

Cobden Wastewater System

Waterworks #120000596

Annual Report

Prepared For: The Township of Whitewater Region

Reporting Period of January 1st – December 31st 2023

Issued: March 13th, 2024

Revision: 1

Operating Authority:



This report has been prepared to meet the requirements set out in:

Document	Document #	Issue Date	Issue Number
Facility ECA	4306-B2YKK4	2018-09-05	N/A
ECA for Municipal Sewage Collection System	N/A	N/A	N/A

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1 Revision History

Date	Rev#	Revisions	Revised By
2024-02-29	0	Annual Report Issued	Kaylee Saar, OCWA
2024-03-13	1	Revised Effluent Quality Non-Compliance Summary Table	Kaylee Saar, OCWA

2 Operations and Compliance Reliability Indices

Compliance Event	Details
Ministry of Environment Inspections	1 - MECP Inspection on September 7 th 2023, no recommended or required actions
Ministry of Labour Inspections	0
Non-Compliance	2 - See Raw Sewage Quality and Effluent Quality for details
Community Complaints	2 - See Summary of Complaints for details
Spills	0
Overflows	3 - See Appendix D for details of Abnormal Sewage Discharge Events
Bypass	1 - See Appendix D for details of Abnormal Sewage Discharge Events
Sewer main blockages	0 - Sewer main blockages 2 - Lateral blockages, See Summary of Complaints for details

3 Process Description

Cobden’s wastewater treatment system consists of a gravity fed collection system of separated sewers and the Morton Street lift station that discharges to the wastewater treatment facility located at 1 Astrolabe Road in Cobden, Ontario. Cobden’s wastewater treatment plant is a Class III treatment facility. Raw sewage is gravity fed through the existing inlet parallel grit channels and four (4) manual bar screens for preliminary treatment before entering one equalization (EQ) tank, with two (2) interconnected cells. The inlet channel is also equipped with overflow capabilities via a weir to the overflow channel. A level sensor measures the overflow volume.

From the EQ tank, the raw sewage is pumped into the treatment headworks where solids and rags are further removed using a two (2) rotary drum screens and a compacting screw auger. Wastewater then enters two bioreactor tanks that operate in parallel, each made up of an aeration cell and a membrane filtration cell. The aeration cell is where secondary treatment begins. Each tank is equipped with a fine bubble aeration system. PAS-8 is injected for phosphorus removal via the sludge recirculation line in the aeration cell. The membrane filtration cells is where post-secondary treatment continues. Each cell contains one Membrane BioReactor (MBR) filter consisting of two parallel ultrafiltration membrane trains, effluent pumps, and air scouring blowers. Permeate pulled from the MBR filters flows through

individual UV reactors to achieve disinfection before combining at a common header to fill the 6000 L permeate holding tank. The permeate holding tank is used during the chemically enhanced backwash of the ultrafiltration fibers. Sodium hypochlorite is applied on a weekly basis to combat organics that can foul the fibers. Citric acid is applied on a monthly basis to combat inorganics that can clog the fibers. When the permeate tank is not in use for chemically assisted backwashes, it acts as a holding tank before the effluent is directed to the outfall pipe. The outfall pipe directs the effluent to an earth bermed enclosure (lagoon) located southeast of the plant, then is discharged into Muskrat River and subsequently to Muskrat Lake.

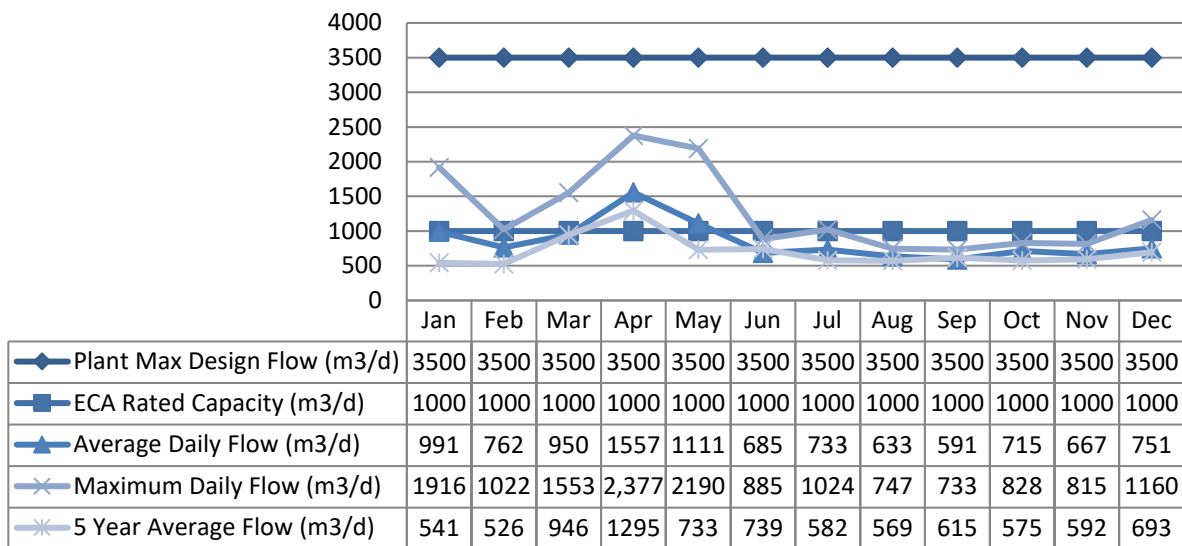
Activated sludge which has been removed from the MBR’s is pumped into a two-celled aerobic sludge digestion/storage tank. The storage tank is equipped with a coarse bubble aeration system and two (2) manual decant arms, one in each cell. When aeration is stopped in one cell, the activated sludge is allowed settle and separate. The clear supernatant is collected by lowering the manual decant arm and is directed to a supernatant storage tank. A pump returns the supernatant to the headworks of the plant. The activated sludge that has settled and has “thickened” is then pumped to the centrifuge for further dewatering. The centrate produced is also piped to return to the supernatant storage tank to be pumped to the headworks of the plant. Dewatered biosolids are collected in a dump trailer and hauled offsite for landfill application under EASR #R-004-3114519011. Additionally, there is a provision for desludging the tanks by directly loading a hauling truck as a backup to the dewatering system during maintenance of the centrifuge system.

4 Treatment Flows

The annual average daily flow for 2023 was 846 m³/d, which represents 84.6% of the facility’s 1000 m³/d rated capacity.

4.1 Raw Flow (m³/d)

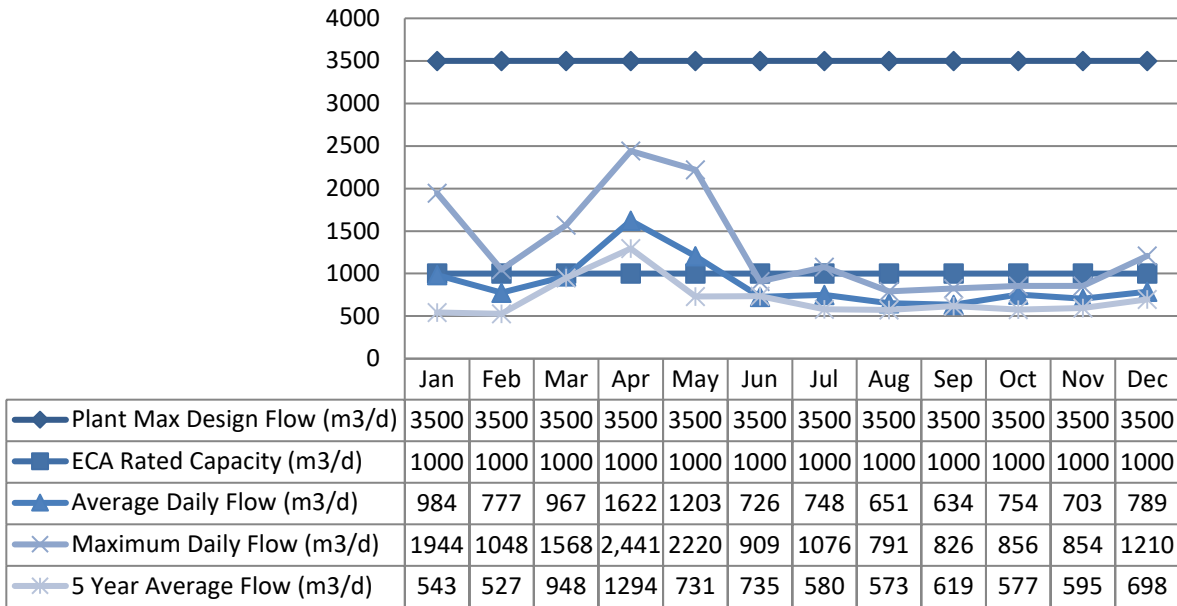
4.1.1 2023 Raw Flow



Note: the spikes in the maximum daily flow in March, April and May were due to the spring melt and the spikes in July and December were due rain events.

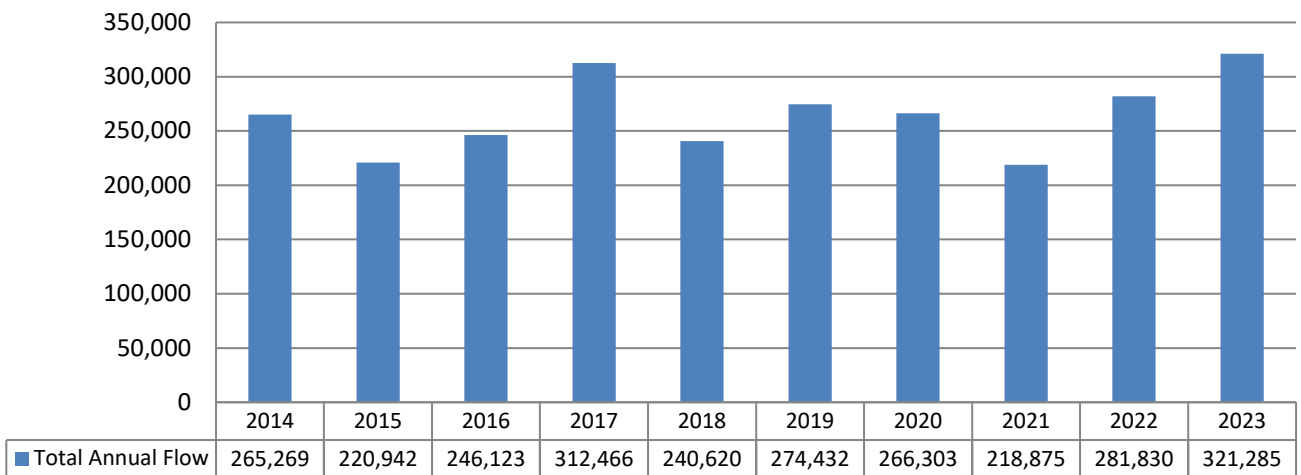
4.2 Effluent Flow (m³/d)

4.2.1 2023 Effluent Flow



Note: the spikes in the maximum daily flow in March, April and May were due to the spring melt and the spikes in July and December were due rain events.

4.2.2 Annual Effluent Flow Comparison (m³)



4.3 Imported Sewage

4.3.1 Leachate Flow (m³/d)

There was no leachate accepted at this facility in 2023.

4.3.2 Septage Flow (m³/d)

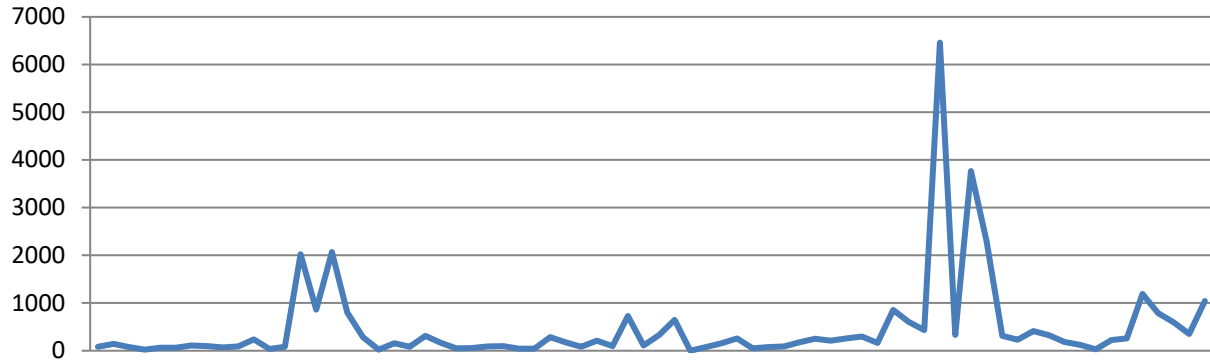
There was no septage accepted at this facility in 2023.

5 Raw Sewage Quality

5 Year Average Trends for Raw Sewage Quality are graphed below:

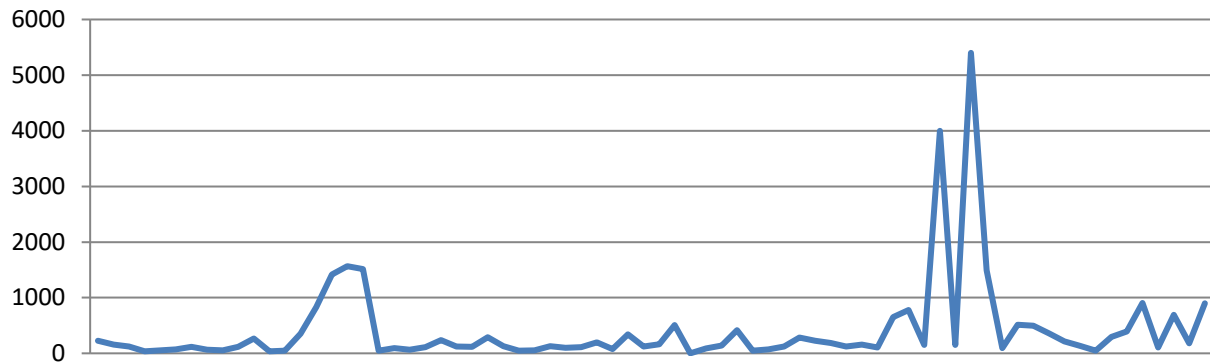
5.1 Biochemical Oxygen Demand (5 Day)

The graph below represents the monthly average of BOD₅ measured in mg/L from 2018-2023.



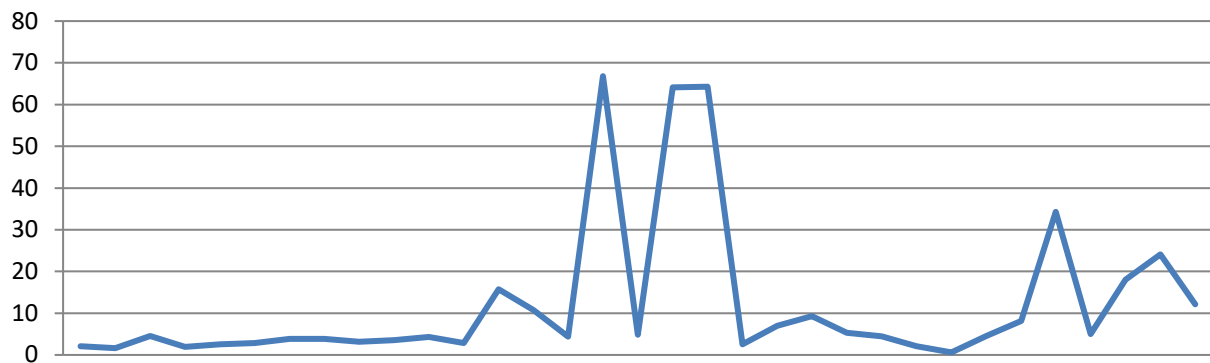
5.2 Total Suspended Solids

The graph below represents the monthly average of TSS measured in mg/L from 2018-2023.



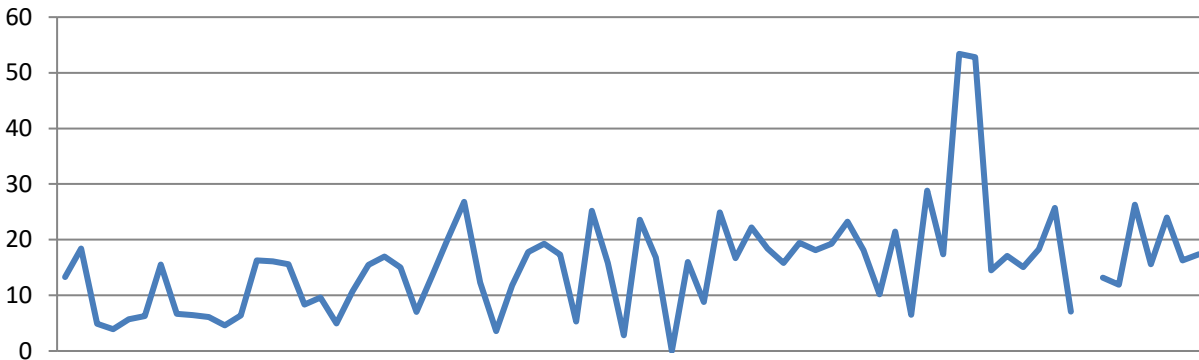
5.3 Total Phosphorus

The graph below represents the monthly average of TP measured in mg/L from 2018-2023.



5.4 Total Ammonia Nitrogen

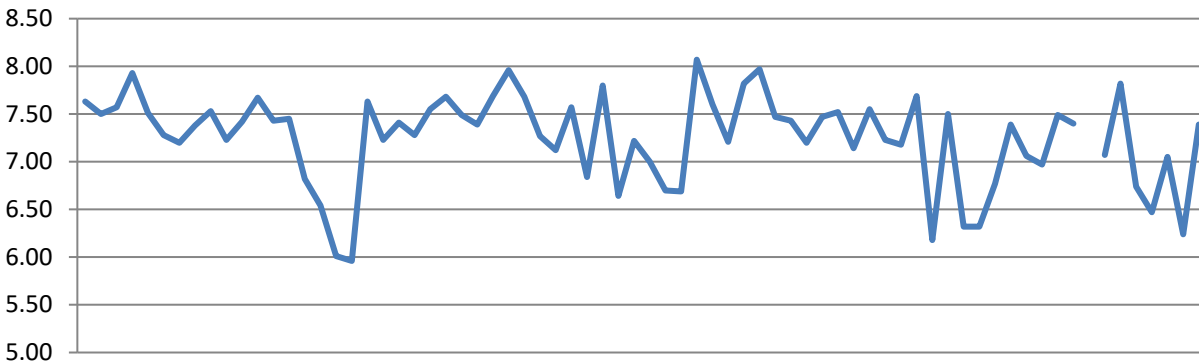
The graph below represents the monthly average of TAN measured in mg/L from 2018-2023.



Note: An incorrect COC was used during sampling in May of 2023 resulting in missing TAN data, this parameter is required to be sampled by the facility’s ECA and a non-compliance was reported to the MECP.

5.5 pH

The graph below represents the monthly average of pH from 2018-2023, there is no measured unit for pH.



Note: An incorrect COC was used during sampling in May of 2023 resulting in missing pH data, this parameter is not required to be sampled by the facility’s ECA, a non-compliance did not need to be issued.

6 Effluent Quality

The monthly average concentrations of the carbonaceous biochemical oxygen demand (CBOD₅), total suspended solids (TSS), and the monthly geometric mean density (GMD) of E. coli remained below the effluent objectives and limits outlined in the facility’s ECA during 2023. In addition, the effluent pH remained within the limits and objectives throughout the year. The monthly average concentration of total phosphorus exceeded the facility’s ECA objective on two occasions but remained below the ECA limit. The monthly average concentration of the total ammonia nitrogen (TAN) exceeded the facility’s ECA objective on two occasions and the ECA limit on one occasion. See the Operating Issues/Problems section of this report for further details.

The Federal Government also regulates the effluent flow, and the monthly averages of CBOD₅ and TSS in the effluent under the Federal Fisheries Act. The results are submitted to Environment and Climate Change Canada’s effluent regulatory reporting information system, under wastewater systems effluent

regulations (WSER) on a quarterly basis.

Effluent results from the Cobden wastewater treatment facility for 2023 are graphed on pages 8-13 of this report.

6.1 Effluent Quality Assurance and Control Measures Taken

This system is part of OCWA's Madawaska Cluster. The cluster is supported by the Eastern Regional Hub, and corporate resources. Operational Services are delivered by OCWA staff that live and work in the community. The systems are operated to meet compliance with applicable regulations. The system has comprehensive manuals detailing operations, maintenance, instrumentation, and emergency procedures. All procedures are treated as active documents and are updated as required. These documents are also part of OCWA's Quality & Environmental Management System.

The process is reviewed and maintained by certified operators. These operator's complete in-house rounds and testing to monitor the process. All Sampling and analysis follow approved methods and protocols for sampling, analysis and recording as specified in the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works", the Ministry's publication, "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" and the publication, "Standard Methods for the Examination of Water and Wastewater".

All final effluent samples collected during the reporting period to meet legislated sampling requirements are submitted to SGS Lakefield Research Ltd. laboratory in Lakefield, Ontario for analysis, with the exception of disinfection residuals and temperature. SGS Lakefield Research Ltd. has been deemed accredited by the Canadian Association for Laboratory Accreditation (CALA), meeting strict provincial guidelines including an extensive quality assurance/quality control program. By choosing this laboratory, the Ontario Clean Water Agency is ensuring appropriate control measures are undertaken during sample analysis. The disinfection residuals and temperature parameters are analyzed in the field at the time of sample collection by certified operators, to ensure accuracy and precision of the results obtained.

OCWA uses several computer systems which include:

- Process Data Management (PDM)
 - This database program consolidates all operational data from a variety of sources including field data, online instrumentation, and electronic receipt of lab test results for reporting, tracking and analysis.
- Maximo – OCWA's Work Management System (WMS)
 - This program is used to track and schedule maintenance activities for all equipment in the system. It is also used to assign tasks for specific operational tasks.
- SCADA
 - SCADA system allows for process optimization and data logging, process trending, remote alarming.

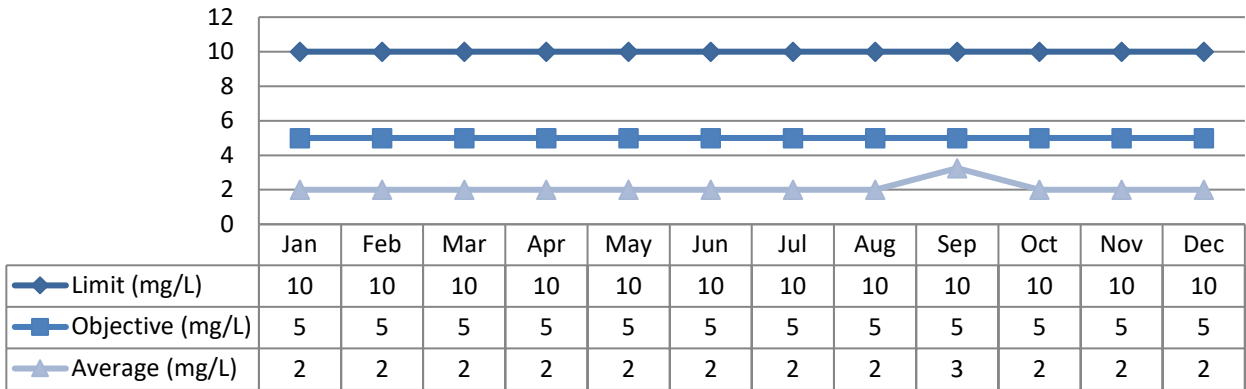
The operations team also has access to a network of operational compliance and process specialists to assist for emerging process issues. This aids in establishing additional control measures to ensure a quality effluent product.

Detailed individual sample results for both raw sewage and final effluent can be requested from the operating authority.

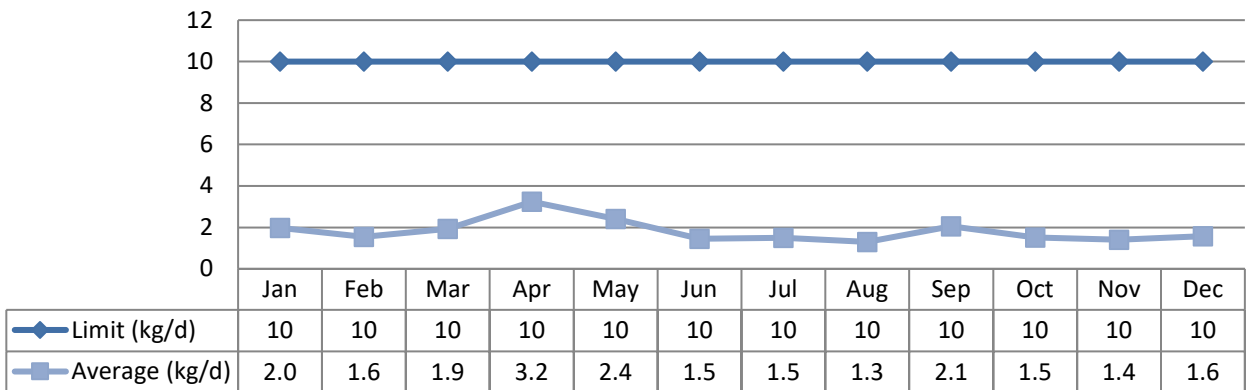
6.2 CBOD5

There was no Compliance Objective or Compliance Limit exceedance for this parameter.

6.2.1 Concentration (mg/L)



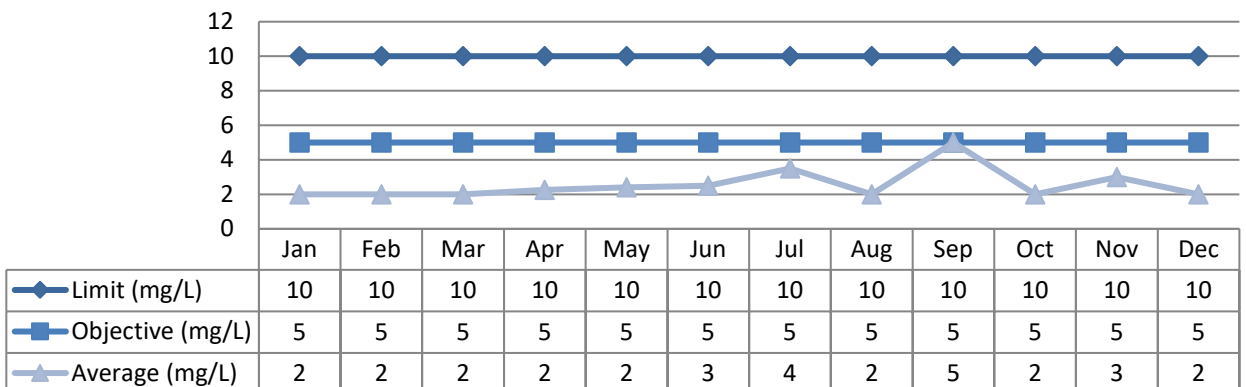
6.2.2 Loading (kg/d)



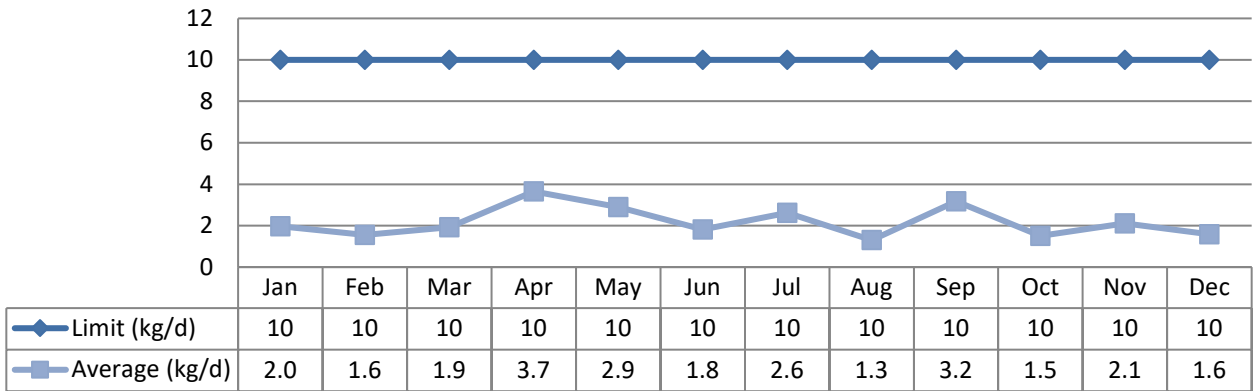
6.3 Total Suspended Solids

There was no Compliance Objective or Compliance Limit exceedance for this parameter.

6.3.1 Concentration (mg/L)



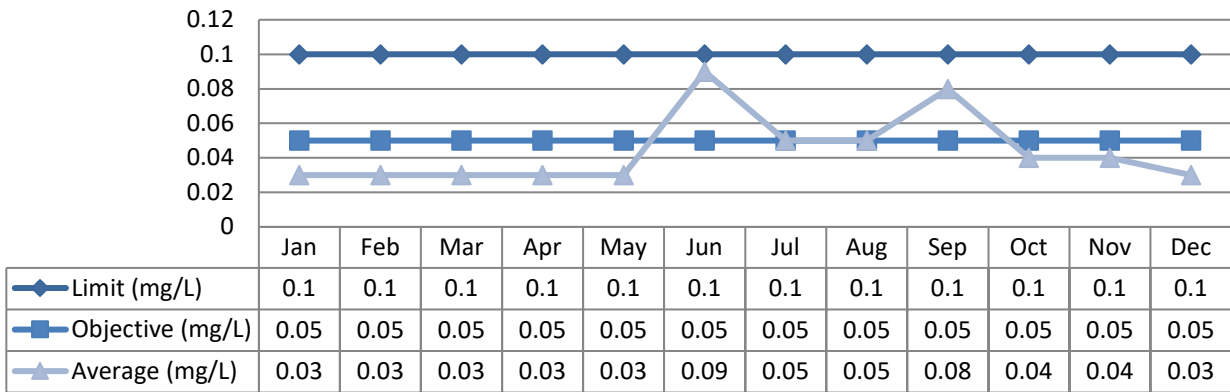
6.3.2 Loading (kg/d)



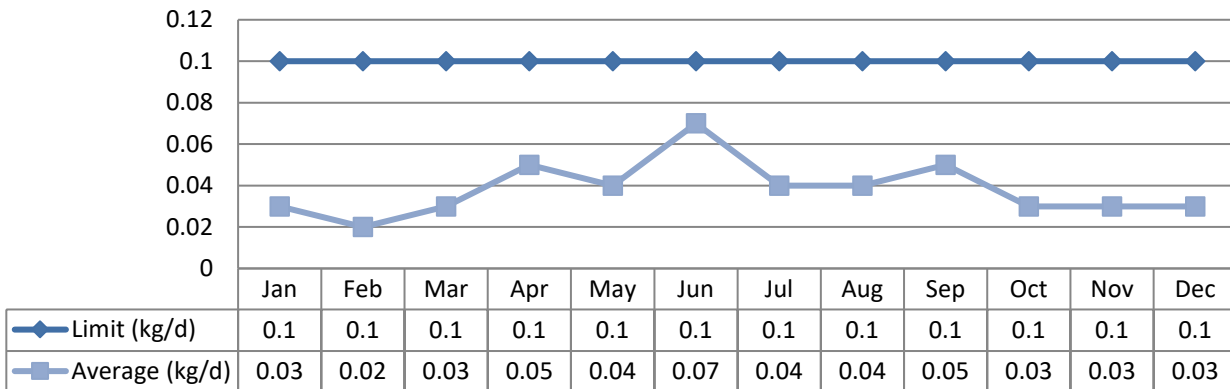
6.4 Total Phosphorus

There were two Compliance Objective exceedances and no Compliance Limit exceedance for this parameter, see Operational Issues/Problems section of this report for details.

6.4.1 Concentration (mg/L)



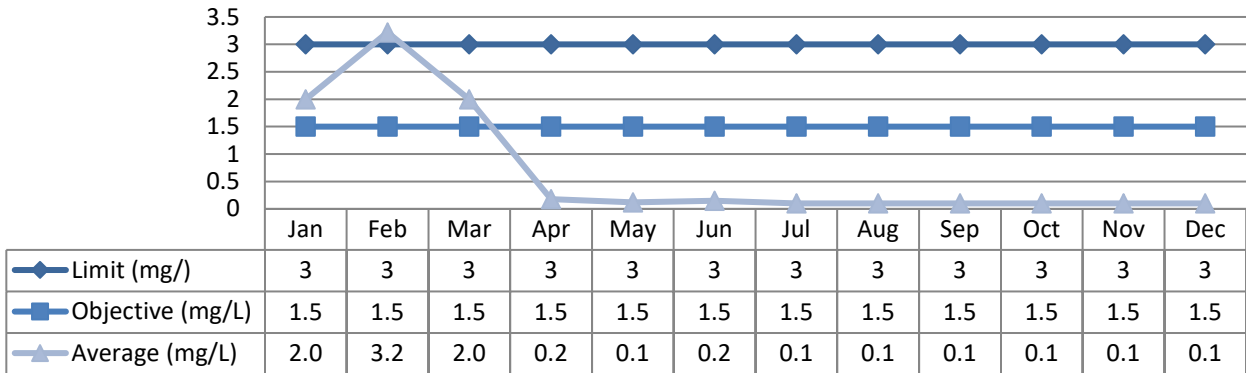
6.4.2 Loading (kg/d)



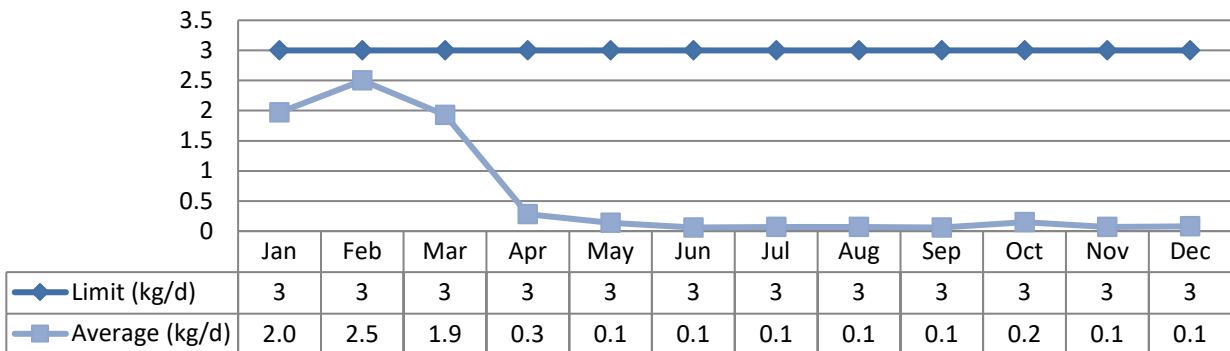
6.5 Total Ammonia Nitrogen

There were two Compliance Objective exceedances and one Compliance Limit exceedance for this parameter, see Operational Issues/Problems section of this report for details.

6.5.1 Concentration (mg/L)



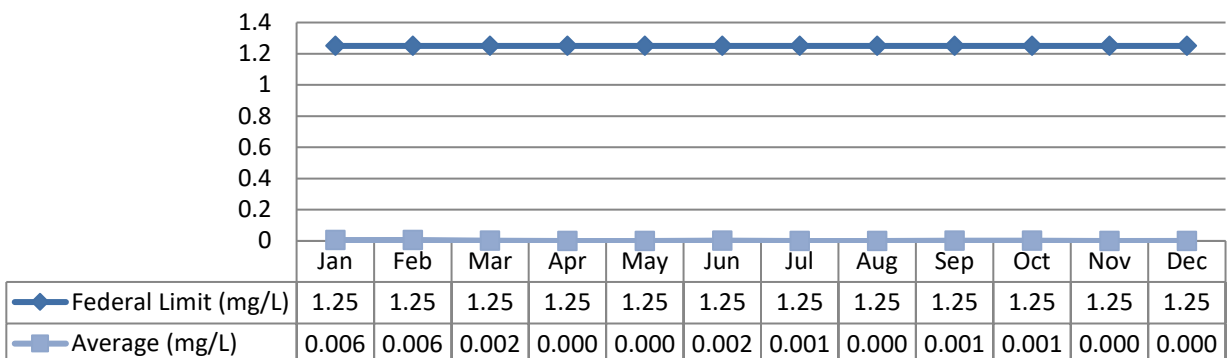
6.5.2 Loading (kg/d)



6.6 Un-Ionized Ammonia/Nitrogen/TKN

There was no Compliance Limit exceedance for this parameter, there is no Compliance Objective for this parameter.

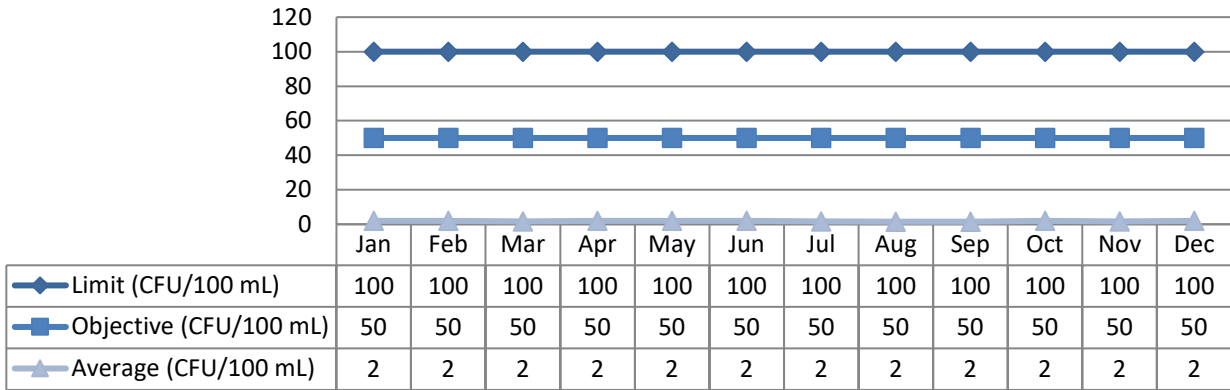
6.6.1 Concentration (mg/L)



6.7 E-coli

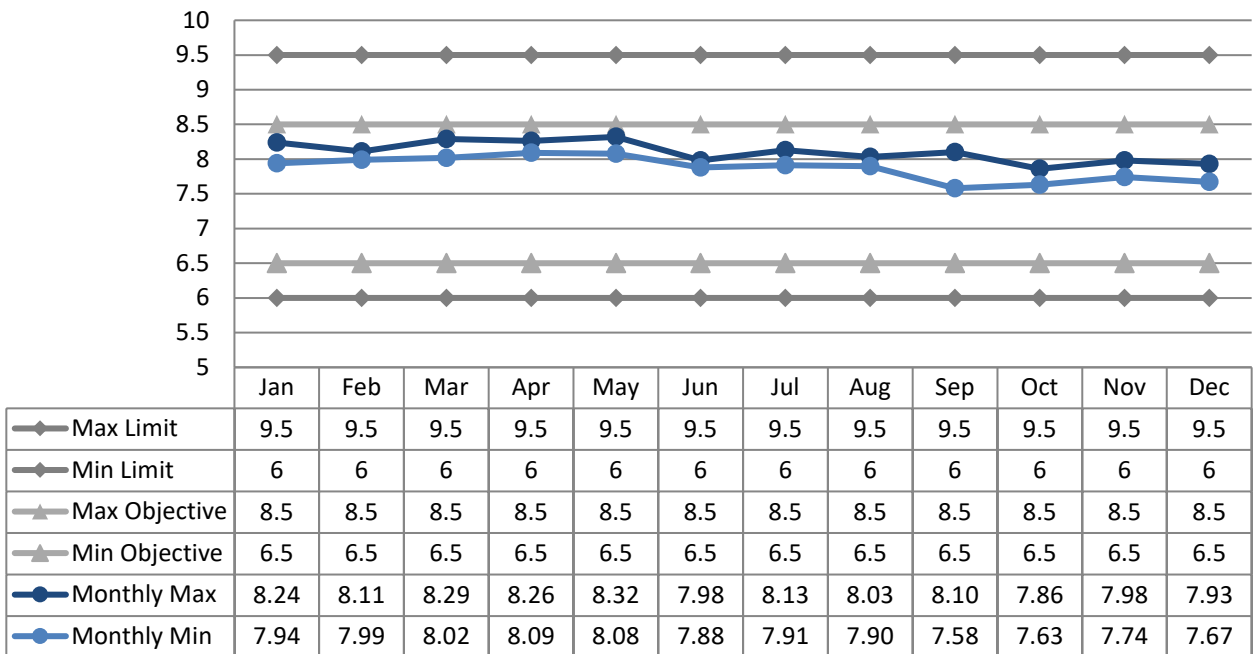
There was no Compliance Objective or Compliance Limit exceedance for this parameter.

6.7.1 Geometric Mean (CFU/100mL)



6.8 pH

pH is to remain in the range of 6-9.5, each instance the pH is outside of that range is reported as a non-compliance.



7 Monitoring Schedule

The 2024 Sample Calendar can be viewed in Appendix A.

7.1 Deviations

Date	Details	Cause of Deviation
January 18 th 2023	Monthly sample was collected on the third week of the month, which is a deviation from the standard first week.	Influent sampler failed to collect sample when started January 3 rd , restarted on January 10 th but malfunctioned with cold weather. Restarted sampler January 17 th for sample collected on the 18 th .
February 8 th 2023	Monthly sample was collected on the second week of the month, which is a deviation from the standard first week.	Influent sampler failed to collect sample when started January 31 st to be collected February 1 st . Restarted on February 7 th for sample collected on the 8 th .
September 8 th 2023	Weekly E.Coli sample was collected on Friday, which is a deviation from the standard day of Wednesday.	Due to a courier error, the E.Coli sample was received after the recommended holding time of 48 hours. As a result the E.Coli sample collected on Wednesday was not processed and resample of the E.Coli in the final effluent was collected on the Friday to be processed.
December 29 th 2023	Weekly samples were collected on Thursday, which is a deviation from the standard day of Wednesday.	Due to the Christmas Day and Boxing Day Stat holidays on December 25 th and 26 th operations staff were not able to start the effluent sampler until Wednesday to ensure that the full 24 hours had passed before collecting the composite sample.

Weekly effluent sampling is scheduled to occur on Thursdays in 2024.

8 Operating Issues/Problems

In an effort to conserve power consumption at the facility the aerobic tank blower’s VFDs were adjusted in January of 2023 resulting in lowering the dissolved oxygen (DO) concentration leading to total ammonia nitrogen (TAN) objective and limit exceedances. The VFD’s were further adjusted in March of 2023 to raise the DO and improve TAN removal.

The treatment plant experienced influent average daily flow rates that exceeded the plants rated capacity in April and May of 2023 which resulted in three overflow events and one disinfection system bypass. The high flows experienced by the facility were due to infiltration from the spring freshet and precipitation events. See Appendix D for details of Abnormal Sewage Discharge Events.

8.1 Effluent Quality Non-Compliance Summary

The effluent objectives are based on current requirements in the facility’s Environmental Compliance Approval (ECA). ECA objective exceedances are non-reportable, and are used as an operational target. As the operating authority we shall use our best efforts to operate the facility in a manner that ensures the objectives are not exceeded in the treated effluent.

The Final Effluent did not see objective exceedances more than 50% of the time during the year or experience an increased deterioration in the final effluent. At this time no proactive actions are suggested.

The following table is a summary of objective and limit exceedances and the efforts made to meet the

objectives and corrective actions taken when the limit was exceeded.

Date	Exceedance of	ECA Objective	ECA Limit	Value	Corrective Action
January 2023	Monthly average concentration Total Ammonia Nitrogen	1.50 mg/L	3.00 mg/L	2.00 mg/L	Waste from MBR trains to reduce MLSS concentration
February 2023	Monthly average concentration Total Ammonia Nitrogen	1.50 mg/L	3.00 mg/L	3.23 mg/L	Waste from MBR trains to reduce MLSS concentration
March 2023	Monthly average concentration Total Ammonia Nitrogen	1.50 mg/L	3.00 mg/L	2.00 mg/L	Adjust aerobic tank blowers VFD's to increase DO concentration
June 2023	Monthly average concentration Total Phosphorus	0.050 mg/L	0.10 mg/L	0.090 mg/L	Adjusted PAS-8 injection rate
September 2023	Monthly average concentration Total Phosphorus	0.050 mg/L	0.10 mg/L	0.075 mg/L	Adjusted PAS-8 injection rate

8.2 Summary of Abnormal Sewage Discharge Events

Abnormal Discharge Events include Bypass', Overflows, Diversions and Spills of Sewage. Summary Details are included in Appendix C.

8.3 Spills (Other than Sewage)

Date	Location	Details	Volume (m3)	Start Date and Time	End Date and Time
There were no Spill events reported during the reporting period.					

9 Maintenance

Routine planned maintenance activities are scheduled in WMS and include:

- Inspect, adjust and calibrate process control equipment to ensure proper operation of pumps, chemical feeders, and all other equipment installed at the facilities.
- Carry out a routine maintenance program including greasing and oiling as specified in the lubrication schedule.
- Perform day-to-day maintenance duties to equipment including checking machinery and electrical equipment when required.
- Maintain an equipment inventory
- Maintain accurate records of work conducted, activities, and achievements.

Planned maintenance activities are communicated to the person responsible for completing the task through the issuance of WMS work orders. Work orders are automatically generated on a schedule as determined based on manufacturer's recommendations and site specific operational and maintenance needs and are assigned directly to the appropriate operations personnel. This schedule is set up by the

designated WMS Primary. Work orders are completed and electronically entered into WMS by the person responsible for completing the task. Unplanned maintenance is conducted as required.

9.1 Normal Maintenance and Repairs

Work Order	Details
3524459	Flushed and cleaned new PAS-8 bulk storage tank before filling with PAS-8
3434468	Replaced defective hot water tank
3244015	Semi-annual gas meter calibrations of hardwired and portable devices
3203242	Inspected protective coatings of EQ tanks, MBR & Aeration tanks
3204900	Cleaned sewer basket at Caressant Care Nursing Home and Morton Street Lift Station
3432038	Maintenance hole inspections

9.2 Emergency Maintenance and Repairs

Work Order	Details
3386657	Service repair at 29 Gould Street, service had insufficient fall after leaving property. Service was flushed and a clean out was installed at the house
3244034	Replaced transformer and contactor on sewage pump #2 in sump pit of old control building that discharged sanitary waste to existing clarifier
3288473	Sanitary line of old control building frozen at existing clarifier and line was thawed and flushed ahead of extending discharge line to sludge holding tanks decant well
3620906	Extended sanitary line from old control building to the new facility decant well between the two sludge holding tanks to be returned to the head of the plant
3246226	Alarm monitoring upgrades Morton Street Lift Station and facility including removing alarm panel from decommissioned equipment at the old control building
3382929	Replaced damaged Permeate Flow Meter #1 from overflow events
3621366	Repaired lateral at corner of Astrolabe Road and Crawford Street

9.3 Flow Meter Calibrations and Maintenance

Location	Date of Calibration	Additional Maintenance
EQ Pump Discharge (Raw) Flow Meter	November 7, 2023	N/A
Sludge Feed to Centrifuge Flow Meter	November 7, 2023	N/A
Screen Outlet Train 1 Flow Meter	November 7, 2023	N/A
Screen Outlet Train 2 Flow Meter	November 7, 2023	N/A
Permeate Train 1 Flow Meter	November 7, 2023	N/A
RAS Train 1 Flow Meter	November 7, 2023	N/A
Permeate Train 2 Flow Meter	November 7, 2023	N/A
RAS Train 2 Flow Meter	November 7, 2023	N/A
Supernatant Flow Meter	November 7, 2023	N/A
Collection System Flow Meter	No collection system flow meter	N/A

9.4 Authorized Alterations in Collection System

Work Order	Details	Significant Drinking Water Threat (Y/N)
There were no authorized alterations made to the collection system during the reporting period.		

9.5 Notice of Modifications

Date	Process	Modification	Status
There were no modifications made to the treatment facility or the collection system during the reporting period.			

10 Sludge Generation

In the event that the centrifuge isn't operational, a provision in the ECA allows liquid biosolids to be hauled off site. In 2023 no liquid biosolids were removed from site.

10.1 Processed Volumes

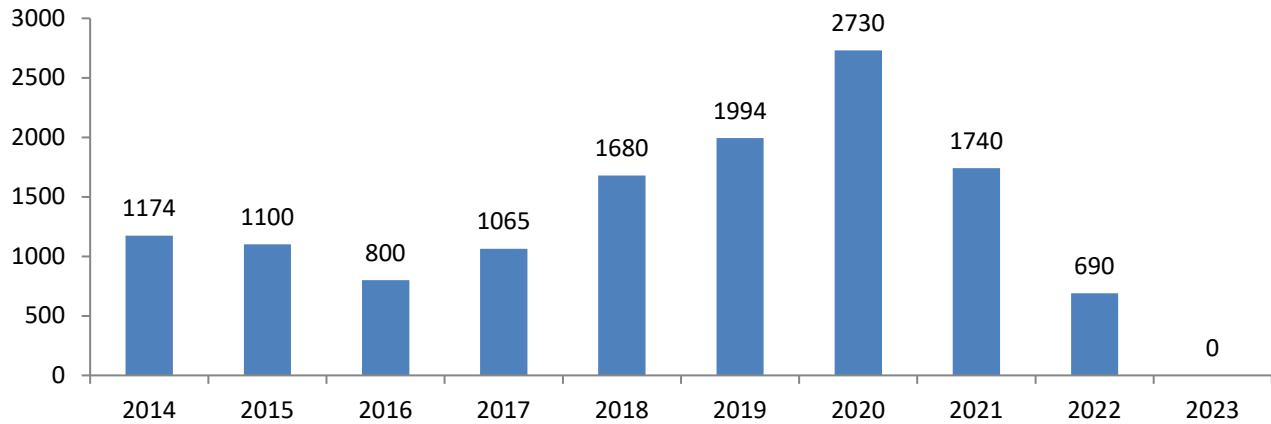
Cobden's Wastewater Treatment Facility's centrifuge processed approximately 4242 m³ of liquid sludge in 2023. The dewatered biosolids were disposed of at the Ross Landfill site located at 990 Kohlsmith Road in Whitewater Region, Ontario under certificate of approval #A413209. It is anticipated that approximately the same volume of sludge will be processed in 2024.

10.2 Sludge Disposal Summary

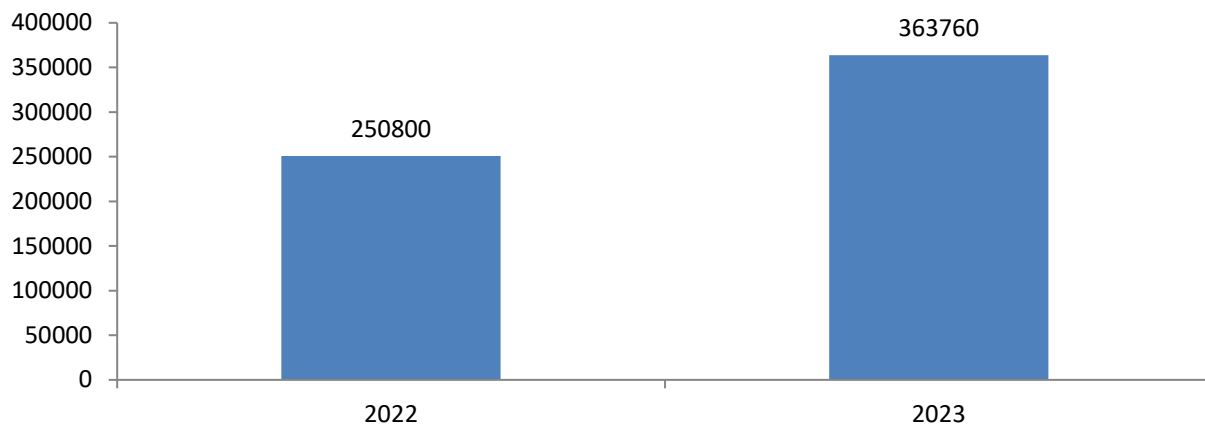
Month	Disposal Location	Approval Number	Total (kg)
January	Ross Landfill	A413209	38,830
February	Ross Landfill	A413209	34,040
March	Ross Landfill	A413209	30,450
April	Ross Landfill	A413209	36,540
May	Ross Landfill	A413209	35,540
June	Ross Landfill	A413209	27,470
July	Ross Landfill	A413209	17,760
August	Ross Landfill	A413209	35,180
September	Ross Landfill	A413209	23,310
October	Ross Landfill	A413209	22,700
November	Ross Landfill	A413209	36,340
December	Ross Landfill	A413209	25,600
Total Annual Weight (kg)			363,760

10.3 Annual Comparison

10.3.1 Volume Hauled (m³/year)



10.3.2 Weight Hauled (kg/year)



10.4 Quality

The biosolids sampling results are summarized in Appendix C. All results met the established guidelines.

11 Summary of Complaints


Location	Date	Nature of Complaint	Actions Taken
29 Gould Street	04/12/2023	Sewer Backup	Checked sewer main above and below residence for flow, flow present, no clean out present at home. Clean out was installed and flow from home verified
6 Arthur Street	11/27/2023	Sewer Backup	Checked sewer main above and below residence for flow, flow present, advise home owner to contact plumber

Appendix A


Appendix A - Sample Calendar

	External Laboratory Sample Schedule Cobden Wastewater Treatment Plant January 2024		Issued: Dec-08-2023 Rev: 0 Page 1 of 12
	Reviewed by: Process and Compliance Technician		Approved by: Senior Operations Manager

	Week 1		Week 2		Week 3		Week 4		Week 5	
	<i>Monday Stat</i>									
	31-6		7-13		14-20		21-27			
	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received
Raw Analysis										
Effluent Plant Analysis										
RAS Train 1 & 2										
Aerated Sludge										
Additional Samples/Monthly Notes										
Sludge sampling needs to occur annually as per ECA, though sampling monthly will occur										
Samples are taken on Thursday in 2024										
RAS Train 1 & 2 sampling not required by ECA, operational monitoring only										
This schedule is for guidance purposes only										
Please refer to all regulatory requirements that affect the sampling schedule										

	External Laboratory Sample Schedule Cobden Wastewater Treatment Plant February 2024		Issued: Dec-08-2023 Rev: 0 Page 2 of 12
	Reviewed by: Process and Compliance Technician		Approved by: Senior Operations Manager

	Week 1		Week 2		Week 3		Week 4		Week 5	
							<i>Monday Stat</i>			
	28-3		4-10		11-17		18-24		25-2	
	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received
Raw Analysis										
Effluent Plant Analysis										
RAS Train 1 & 2										
Aerated Sludge										
Additional Samples/Monthly Notes										
Sludge sampling needs to occur annually as per ECA, though sampling monthly will occur										
Samples are taken on Thursday in 2024										
RAS Train 1 & 2 sampling not required by ECA, operational monitoring only										
This schedule is for guidance purposes only										
Please refer to all regulatory requirements that affect the sampling schedule										

	External Laboratory Sample Schedule Cobden Wastewater Treatment Plant March 2024		Issued: Dec-08-2023 Rev: 0 Page 3 of 12
	Reviewed by: Process and Compliance Technician		Approved by: Senior Operations Manager

	Week 1		Week 2		Week 3		Week 4		Week 5	
							<i>Friday Stat</i>			
	3-9		10-16		17-23		24-30			
	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received
Raw Analysis										
Effluent Plant Analysis										
RAS Train 1 & 2										
Aerated Sludge										
Additional Samples/Monthly Notes										
Sludge sampling needs to occur annually as per ECA, though sampling monthly will occur										
Samples are taken on Thursday in 2024										
RAS Train 1 & 2 sampling not required by ECA, operational monitoring only										
This schedule is for guidance purposes only										
Please refer to all regulatory requirements that affect the sampling schedule										

	External Laboratory Sample Schedule Cobden Wastewater Treatment Plant April 2024	Issued: Dec-08-2023 Rev: 0 Page 4 of 12
Reviewed by: Process and Compliance Technician		Approved by: Senior Operations Manager

	Week 1		Week 2		Week 3		Week 4		Week 5	
	<i>Monday Stat</i>									
	31-6		7-13		14-20		21-27			
	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received
Raw Analysis										
Effluent Plant Analysis										
RAS Train 1 & 2										
Aerated Sludge										

Additional Samples/Monthly Notes

Sludge sampling needs to occur annually as per ECA, though sampling monthly will occur

Samples are taken on Thursday in 2024

RAS Train 1 & 2 sampling not required by ECA, operational monitoring only


This schedule is for guidance purposes only

Please refer to all regulatory requirements that affect the sampling schedule

	External Laboratory Sample Schedule Cobden Wastewater Treatment Plant May 2024	Issued: Dec-08-2023 Rev: 0 Page 5 of 12
	Reviewed by: Process and Compliance Technician	Approved by: Senior Operations Manager

	Week 1		Week 2		Week 3		Week 4		Week 5	
							<i>Monday Stat</i>			
	28-4		5-11		12-18		19-25		26-1	
	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received
Raw Analysis										
Effluent Plant Analysis										
RAS Train 1 & 2										
Aerated Sludge										

Additional Samples/Monthly Notes
Sludge sampling needs to occur annually as per ECA, though sampling monthly will occur
Samples are taken on Thursday in 2024
RAS Train 1 & 2 sampling not required by ECA, operational monitoring only
This schedule is for guidance purposes only
Please refer to all regulatory requirements that affect the sampling schedule

	External Laboratory Sample Schedule Cobden Wastewater Treatment Plant June 2024		Issued: Dec-08-2023 Rev: 0 Page 6 of 12
	Reviewed by: Process and Compliance Technician		Approved by: Senior Operations Manager

	Week 1		Week 2		Week 3		Week 4		Week 5	
	2-8		9-15		16-22		23-29			
	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received
Raw Analysis										
Effluent Plant Analysis										
RAS Train 1 & 2										
Aerated Sludge										
Additional Samples/Monthly Notes										
Sludge sampling needs to occur annually as per ECA, though sampling monthly will occur										
Samples are taken on Thursday in 2024										
RAS Train 1 & 2 sampling not required by ECA, operational monitoring only										
This schedule is for guidance purposes only										
Please refer to all regulatory requirements that affect the sampling schedule										

	External Laboratory Sample Schedule Cobden Wastewater Treatment Plant July 2024	Issued: Dec-08-2023 Rev: 0 Page 7 of 12
Reviewed by: Process and Compliance Technician	Approved by: Senior Operations Manager	

	Week 1		Week 2		Week 3		Week 4		Week 5	
	<i>Monday Stat</i>									
	30-6		7-13		14-20		21-27			
	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received
Raw Analysis										
Effluent Plant Analysis										
RAS Train 1 & 2										
Aerated Sludge										

Additional Samples/Monthly Notes

Sludge sampling needs to occur annually as per ECA, though sampling monthly will occur

Samples are taken on Thursday in 2024

RAS Train 1 & 2 sampling not required by ECA, operational monitoring only

This schedule is for guidance purposes only

Please refer to all regulatory requirements that affect the sampling schedule

	External Laboratory Sample Schedule Cobden Wastewater Treatment Plant August 2024	Issued: Dec-08-2023 Rev: 0 Page 8 of 12
Reviewed by: Process and Compliance Technician	Approved by: Senior Operations Manager	

	Week 1		Week 2		Week 3		Week 4		Week 5	
			<i>Monday Stat</i>							
	28-3		4-10		11-17		18-24		25-31	
	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received
Raw Analysis										
Effluent Plant Analysis										
RAS Train 1 & 2										
Aerated Sludge										

Additional Samples/Monthly Notes

Sludge sampling needs to occur annually as per ECA, though sampling monthly will occur

Samples are taken on Thursday in 2024

RAS Train 1 & 2 sampling not required by ECA, operational monitoring only

This schedule is for guidance purposes only

Please refer to all regulatory requirements that affect the sampling schedule

	External Laboratory Sample Schedule Cobden Wastewater Treatment Plant September 2024		Issued: Dec-08-2023 Rev: 0 Page 9 of 12
	Reviewed by: Process and Compliance Technician		Approved by: Senior Operations Manager

	Week 1		Week 2		Week 3		Week 4		Week 5	
	<i>Monday Stat</i>									
	1-7		8-14		15-21		22-28			
	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received
Raw Analysis										
Effluent Plant Analysis										
RAS Train 1 & 2										
Aerated Sludge										

Additional Samples/Monthly Notes

Sludge sampling needs to occur annually as per ECA, though sampling monthly will occur

Samples are taken on Thursday in 2024

RAS Train 1 & 2 sampling not required by ECA, operational monitoring only

This schedule is for guidance purposes only

Please refer to all regulatory requirements that affect the sampling schedule

	External Laboratory Sample Schedule Cobden Wastewater Treatment Plant October 2024		Issued: Dec-08-2023 Rev: 0 Page 10 of 12
	Reviewed by: Process and Compliance Technician		Approved by: Senior Operations Manager

	Week 1		Week 2		Week 3		Week 4		Week 5	
	<i>Monday Stat</i>		<i>Monday Stat</i>							
	29-5		6-12		13-19		20-26		27-2	
	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received
Raw Analysis										
Effluent Plant Analysis										
RAS Train 1 & 2										
Aerated Sludge										
Additional Samples/Monthly Notes										
Sludge sampling needs to occur annually as per ECA, though sampling monthly will occur										
Samples are taken on Thursday in 2024										
RAS Train 1 & 2 sampling not required by ECA, operational monitoring only										

	External Laboratory Sample Schedule Cobden Wastewater Treatment Plant November 2024		Issued: Dec-08-2023 Rev: 0 Page 11 of 12
	Reviewed by: Process and Compliance Technician		Approved by: Senior Operations Manager

	Week 1		Week 2		Week 3		Week 4		Week 5	
			<i>Monday Stat</i>							
	3-9		10-16		17-23		24-30			
	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received
Raw Analysis										
Effluent Plant Analysis										
RAS Train 1 & 2										
Aerated Sludge										

Additional Samples/Monthly Notes

Sludge sampling needs to occur annually as per ECA, though sampling monthly will occur

Samples are taken on Thursday in 2024

RAS Train 1 & 2 sampling not required by ECA, operational monitoring only

This schedule is for guidance purposes only

Please refer to all regulatory requirements that affect the sampling schedule

	External Laboratory Sample Schedule Cobden Wastewater Treatment Plant December 2024	Issued: Dec-08-2023 Rev: 0 Page 12 of 12
Reviewed by: Process and Compliance Technician	Approved by: Senior Operations Manager	

	Week 1		Week 2		Week 3		Week 4		Week 5	
							<i>Wed/Thur Stat</i>			
	1-7		8-14		15-21		22-28			
	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received	Sampled	Received
Raw Analysis										
Effluent Plant Analysis										
RAS Train 1 & 2										
Aerated Sludge										

Additional Samples/Monthly Notes

Sludge sampling needs to occur annually as per ECA, though sampling monthly will occur

Samples are taken on Thursday in 2024

RAS Train 1 & 2 sampling not required by ECA, operational monitoring only

This schedule is for guidance purposes only

Please refer to all regulatory requirements that affect the sampling schedule

Appendix B

Appendix B - Biosolids Quality Report

Biosolids Quality Report

Facility: COBDEN WASTEWATER TREATMENT FACILITY



Solids & Nutrients

Period: 01/01/2023 to 12/31/2023

Works: 1275 / Digester Type: Aerobic

Solids & Nutrients	Metals & Criteria	Last 4 Samples
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Facility Works Number: 120000596 Receiver: MUSKRAT LAKE
 Facility Owner: Municipality: WHITEWATER REGION Service Population: 1845
 Facility Classification: Class 3 Wastewater Treatment Total Design Capacity: 696 m3/day

Note: all parameters in this report are derived from the Bslq Station

Month	Hauled Vol. (m³)	Total Solids (mg/L)	Volatile Solids (mg/L)	Total Phosphorus (mg/L)	Total Ammonia Nitrogen (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Ammonia + Nitrate (mg/L)	Potassium (mg/L)
Parameter Short Name	HauledVol	TS	VS	TP	NH3p_NH4p_N	NO3-N	NO2-N	TKN	Calculation in Report	K
T/S	IH Month.Total	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	- no T/S	Lab Published Month Mean
Jan	170.00	16,500.00	11,400.00	470.00	9.30	13.00	14.00	1,070.00	11.15	84.00
Feb	142.00	12,100.00	8,900.00	240.00	7.60	0.30	0.20	747.00	3.95	63.00
Mar		12,100.00	9,690.00	260.00	11.80	0.30	0.20	900.00	6.05	87.00
Apr	309.00	20,500.00	15,600.00	360.00	12.10	0.30	0.50	1,370.00	6.20	100.00
May	365.00	17,100.00	12,200.00	364.00	13.50	26.00	16.00	1,040.00	19.75	94.00
Jun	269.70	15,600.00	11,600.00	328.00	17.90	73.00	17.00	764.00	45.45	70.00
Jul	185.20	13,000.00	10,700.00	104.00	33.00	3.00	3.00	646.00	18.00	44.00
Aug	222.30	15,250.00	10,700.00	294.00	17.00	3.00	3.00	718.00	10.00	48.00
Sep	234.00	12,700.00	9,140.00	369.00	28.00	3.00	3.00	694.00	15.50	54.00
Oct	173.40	15,200.00	11,100.00	348.00	22.20	3.00	3.00	774.00	12.60	50.00
Nov		15,900.00	11,600.00	445.00	6.40	160.00	8.00	694.00	83.20	62.00
Dec		15,750.00	11,400.00	404.00	9.10	3.00	3.00	932.00	6.05	62.00
Average	230.07	15,141.67	11,169.17	332.17	15.66	23.99	5.91	862.42	19.83	68.17
Total	2,070.60	181,700.00	134,030.00	3,986.00	187.90	287.90	70.90	10,349.00	237.90	818.00

Solids & Nutrients

Metals & Criteria

Last 4 Samples

Note: all parameters in this report are derived from the Bslq Station

Month	Arsenic (mg/L)	Cadmium (mg/L)	Cobalt (mg/L)	Chromium (mg/L)	Copper (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)
Parameter Short Name	As	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Zn
T/S	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean
Jan	0.10	0.01	0.02	0.11	4.70	0.00	0.06	0.15	0.20	0.10	6.00
Feb	0.10	0.11	0.01	0.07	2.30	0.00	0.05	0.08	0.10	0.10	2.00
Mar	0.10	0.01	0.01	0.07	2.40	0.01	0.05	0.09	0.10	0.10	2.00
Apr	0.10	0.03	0.02	0.11	3.30	0.00	0.06	0.14	0.10	0.10	3.00
May	0.10	0.03	0.02	0.12	2.90	0.00	0.05	0.14	0.10	0.10	3.00
Jun	0.10	0.01	0.01	0.09	2.60	0.00	0.05	0.11	0.10	0.10	2.00
Jul	0.10	0.01	0.01	0.05	0.80	0.00	0.05	0.04	0.10	0.10	1.00
Aug	0.10	0.01	0.01	0.08	2.40	0.00	0.05	0.09	0.10	0.10	2.00
Sep	0.10	0.01	0.01	0.09	3.10	0.00	0.05	0.11	0.10	0.10	4.00
Oct	0.10	0.01	0.01	0.07	2.80	0.00	0.06	0.09	0.10	0.10	4.00
Nov	0.10	0.01	0.02	0.10	3.80	0.00	0.07	0.16	0.10	0.10	6.00
Dec	0.10	0.01	0.02	0.09	3.60	0.00	0.06	0.12	0.10	0.10	5.00
Average	0.10	0.02	0.01	0.09	2.89	0.00	0.06	0.11	0.11	0.10	3.33
Max. Permissible Metal Concentrations (mg/kg of Solids)	170.00	34.00	340.00	2,800.00	1,700.00	11.00	94.00	420.00	1,100.00	34.00	4,200.00
Metal Concentrations in Sludge (mg/kg)	6.60	1.25	0.94	5.78	190.97	0.18	3.63	7.26	7.15	6.60	220.14

Biosolids Quality Report

Facility: COBDEN WASTEWATER TREATMENT FACILITY

Last 4 Samples

Period: 01/01/2023 to 12/31/2023

Works: 1275 / Digester Type: Aerobic

Solids & Nutrients

Metals & Criteria

Last 4 Samples

Note: all parameters in this report are derived from the Bslq Station

Parameter Short Name	Time Series	09/06/2023	10/04/2023	11/02/2023	12/06/2023	Average	Metal Concentrations in Sludge (mg/kg)	Max. Permissible Metal Concentrations (mg/kg of Solids)
As (mg/L)	Lab Published	0.10	0.10	0.10	0.10	0.10	6.72	170
Cd (mg/L)	Lab Published	0.01	0.01	0.01	0.01	0.01	0.42	34
Co (mg/L)	Lab Published	0.01	0.01	0.02	0.02	0.02	1.01	340
Cr (mg/L)	Lab Published	0.09	0.07	0.10	0.09	0.09	5.88	2800
Cu (mg/L)	Lab Published	3.10	2.80	3.80	3.60	3.33	223.34	1700
Hg (mg/L)	Lab Published	0.00	0.00	0.00	0.00	0.00	0.13	11
Mo (mg/L)	Lab Published	0.05	0.06	0.07	0.06	0.06	4.03	94
Ni (mg/L)	Lab Published	0.11	0.09	0.16	0.12	0.12	8.06	420
Pb (mg/L)	Lab Published	0.10	0.10	0.10	0.10	0.10	6.72	1100
Se (mg/L)	Lab Published	0.10	0.10	0.10	0.10	0.10	6.72	34
Zn (mg/L)	Lab Published	4.00	4.00	6.00	5.00	4.75	319.06	4200
E.Coli Dry Wt (cfu/g)	Lab Published	496,063.00	386,667.00	28,931.00	140,127.00	166,989.75	E. Coli average is the GMD	
TS (mg/L)	Lab Published	12,700.00	15,200.00	15,900.00	15,750.00	14,887.50		
VS (mg/L)	Lab Published	9,140.00	11,100.00	11,600.00	11,400.00	10,810.00		
TP (mg/L)	Lab Published	369.00	348.00	445.00	404.00	391.50		
NO2-N (mg/L)	Lab Published	3.00	3.00	8.00	3.00	4.25		
TKN (mg/L)	Lab Published	694.00	774.00	694.00	932.00	773.50		
K (mg/L)	Lab Published	54.00	50.00	62.00	62.00	57.00		
NH3p_NH4p_N (mg/L)	Lab Published	28.00	22.20	6.40	9.10	16.43		
NO3-N (mg/L)	Lab Published	3.00	3.00	160.00	3.00	42.25		

Appendix C

Appendix C - Details of Abnormal Sewage Discharge Events

Event Details Summary**Facility Bypass**

Date	Location	Details	Volume (m3)	Start Time	End Time	Duration (h)	Discharge Receiver	Disinfection Provided
May 6 th -8 th 2023	UV#1 Reactor	SAC Reference #1-3G73V3. UV Reactor #1 intensity interlock due to corroded and broken wire connection in the intensity sensor. Plant ran without disinfection on Train #1 until repairs could be made	2092.9	10:01 am	14:45 pm	52 hrs 44 min	Muskrat Lake	No

Facility Overflow

Date	Location	Details	Volume (m3)	Start Time	End Time	Duration (h)	Discharge Receiver	Disinfection Provided
April 4 th -9 th 2023	Overflow pipe post preliminary treatment	SAC Reference #1-34K020. Overflow was a result of the spring freshet and rainfall event overwhelming the plant. Samples were collected over the duration of the overflow.	15,172	15:30 pm	8:43 am	89 hrs 13 min	Muskrat Lake	No
May 1 st -2 nd 2023	Overflow pipe post preliminary treatment	SAC Reference #1-3FS3L6. Overflow was a result of a rainfall event overwhelming the plant. Samples were collected over the duration of the overflow.	788	14:12 pm	21:15 pm	31 hrs 3 min	Muskrat Lake	No
May 3 rd -8 th 2023	Overflow pipe post preliminary treatment	SAC Reference #1-3FYGCW. Overflow was a result of a rainfall event overwhelming the plant. samples were collected over the duration of the overflow.	3501	19:01 pm	13:15 pm	114 hrs 14 min	Muskrat Lake	No

Collection Overflow

There are no authorized overflow locations in this system.

Spills of Sewage

Date	Location	Details	Volume (m3)	Start Time	End Time	Duration (h)	Discharge Receiver	Disinfection Provided
There were no spill events reported during the reporting period.								

Collection System Monitoring Data

Event Date	Event Location	Volume (m3)	Parameter	mg/L	Source Loading	Any Adverse Impacts & Corrective Actions
There were no overflow or spill of sewage events in the Collection System reported during the reporting period.			BOD			
			Total Suspended Solids			
			Total Phosphorus			
			Total Kjeldahl Nitrogen (TKN)			
			E.Coli			

Appendix D

Appendix D - ECA Annual Report Requirements

Facility ECA #4306-B2YKK4 Section 11	Section in Report
4.a. a summary and interpretation of all Influent, Imported Sewage monitoring data, and a review of the historical trend of the sewage characteristics and flow rates	Treatment Flows Raw Sewage Quality
4.b. a summary and interpretation of all Final Effluent monitoring data, including concentration, flow rates, loading and a comparison to the design objectives and compliance limits in this Approval, including an overview of the success and adequacy of the Works	Treatment Flows Effluent Quality
4.c. a summary of any deviation from the monitoring schedule and reasons for the current reporting year and a schedule for the next reporting year	Monitoring Schedule Appendix A
4.d. a summary of all operating issues encountered and corrective actions taken	Operating Issues and Problems
4.e. a summary of all normal and emergency repairs and maintenance activities carried out on any major structure, equipment, apparatus or mechanism forming part of the Works	Maintenance
4.f. a summary of any effluent quality assurance or control measures undertaken	Effluent Quality
4.g. a summary of the calibration and maintenance carried out on all Influent and Final Effluent monitoring equipment to ensure that the accuracy is within the tolerance of that equipment as required in this Approval or recommended by the manufacturer;	Maintenance
4.h. a summary of efforts made to achieve the design objectives in this Approval, including an assessment of the issues and recommendations for pro-active actions if any are required under the following situations: i. when any of the design objectives is not achieved more than 50% of the time in a year, or there is an increasing trend in deterioration of Final Effluent quality; ii. when the Annual Average Daily Influent Flow reaches 80% of the Rated Capacity;	Operating Issues and Problems
4.i. a tabulation of the volume of sludge generated, 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;	Sludge Generation
4.j. a summary of any complaints received and any steps taken to address the complaints;	Summary of Complaints
4.k. a summary of all Bypasses, Overflows, other situations outside Normal Operating Conditions and spills within the meaning of Part X of EPA and abnormal discharge events;	Operating Issues and Problems Appendix C
4.l. a summary of all Notice of Modifications to Sewage Works completed under Paragraph 1.d. of Condition 10, including a report on status of implementation of all modification.	Maintenance
4.m. a summary of efforts made to achieve conformance with Procedure F-5-1 including but not limited to projects undertaken and completed in the sanitary sewer system that result in overall Bypass/Overflow elimination including expenditures and proposed projects to eliminate Bypass/Overflows with estimated budget forecast for the year following that for which the report is submitted.	Maintenance Operating Issues and Problems

4.n any changes or updates to the schedule for the completion of construction and commissioning operation of major process(es) / equipment groups in the Proposed Works.	Maintenance
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