11	37.72	95.7%	2.63	0.60	3.17	77.5%	27.48	18.56	100.8	30.3%	110.23	43.38	20.48	1.30	7.29	7.48	7.25	208	138		2.59		202.36	0.75	64



Plant Type: Extended Aeration
Design Capacity: 11,400 m^3/day
Population Served: 17,365

Compliance Parameters:

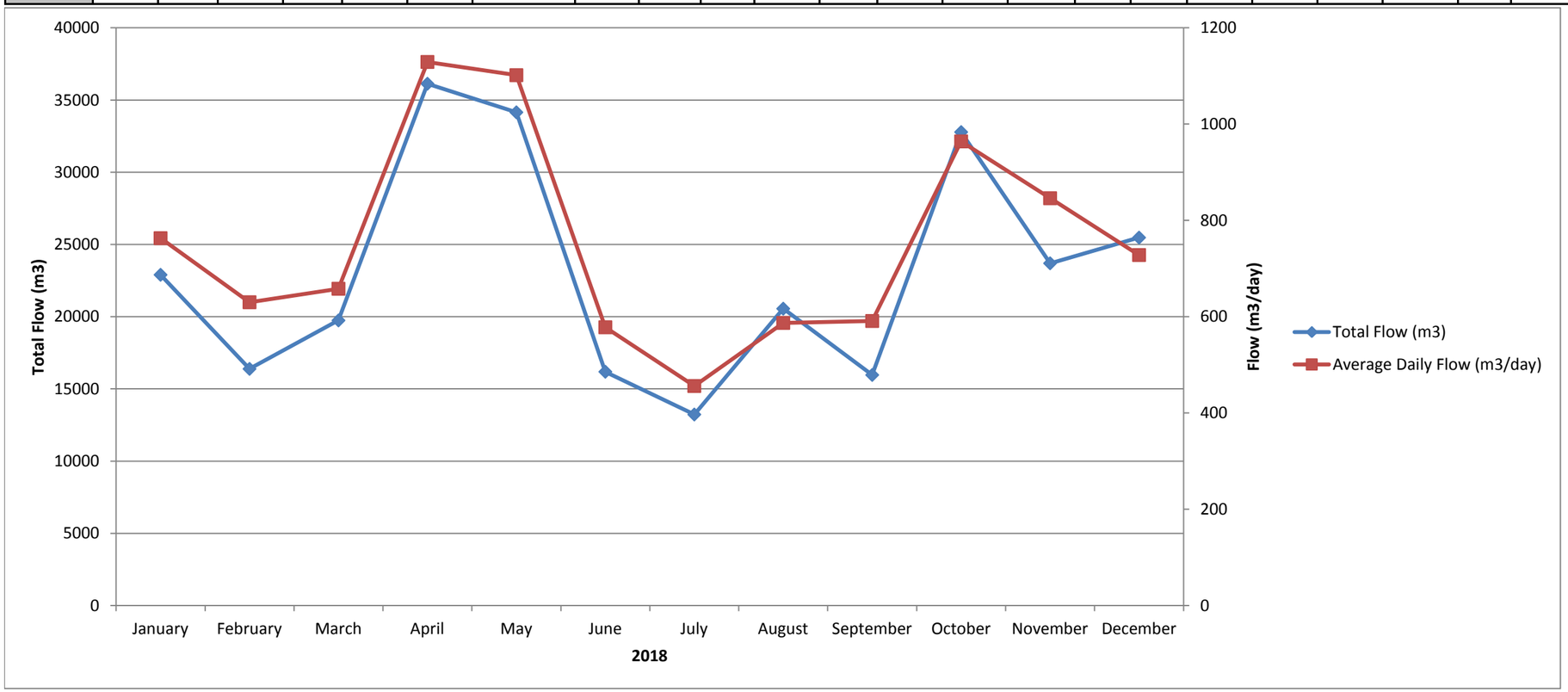
	Conc.	Loading	
CBOD	25 mg/L	284 kg/day	Annual Average
TSS	25 mg/L	284 kg/day	Annual Average
Total Phosphorus	1.0 mg/L	11.4 kg/day	Monthly Average
pH	6.0 to 9.5 inclusive, at all times		
E.Coli	200 col/100 mL		Monthly Geometric Mean

2018 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)	149	350	233	120	191	134	31.9	187	154	103	172	65.5	157.5
Nitrate (as N)	0.86	0.1	0.1	0.1	0.1	0.1	1	0.1	1	0.02	0.2	0.02	0.31
Nitrite (as N)	10.9	11.9	0.683	8.89	7.1	1.35	0.3	0.03	0.3	5.62	0.08	0.008	3.93
Potassium	106	72	94	117	57	52.1	71.6	78.2	56	70	63	64	75.1
TKN	1530	1420	1520	1450	1590	545	119	1620	970	1360	124	1260	1125.7
Total Phosphorus	663	594	650	536	671	344	797	563	537	591	383	599	577.3
Total Solids	33700	26700	33300	32300	34000	21700	22700	30400	26500	28600	28500	30600	29083
Arsenic	0.09	0.057	0.105	0.09	0.104	0.065	0.092	0.066	0.07	0.09	0.08	0.06	0.0808
Cadmium	0.0334	0.0158	0.0202	0.0184	0.0381	0.0195	0.0205	0.0171	0.0160	0.0252	0.0200	0.0100	0.0212
Chromium	0.3330	0.2090	0.4590	0.3470	0.5210	0.3240	0.4140	0.3300	0.2600	0.3600	0.3000	0.2500	0.3423
Cobalt	0.0756	0.0542	0.1060	0.0930	0.1690	0.0783	0.1110	0.0931	0.0730	0.0960	0.0980	0.0700	0.0931
Copper	10.8	7.78	11.5	8.32	14.5	8.58	12	9.31	8.5	10.7	7.3	7.3	9.72
Lead	0.3060	0.4220	0.3550	0.2080	0.4740	0.1930	0.3270	0.2210	0.2190	0.2900	0.2670	0.2100	0.2910
Mercury	0.0036	0.0010	0.0073	0.0040	0.0133	0.0100	0.0011	0.0010	0.0250	0.0070	0.0010	0.0040	0.0065
Molybdenum	0.0770	0.0380	0.0640	0.0100	0.0850	0.0430	0.0800	0.0600	0.0300	0.0700	0.0700	0.0500	0.0564
Nickel	0.580	1.88	1.03	0.71	1.42	0.59	0.84	0.66	0.61	0.94	0.88	0.54	0.89
Selenium	0.0570	0.0310	0.0550	0.0450	0.0110	0.0380	0.0560	0.0420	0.0500	0.0450	0.0460	0.0400	0.0430
Zinc	9.42	37.30	10.90	9.17	13.20	7.43	13.30	9.01	8.50	10.80	6.40	7.70	11.93
Sample Date	Jan.3/18	Feb.21/18	Mar.14/18	Apr.19/18	May 9/18	Jun.13/18	Jul.18/18	Aug.2/18	Sep.19/18	Oct.16/18	Nov.7/18	5-Dec-18	

2018 Wahnapitae Wastewater Treatment Lagoon Performance

Month	Flows		BOD_5	CBOD						Total Suspended Solids						Total Phosphorus						Total Ammonia						Un-Ionized	TKN	pH	H_2S	E.Coli
	Total	Avg Day	Raw	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	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		mg/L	CFU/100mL
January	22898	763	32			0.00	0	0		172		0.00	131	131	100.0%	0.7		0.00	0.50	0.00	0.0%	8.83		0.00	0.00	0.00			12.6			
February	16386	630				0.00	0	0				0.00	0	0				0.00	0.00	0.00				0.00	0.00	0.00						
March	19740	658				0.00	0	0				0.00	0	0				0.00	0.00	0.00				0.00	0.00	0.00						
April	36126	1129	100			0.00	0	0		144		0.00	163	163	100.0%	1.6		0.00	1.76	0.00	0.0%	4.95		0.00	5.59	5.59	100.0%		11.5			
May	34148	1102			5.1	5.62	0	-6			53.6	59.09	0	-59			0.08	0.08	0.00	-0.08			5.10	5.62	0.00	-5.62		7.72		6.6	0.02	11449
June	16187	578			0.9	0.52	0	-1			4.2	2.44	0	-2			0.04	0.02	0.00	0.00			0.52	0.30	0.00	0.00		7.44		6.9		3401
July	13228	456	20	20		0.00	9	9	100.0%	154		0.00	70	70	100.0%	0.6		0.00	0.29	0.00	0.0%	4.80		0.00	0.00	0.00			10.4			
August	20553	587				0.00	0	0				0.00	0	0				0.00	0.00	0.00				0.00	0.00	0.00						
September	15965	591				0.00	0	0				0.00	0	0				0.00	0.00	0.00				0.00	0.00	0.00						
October	32779	964	20	50	3.4	3.28	48	45	93.2%	128	16.0	15.41	123	108	87.5%	0.6	0.05	0.05	0.62		0.0%	8.70	1.76	1.70	8.39	6.69		0.78	12.3	6.5	0.02	
November	23695	846			8.1	6.85	0	-7			74.9	63.37	0	-63			0.20	0.17	0.00	-0.17			1.44	1.22	0.00	-1.22		1.18		7.1		19
December	25474	728				0.00	0	0				0.00	0	0				0.00	0.00	0.00				0.00	0.00	0.00						
Total	277179						57	41	71.6%				487	347	71.2%				3	0	-8.0%				14	5	38.9%					
Average		759	43	35	4.38	1.36	5	3	71.6%	150	37.19	11.69	41	29	71.2%	0.87	0.09	0.03	0.26	-0.02	-8.7%	6.82	2.21	0.74	1.16	0.45	38.9%	4.28	11.7	6.8	0.02	4956
Spring	155947	728.65	60.00	20.00	3.00	0.88	1.30	0.43	32.7%	149.00	28.94	8.79	33.26	24.47	73.6%																	
Fall	121232	753.67	26.00	50.00	5.75	1.69	8.03	6.34	79.0%	150.00	45.45	13.13	42.44	29.31	69.1%																	



Lagoon Type: Seasonal Retention
Design Capacity: 1246 m^3/day
Population Served: 1,136

Compliance Parameters:

	Concentration	
CBOD	30 mg/L	Seasonal Average
TSS	40 mg/L	Seasonal Average
pH	6.0 to 9.5 inclusive at all times	

Spring Discharge:

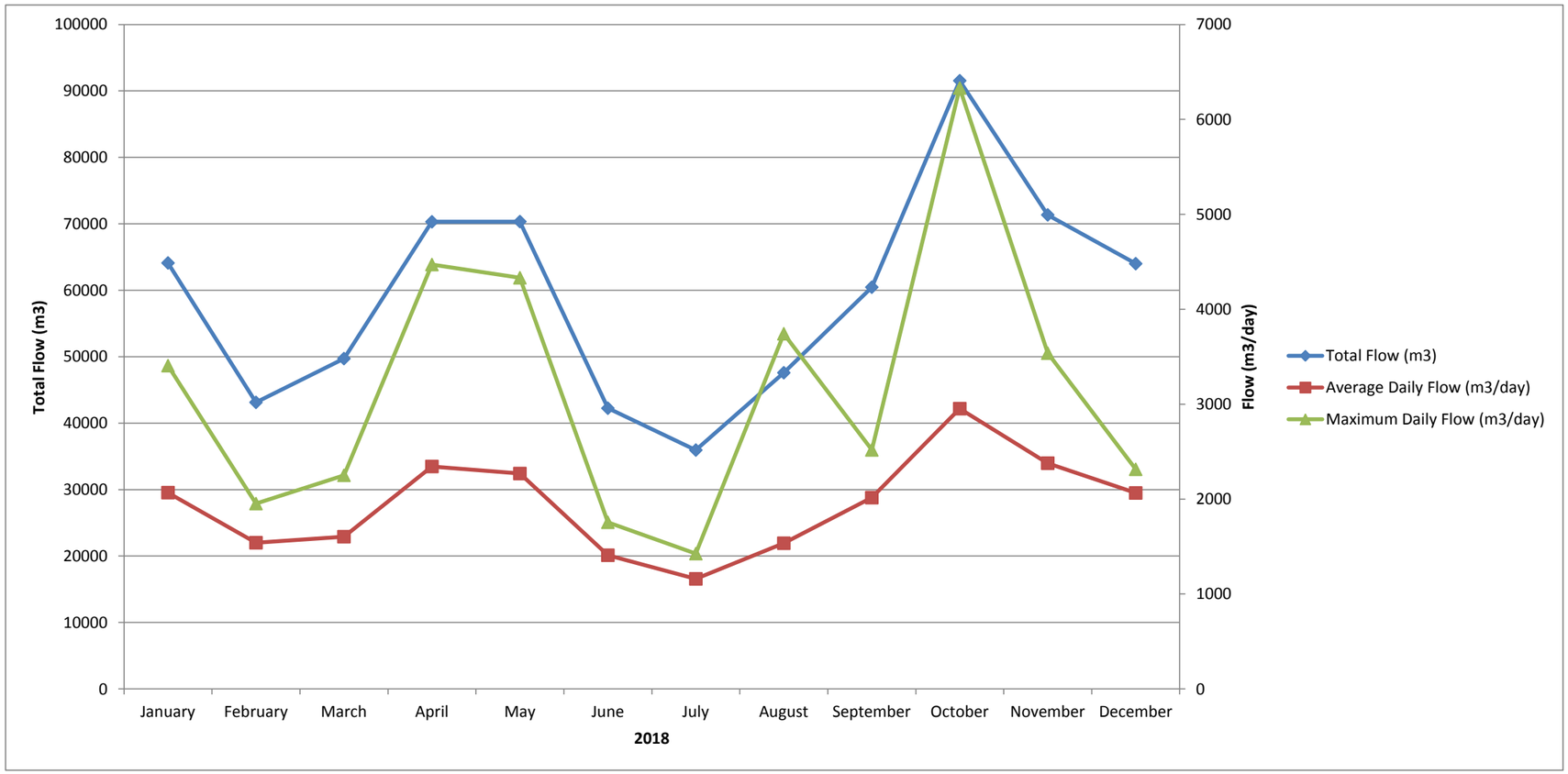
Cell #1 Pre-Discharge sampled May 22/18.
Cell #2 Pre-Discharge sampled May 1/18.
Cell #3 Pre-Discharge sampled May 7/18.
Cell #1 Discharged May 29 to June 12/18.
Cell #2 Discharged May 8 to May 22, 2018.
Cell #3 Discharged May 15 to May 28/18.
Total amount discharged approximately 155947 m^3.

Fall Discharge:

Cell #1 Pre-Discharge sampled Oct. 25
Cell #2 Pre-Discharge sampled
Cell #3 Pre-Discharge sampled
Cell #1 Discharged .
Cell #2 Discharged
Cell #3 Discharged Nov.1 to Nov.28/18.
Total amount discharged approximately 121232 m^3.

2018 Walden Wastewater Treatment Plant Performance

Month	Flows			BOD_5	CBOD				Total Suspended Solids				Total Phosphorus				Total Ammonia				Un-Ionized	TKN		Nitrite	Nitrate	pH		Alkalinity		Sludge			Chlorine		E.Coli
	Total	Avg Day	Max Day	Raw	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	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	CFU/100mL
January	64113	2068	3406	190	N/A	5.0	10.34	N/A	159	16.6	34.33	89.6%	2.9	0.50	1.03	82.8%	21.90	0.56	1.16	97.4%	0.32	38.70	0.54	0.32	19.20	7.1	6.4	153	8	240	2.6	6.2	214.0	0.71	4
February	43131	1540	1953	520	N/A	0.9	1.39	N/A	307	14.3	22.03	95.3%	3.9	0.41	0.63	89.5%	21.60	7.84	12.08	63.7%	5.20	61.30	8.72	0.03	12.20	7.5	6.5	167	82	400	0.6	2.4	103.0	0.77	8
March	49719	1604	2251	160	N/A	1.8	2.89	N/A	151	9.1	14.59	94.0%	4.1	0.28	0.45	93.2%	23.30	9.52	15.27	59.1%	6.47	30.40	9.72	0.03	9.70	7.1	6.8	162	73	320	1.2	3.8	68.9	0.62	2
April	70307	2344	4471	240	N/A	2.9	6.80	N/A	108	6.7	15.70	93.8%	2.7	0.42	0.98	84.4%	21.10	10.90	25.54	48.3%	35.28	27.00	10.90	0.23	7.88	7.3	7.1	168	94	360	1.7	6.1	91.8	0.53	13
May	70337	2269	4332	95	97	2.3	5.22	97.6%	115	7.9	17.92	93.1%	2.9	0.50	1.13	82.8%	14.90	7.24	16.43	51.4%	6.75	17.50	7.71	1.53	5.88	7.6	7.0	149	95	360	2.7	9.7	112.0	0.70	30
June	42249	1408	1756	62	45	1.0	1.41	97.8%	105	6.4	9.01	93.9%	2.6	0.47	0.66	81.9%	19.60	0.11	0.15	99.4%	0.33	24.60	0.20	0.03	17.30	7.4	7.1	162	56	280	2.0	5.6	79.6	0.44	21
July	35949	1160	1426	140	100	2.0	2.32	98.0%	349	8.3	9.63	97.6%	3.6	0.50	0.58	86.1%	16.20	0.03	0.03	99.8%	0.01	28.20	0.20	0.03	18.40	7.0	6.7	161	19	240	2.2	5.3	150.3	0.69	12
August	47590	1535	3742	230	150	1.2	1.84	99.2%	303	7.9	12.13	97.4%	4.5	0.34	0.52	92.4%	19.40	0.10	0.15	99.5%	0.17	20.40	0.20	0.03	20.40	7.0	6.7	172	18	400	1.8	7.2	165.7	0.63	4
September	60462	2015	2518	170	84	5.5	11.08	93.5%	206	8.0	16.12	96.1%	4.0	0.26	0.52	93.5%	21.40	4.77	9.61	77.7%	12.83	25.00	4.51	1.57	12.70	7.0	6.9	176	61	120	2.8	3.4	117.0	0.88	14
October	91541	2953	6331	46	46	15.0	44.29	67.4%	162	14.0	41.34	91.4%	2.5	0.35	1.03	86.0%	12.40	19.30	56.99	-55.6%	131.74	12.70	19.90	0.43	0.06	7.2	7.0	85	145	120	2.1	2.5	121.2	0.90	72
November	71347	2378	3538	180	170	2.9	6.90	98.3%	139	6.5	15.46	95.3%	2.9	0.20	0.48	93.1%	16.90	19.00	45.19	-12.4%	53.92	23.80	16.10	0.01	1.09	7.0	7.1	149	150	200	2.6	5.2	112.0	1.60	17
December	64006	2065	2314	130	160	0.7	1.45	99.6%	153	8.1	16.72	94.7%	3.4	0.16	0.33	95.3%	20.50	9.70	20.03	52.7%	9.10	22.90	8.70	1.19	8.95	7.3	6.9	169	71	240	2.4	N/A	76.9	0.74	33
Total	710751																													3280		57.5			
Average		1947		180		3.43	7.99	95.2%	188	9.48	18.75	94.5%	3.33	0.37	0.70	88.9%	19.10	7.42	16.9	53.7%	21.84	27.71	7.28	0.45	11.15	7.21	6.85	156	73		2.06			0.77	19



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

Compliance Parameters:

	Conc.	Loading	
CBOD	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

2018 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)	60.8	36.9	5.91	59.6	203	25.2	38	10.6	22	21.3	28.3	22.7	44.5
Nitrate (as N)	0.22	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.02	0.02	0.02	0.09
Nitrite (as N)	1.39	0.713	1.96	0.94	7.26	0.795	0.03	0.03	0.03	0.008	0.008	0.008	1.10
Potassium	138	31.3	49	82	80	64	84.6	52.4	59.4	15	22	89	63.9
TKN	1520	458	718	1820	2030	1400	397	24.1	601	22.6	244	1280	876.2
Total Phosphorus	579	156	297	476	513	406	556	372	616	39.4	48.2	1200	438.2
Total Solids	25400	5890	11600	21900	27300	22400	26100	20600	31400	3110	5130	24400	18769
Arsenic	0.128	0.042	0.076	0.207	0.149	0.219	0.174	0.119	0.312	0.04	0.05	0.16	0.1397
Cadmium	0.0601	0.0211	0.0183	0.0432	0.0519	0.0808	0.0612	0.0220	0.0535	0.0059	0.0140	0.0390	0.0393
Chromium	0.3680	0.1170	0.1530	0.3700	0.4570	0.5350	0.5060	0.3540	0.9360	0.1200	0.1700	0.5700	0.3880
Cobalt	0.5830	0.1920	0.3340	0.9430	1.0500	1.1200	0.6060	0.5470	1.1100	0.1460	0.1720	0.6210	0.6187
Copper	11.2	3.06	4.83	11.2	11.7	12.9	12.1	5.69	11.9	1.6	2.6	10.1	8.24
Lead	1.1400	0.5030	0.5760	1.0100	0.9800	0.8600	0.7750	0.5540	1.1400	0.0980	0.1380	0.5040	0.6898
Mercury	0.0037	0.0010	0.0010	0.0034	0.0037	0.0072	0.0037	0.0010	0.0053	0.0010	0.0001	0.0030	0.0028
Molybdenum	0.1680	0.0690	0.0830	0.1100	0.1340	0.1580	0.1660	0.1700	0.3600	0.0300	0.0300	0.1200	0.1332
Nickel	4.12	1.38	1.99	5.27	7.75	8.27	4.70	2.53	6.10	1.08	1.30	4.80	4.11
Selenium	0.3820	0.0700	0.0840	0.3360	0.2720	0.3170	0.2210	0.1410	0.3800	0.0330	0.0520	0.1660	0.2045
Zinc	8.65	2.73	4.00	10.60	9.50	11.80	9.61	5.02	10.00	1.67	3.25	10.30	7.26
Sample Date	Jan.3/18	Feb.7/18	Mar.5/18	Apr.10/18	May 9/18	Jun.6/18	Jul.4/18	Aug.7/18	Sep.4/18	Oct.15/18	Nov.13/18	4-Dec-18	