CREEMORE WASTEWATER TREATMENT PLANT

2023 Performance Report

Contents

Definitions

BOD	Biochemical Oxygen Demand
$CBOD_5$	Carbonaceous Biochemical Oxygen Demand
DO	Dissolved Oxygen
ECA	Environmental Compliance Approval
HP	Horsepower
kg	Kilograms
kW	Kilowatt
mg/l	Milligrams per litre
Ml/d	Mega litres per day
m^3/d	Cubic metres per day
NH_3	Ammonia
TDH	Total Dynamic Head
TKN	Total Kjeldahl Nitrogen
TP	Total Phosphorous
TS	Total Solids
TSS	Total Suspended Solids
UV	Ultraviolet
WWTP	Wastewater Treatment Plant

Section 1: Wastewater System General Information

System Information

Wastewater System Reporting-Creemore Wastewater Treatment Plant

83 Mary Street
Creemore, Ontario L0M 1G0
(705) 466-2741

Wastewater Works Number - 120002683

Wastewater System Owner – The Corporation of the Township of Clearview

Wastewater System Category - Class II Certification

Period Reported - January 1, 2023 – December 31, 2023

Plant Owner –
The Corporation of the Township of Clearview
217 Gideon Street, P.O. Box 200
Stayner, Ontario L0M 1S0
(705) 428-6230

Plant Operating Authority –
Town of Collingwood
P.O. Box 157 97 Hurontario St.
Collingwood, Ontario L9Y 3Z5
Tel. (705) 445-1581

Wastewater Treatment (WWT) Operator Listing			
Name	WWT Classification	Licence No.	Expiry Date
Bell-Adams, Jennifer	3	11169	August 31, 2025
Regts, Brad	3	104259	July 31, 2026
MacNicol, Jason	1	95922	January 31, 2026
Card, Cathy	3	83840	December 31, 2025
Weatherall, Christian	1	120350	December 31, 2025
Wieland, Pierce	2	118539	March 31, 2026
Barrette, Tyler	3	73068	January 31, 2024

Wastewater Collection (WWC) Operator Listing			
Name	WWC Classification	Licence No.	Expiry Date
Barrette, Tyler	2	73067	March 31, 2024
Regts, Brad	2	104258	Feb 28, 2026
Wieland, Pierce	1	120263	December 31, 2025
Weatherall, Christian	1	124161	October 31, 2026
Card, Cathy	OIT	OT65417	April 30, 2025

Plant Certificate of Approval, Environmental Compliance Approvals & Amendments		
Certificate Number	**Date**	**Description/Reason for Amendment**
30589-99-006	July 23rd, 1999	Construction approval
8-1149-99-006	December 3rd, 1999	Air Approval
3-0589-99-006	September 9th, 1999	Amended to indicate compliance with Condition #5 of the Certificate of Approval with respect to construction.
8250-8AWHU7	January 28th, 2011	Amendment for equalization tank installation application submitted by RJ Burnside
3281-AKGR3E	April 6th, 2017	Amendment for modification of membrane filtration

Section 2: Facility Description

The Creemore Wastewater Treatment Plant is owned by the Township of Clearview and operated by the Town of Collingwood.

The plant is located on Lot 8, Conc. IV in the Township of Clearview and services the Village of Creemore. The plant was initially designed to service a population of 1,500, the community's commercial core and the Creemore Springs Brewery Ltd. Provisions were made as part of the design for a future plant capacity increase to accommodate a population of 2,500.

The sewage treatment process consists of an influent pumping station, automatic fine screening (with a manually raked bypass raw sewage screen) and a 2-basin membrane filtration technology treatment process, UV disinfection, effluent re-aeration chamber and outfall to the Mad River.

Phosphorus removal is achieved by ferric chloride addition. Sludge Stabilization is accomplished in a single basin aerobic digester equipped with a Zee-Weed membrane system for thickening. Sludge storage /hauling facilities are also provided.

Standby power is provided by a diesel-driven generator.

Section 3: Process Description

Gravity flow from the Community Collection system arrives at Site MH102. An emergency overflow sewer is also connected at this point.

The Creemore WWTP building has an overall dimension of approximately 34m x 25m and contains the following:

Inlet Pumping Station

- Influent pumping station consisting of a 48.4m^3 wet well.
- Each well is equipped with an ABS submersible pump.
- Each pump has an initial rated capacity of 34.2 L/sec to handle Stage I peak flow. Each pump is capable of being upgraded to 53.7 L/sec to accommodate Stage II peak flow.

Equalization Tank

- One (1) 1,400 m^3 equalization tank with sewage returning to the influent pumping station when peak flow has receded.

Screening

- Influent channel located above the influent pumping room.
- Two channels:
    - 1 - fitted with an automated mechanically cleaned screw screen with a 2 mm screen opening.
    - 1 - bypass channel equipped with a manually cleaned bar screen.

Flow Distribution

- Screened wastewater flows by gravity to the aeration basins.
- Flow is split evenly between the two tanks through a splitter box, which contains an overflow weir and v-notch weir to provide flow equalization.

Biological Treatment (Aeration)

- Two (2) aeration tanks with anoxic and aerobic zones. The anoxic zone is separated from the aerobic zone by a curtain wall with openings to permit flow from the anoxic to the aerobic zone.
- A course bubble diffuser also provides mixing in anoxic zone.
- Each tank also has a submersible re-circulation pump for returning mixed liquor from the aerobic to the anoxic zone and a sludge wasting pump to remove excess biomass to sludge thickener.
- An aerobic environment is maintained in the aerobic portion of the tank with a fine bubble diffused air system.

Membrane Filtration

- Tank ZW-1 holds four (4) Suez modules (Zeeweed) membrane cassettes located in the aerobic zone of the tanks.
- Tank ZW-2 holds four (4) Suez 500D modules (Zeeweed) membrane cassettes located in the aerobic zone of the tanks.
- Associated with the cassettes are the permeate collection headers, air scour distribution pipes for the membranes, pressure and level sensors, oxygen meters,

TSS sensors, three (3) permeate pumps, flow meters and turbidity meters, air separation columns, air removal vacuum pumps, associated valves and piping.

Chemical Systems

Phosphorus removal by ferric chloride addition:

- 1 - 25,000 L bulk storage tank - buried
- 1 – 1,400 L day tank
- 2 – chemical addition metering pumps

Membrane Cleaning

Sodium hypochlorite solution consisting of:

- 100 gal. storage tank (12% hypo)
- 4 – chemical addition metering pumps

Citric acid system consisting of:

- 1 – 100 gal. storage tank with mixer
- 2 – chemical addition metering pumps

Disinfection

- Ultraviolet (UV) disinfection consisting of one (1) bank of modules providing a minimum dose of 30,000 micro watts/sec/cm^2 at peak flow rate of 3,140 m^3/d and 70% lamp output and minimum UV transmittance of 65% to provide an effluent target of 100 CFU/100 mL of E.coli. (monthly geometric mean density). A serpentine weir placed at the end of the channel maintains liquid level within the channel.

Sludge Stabilization

Aerobic Digestion

- One (1) aerobic sludge digestion tank equipped with coarse bubble aeration system.

Sludge Thickener

- A sludge thickener consisting of a 500D membrane cassette and pumps for extracting and returning the liquid portion to the inlet works, back pulse/aerator flush pump and a transfer pump for transferring thickened sludge to the aerobic digester is also employed.

Sludge Holding Tank

- One (1) glass lined steel storage tank with a capacity of 1,400 m^3; located outside of the treatment plant building equipped with a mixing system.
- Underground pumping station housing one sludge loading/mixing pump and associated valving.

Air Blower Room

- Blower room contains seven (7) blowers for process air requirements, two (2) air compressors with one (1) air dryer to supply instrument air.
- Three (3) air blowers, two (2) duty and one (1) standby to supply supplemental air to the diffuser grid in the aeration tanks.

- Two (2) air blowers, one (1) duty and one (1) standby to supply cyclic air scour to the membrane cassettes.
- Two (2) air blowers to supply air to the aerobic digester diffuser grid and the air scour for the membrane cassettes.

Standby Power

- 1 - 375 kW diesel generator set to provide stand-by power capability.
- A process schematic of the existing treatment facilities is shown in Appendix D for reference.

Table 1: Major Unit Process Data	
Headworks	
Wet Well Pumps: • 2 - 7.5 hp submersible pumps rated at 34.2 L/s for stage one flow	
Screening: • 1 - mechanically cleaned screw screen with 2 mm opening • 1 - manually cleaned bar screen located in overflow/bypass channel	
Aeration Tanks Incorporating Membrane Filtration	
Type:	Membrane Technology, Suez ZeeWeed 16-M membrane cassettes
Number:	2 - Trains with anoxic and aerobic zones
Cell Dimensions:	5.3m x 10.6 x 6.4 liquid depth
Total Volume:	720m^3
RAS Pumps:	2 - 7.5 hp submersible pumps rated at 65 L/s
WAS Pumps:	2 – 2.4 hp submersible pumps rated at 36 L/s
Disinfection System	
Disinfection System: • 1 bank of UV lights (6 lamps), low pressure intensity rated at a peak flow of 3,140 m^3/d effluent target of 100 CFU/100 mL of E.coli (monthly geometric mean density)	
Sludge Stabilization and Storage	
Aerobic Digester: • Concrete tank utilizing a coarse bubble diffused air system • Total volume - 272 m^3 at liquid depth of 6.4 m	
Sludge Thickener: • 1 - Zenon membrane 500D cassette in a concrete tank 3.7 m x 2.75 m x 5.2 m working depth for a capacity of approximately 53 m^3 Sludge Holding Tank: • 1 - 1400 m^3 glass lined storage tank	
Process and Membrane Air Supply	
Process Air: • 2 - 40 hp Aerzen blowers • 1- 15 hp Hibon blower Membrane Air: • 1 - 40 hp Hibon blower	

Table 1: Major Unit Process Data
• 2 - 50 hp Hibon blowers Digester Air Supply: • 1 - 30 hp Arezen blower • 1 – 30 hp Hibon blower
Standby Power Supply
Standby Power Supply: • 1 - 375 kw continuous rated diesel generator set

Section 4: Annual Average Performance Assessment

Effluent Objectives and Limits

- Effluent Compliance Limits (concentrations and loadings) are prescribed in Section 7 (2) of the ECA 3281-AKGR3E and are summarized below in Table 2.

Table 2A: Effluent Objectives	
Effluent Parameter	**Concentration Objective (mg/L unless otherwise indicated)**
CBOD5	5.0mg/L
Suspended Solids	5.0mg/L
Total Phosphorous	0.1mg/L
Total Ammonia Nitrogen	1.0 (May 1 – Nov 30) 3.0 (Dec 1 – April 30)
E. Coli	100 organisms per 100mL Monthly Geometric Mean Density

Table 2B: Effluent Concentration Limits		
Effluent Parameter	**Monthly Average Concentration (mg/L unless otherwise indicated)**	**Monthly Average Loading**
$CBOD_5$	10 mg/L	14.0 kg/d
Suspended Solids	10 mg/L	14.0 kg/d
Total Phosphorus	0.2 mg/L	0.28 kg/d
TAN		
May 1 to November 1	2.0 mg/L	2.8 kg/d
December 1 to April 30	4.0 mg/L	5.6 kg/d
Dissolved Oxygen	4.0 mg/L (minimum level)	-
pH Range	6.0 – 9.5	-
E. coli	200 CFU/100mL (Monthly geometric mean density)	-

- Compliance for all parameters except pH and E. coli bacteria is based on a monthly average concentration/loading.

- Compliance for E. coli is based on a monthly geometric mean density.
- Section 7 (2) d. requires that the pH of the effluent be maintained within the range 6.0 to 9.5, inclusive, at all times.

Compliance (Concentration and Loading)

- The monthly average TAN compliance limit of 2.0 mg/L for May was exceeded with an average of 5.30 mg/L a letter of non-compliance can be viewed in Appendix C

Objectives

- The monthly average TP objective of 0.10mg/L was not met in January with an average of 0.18mg/L and in February with an average of 0.19mg/L
- The monthly average TAN objective of 1.0mg/L was not met in May with an average of 5.30mg/L and in July with an average of 1.74mg/L

The monthly flow and process quality data are summarized in Appendix B.

Effluent Sampling Requirements, Monitoring and Recording

Compliance Testing and Analysis

- Monitoring requirements are specified under Condition 9 of the ECA. Twenty–four (24) hour composite samples of raw sewage are required to be collected monthly and analyzed for BOD_5, TSS, TP, and TKN. Twenty–four (24) hour composite samples of final effluent are required to be collected weekly and analyzed for $CBOD_5$, TSS, TP, and TAN. Grab samples of final effluent are required to be collected weekly for analysis for E.coli, temperature, pH, and DO. The plant's current regular monitoring program exceeds these minimum requirements.
- Compliance sampling and analysis of raw sewage is carried out weekly. Twenty–four (24) hour composite samples are collected using an automatic sampler for analysis of BOD_5, TSS, TP, and TKN.
- Compliance sampling and analysis of final effluent is carried out weekly. Twenty–four (24) hour composite samples are collected using a refrigerated automatic sampler for analysis of $CBOD_5$, TSS, TP, and TKN, total ammonia nitrogen, nitrite, and nitrate. Grab samples of final effluent are also collected weekly for analysis of E.coli bacteria. Lastly, grab samples are collected a minimum of once a week and tested for pH and temperature.
- Except for the samples collected for pH and temperature testing, analysis for all compliance samples is carried out by an external contract laboratory, Testmark Laboratories LTD.
- The plant also complies with Guideline F-10-1 concerning sampling and analysis requirements which satisfies condition 2.1 (d).
- The temperature and pH of the final effluent is taken in the field at the time of sampling for Total Ammonia Nitrogen. The Creemore WWTP external sampling program is attached as Appendix A.
- All external laboratory analysis results are reported in the Municipal Utility Monitoring forms which are submitted electronically to wastewater reporting and are used in generating the annual plant performance report.

In-house Testing and Analysis for Process Control

- Influent and Final effluent samples are collected on Monday, Tuesday, Wednesday and Thursday. Grab samples are also obtained for other process streams as required for process control purposes. All samples are analyzed on-site or at the Collingwood WWTP laboratory using techniques in standard methods or using approved methods for HACH DR/2010 Spectrophotometer.
- The Creemore WWTP internal sampling program is attached as Appendix A.

Flow Measurement

- Magnetic flow meters are used to monitor both raw sewage and final effluent flows.
- Both the influent and final effluent flows are trended through the SCADA system.
- The meters are calibrated annually for accuracy to within +/- 5%of actual flow rate within the range of 10% to 100% of the full scale reading to satisfy 9 (6) of the ECA.

Date 2023	Equipment Calibrated/Maintained	Pass/Fail	Comments
July 5	Influent flowmeter	Pass	
July 5	Effluent flowmeter	Pass	

.

Section 5: Capacity Assessment

	Design	Current year
Maximum average daily flow in m^3/d	Stage 1: 860 & 1,400 Stage 2	619
% of capacity based on Average Daily Flow		71.9% of Stage 1

- The Annual average daily flow has fallen within the limit for this reporting period.
- The annual average performance data is summarized in Appendix B.

Section 6: Sludge Management

- Waste activated sludge is aerobically digested at the Creemore WWTP. Digested sludge is pumped to an outdoor sludge storage tank equipped with submersible mixers. Stabilized bio solids are spread on licensed agricultural land as a nutrient and soil conditioner.

- Sludge produced at the Creemore WWTP meets the quality criteria specified in the Ontario Guidelines for Sewage Sludge Utilization on Agricultural lands. Sludge is applied in accordance with these guidelines and the conditions set out in the site Certificate of Approvals. However, sludge disposal through direct utilization on land is not practical during winter months, during periods of inclement weather, and when agricultural fields are inaccessible. The provincial guidelines for biosolids utilization on land recommends municipalities provide six (6) months of sludge storage facilities. The outdoor storage tank has a volume of 1400m^3.
- Sludge disposal operations are currently contracted to a private hauler, Region of Huronia Environmental Services Limited, R. R. #1, New Lowell, Ontario, L0M 1N0. This firm possesses a valid C of A #7383-4LAHXD authorizing it to transport processed organic waste from the Creemore WWTP to approved organic conditioning sites.
- A total volume of 5,638.40 m^3 of biosolids was disposed of from the Creemore facility in 2023. A summary of the locations of where the sludge was disposed, is included in Appendix D.
- A Sludge volume of 5,700.00 m^3 is predicted for the year 2024 due to growth.
- Samples of aerobic sludge are collected twice monthly and sent for metals, E.coli, and nutrient analysis to Testmark Laboratories Ltd in Mississauga, Ontario.
- This sampling frequency satisfies the recommended sampling requirements for sludge as outlined under section 3 of the “Guidelines.”

Section 7: Bypasses, Overflows and Spills

- There were no bypasses, overflows, or spills to report in 2023

Section 8: Maintenance

- Routine preventative maintenance was performed throughout the year in accordance with the recommendations of the original equipment manufacturer.
- Calibrations were carried out on the flow metering equipment and a summary is included.
- Semi-annual inspections and maintenance on the standby generator and monthly operations test, inspection, and maintenance were completed.
- Maintenance records are kept for each piece of equipment at the plant and are available at the plant for viewing.

2023 Maintenance Tracking	
Influent Pump #1	replaced
Influent pump #2	replaced
Influent pump #2 isolation valve	replaced
P-92 Vacuum pump	pump rebuild
ZW#1 level sensor	replaced

Influent pump discharge line	drain port installed
Process pump	motor replacement
UV lights	4 lights replaced
UV ballasts	2 ballasts replaced
Dip tank #1 cleaning tank	pump replaced
Dip tank #2 cleaning tank	pump replaced
Blower motor B-86-B	motor rebuild
Ferric transfer pump	replaced
Digester decant pump	replaced
Zw#1 actuator	replaced

Section 9: Complaints

- There were no complaints in 2023.

Section 10: Comments

- The plant continues to receive high strength wastewater (in terms of soluble BOD_5, SS, & TP) from the Creemore Springs Brewery.
- Foaming issues continue to occur sporadically in the aeration basins during 2023
- Due to the manufacturer installation problems that occurred with the ZW#1 membranes in 2021 and the subsequent problems that arose in 2022 it had been determined that a new pedestal support system and guide rails needed to be engineered, fabricated, and installed. As of November 2023, this project had not been completed. The lack of being able to clean the ZW#1 cassettes and the reduced number of membranes in ZW#2 left the plant with reduced treatment capacity. This created problems in late November and early December for the operating authority. Due to the reduced capacity and lack of membrane cleaning the plant experienced times of not being able to produce the equivalent final effluent to the amount of inflow coming into the plant. This resulted in utilizing the EQ tank as storage and then hauling it to neighboring municipalities to prevent a spill or overflow from occurring.

Appendix A

Sampling and Process control

Composite samples are taken on both the influent and final effluent flow. Samples are taken Monday – Thursday, dependent on staffing.

Samples are analyzed using procedures from the most current edition of "Standard Methods for the Examination of Water and Wastewater" and approved methods for HACH DR 2010 Spectrophotometer.

Samples are obtained by the operators and returned to the Collingwood Lab for analysis (pH, DO &Temp are done on site at the time sample is taken). Operators are responsible for obtaining sufficient samples for the laboratory technician.

In-House Sampling			
Unit Process	**Type Sample**	**Parameters Tested**	**Frequency**
Influent	Composite	pH, TSS, TP, NH3	Daily M-T
Aeration I. Mixed Liquor	Grab	TSS	Daily M-T
Sludge Stabilization I. Thickened sludge	Grab	TS & VS	As required
II. Digested sludge	Grab	TS & VS	As required
Final Effluent	Grab Composite	TSS, pH, DO, Temp, TP, NH3 TSS, pH, DO, Temp, TP, NH3	Monday Tuesday, Wednesday, Thursday

External Lab Analysis			
Unit Process	**Type Sample**	**Parameters Tested**	**Frequency**
Influent	Composite	TP, TSS, BOD5, TAN TKN, N03, N02	Weekly
Effluent	Composite Grab	TSS, CBOD5, TP, TAN N03, N02, TKN E-Coli	Weekly Weekly
Bio-solids (Aerobic Sludge)	Grab	TS, VS, ICAP,TP,NH3, TKN, anions, E-Coli	Twice/Month

- Samples are sent to an outside Lab to supplement the testing done in-house and provide a QA/QC check.
- The external lab is an accredited lab and these results are reported on the monthly R1 sheets.

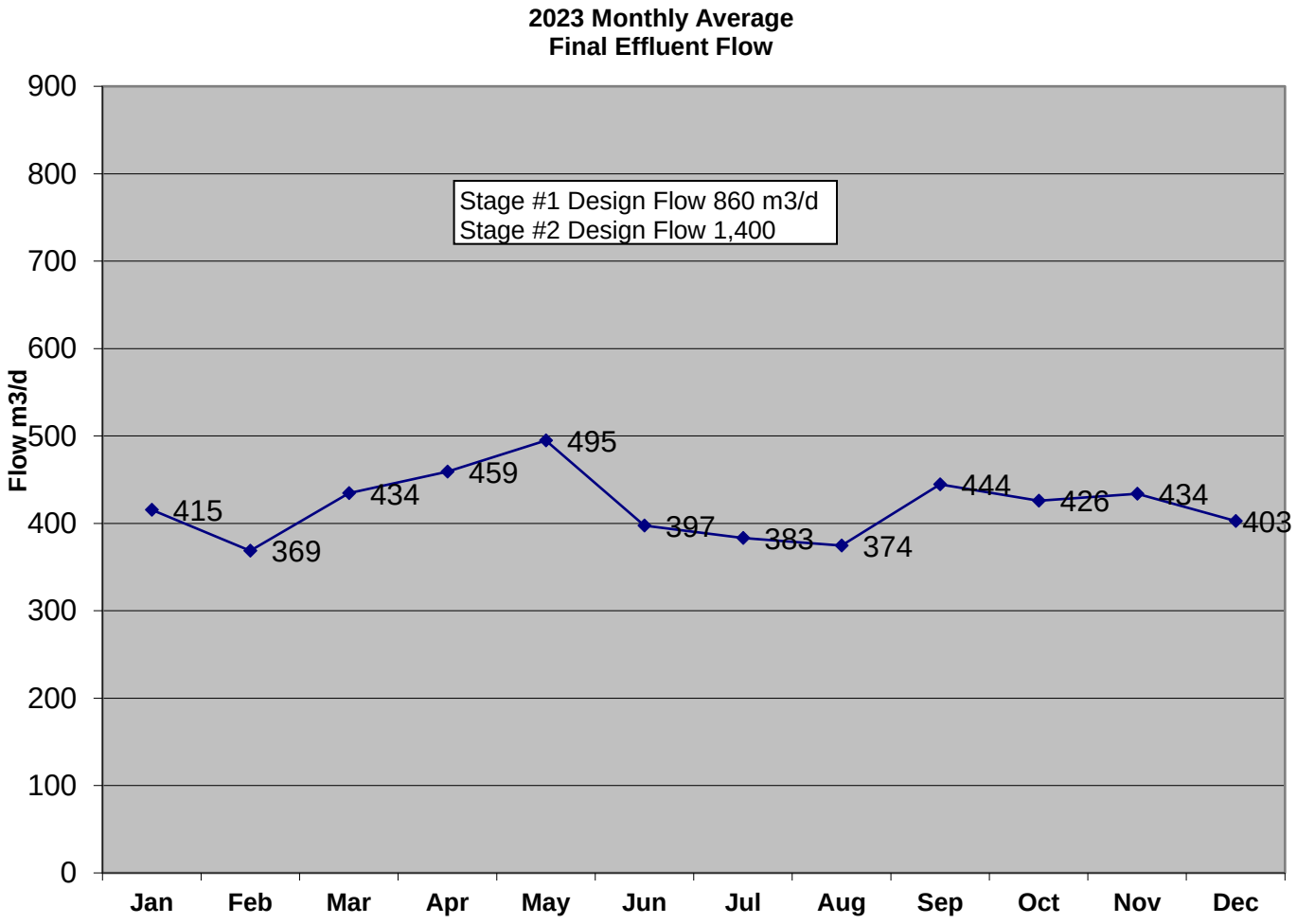
Appendix B

Monthly Flow and Process Quality Data

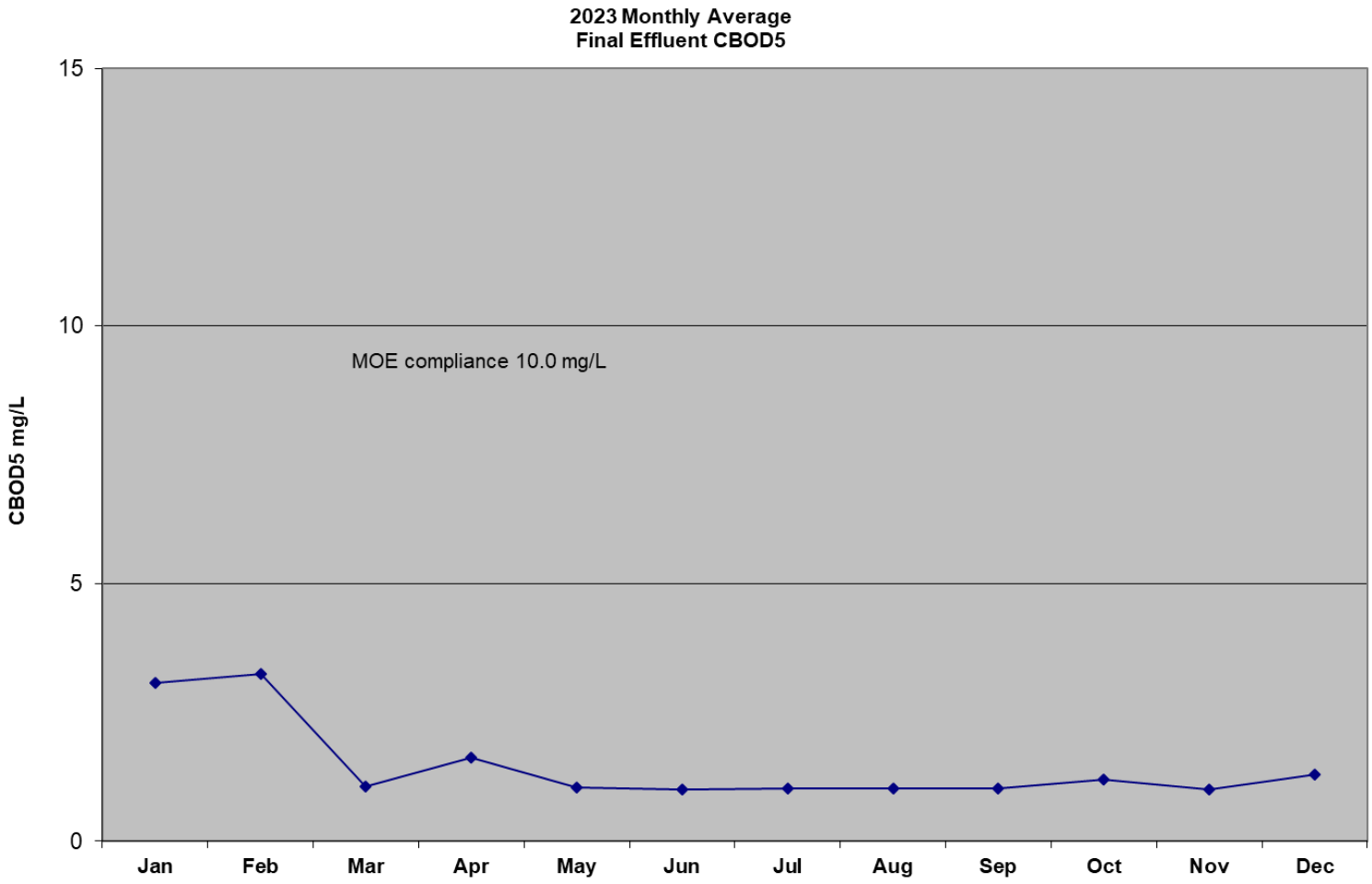
CREEMORE
WWTP PERFORMANCE EVALUATION 2023

2023	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	ECA Criteria
FLOWS (m^3/d)														
Influent														
ADF	388	393	408	515	434	373	350	331	316	313	333	335	369	
Total	12,030	10,995	12,637	15,463	13,442	11,191	10,841	10,251	9,474	9,708	8,337	10,376	134,745	
Max Day	488	457	612	619	499	486	442	421	369	366	388	514		
Min Day	303	324	318	396	343	291	252	268	243	256	270	253		
FinalEffluent														
ADF	415	369	434	459	495	397	383	374	444	426	434	403	413	
Total	12,876	10,320	13,467	13,774	15,338	11,920	11,883	11,606	13,333	13,204	10,841	12,486	151,047	
Max Day	533	504	584	566	733	493	483	475	556	632	589	682		
Min Day	292	304	233	350	235	314	290	303	306	268	294	282		
BOD5 (mg/L)														
Influent	968	798	1018	625	1190	1475	1603	1194	1213	1275	910	223	1041	
Effluent **CBOD5**	3.1	3.3	1.1	1.6	1.0	1.0	1.0	1.0	1.0	1.2	1.0	1.3	1.5	10.0 mg/L
BOD5 (kg/d)														
Effluent average loading	1.16	1.00	0.45	0.64	0.55	0.33	0.31	0.40	0.39	0.48	0.48	0.55		14.0 kg/d
	Compliance is a monthly average concentration of 10.0 mg/L and a monthly average loading of 14.0 kg/d in the Final Effluent													
SS (mg/L)														
Influent	264	211	166	188	198	243	328	296	257	292	243	188	239	
Effluent	3.0	3.1	1.5	1.6	1.4	1.9	0.9	2.9	1.8	2.2	1.9	2.7	2.1	10.0 mg/L
SS (kg/d)														
Effluent average loading	1.06	0.94	0.63	0.64	0.78	0.62	0.00	1.16	0.65	0.86	0.92	1.12		14.0 kg/d
	Compliance is a monthly average concentration of 10.0 mg/L and a monthly average loading of 14.0 kg/d in the Final Effluent													
TP (mg/L)														
Influent	24.1	18.1	14.7	11.1	15.5	16.4	21.2	18.2	21.9	19.2	10.0	16.2	17	
Effluent	0.18	0.19	0.07	0.05	0.06	0.03	0.04	0.06	0.08	0.07	0.06	0.04	0.08	0.2 mg/L
TP (kg/d)														
Effluent average loading	0.063	0.055	0.031	0.019	0.031	0.011	0.011	0.023	0.029	0.027	0.030	0.019		0.28 kg/d
	Compliance is a monthly average concentration of 0.2 mg/L and a monthly average loading of 0.28 kg/d in the Final Effluent													
TAN (mg/L)														
Influent	61.5	56.3	36.7	16.5	18.3	16.9	20.6	23.2	50.1	32.0	37.7	48.7	35	
Effluent	1.07	0.60	1.33	0.13	5.30	0.09	1.74	0.26	0.24	0.17	0.20	0.27	0.95	
TAN (kg/d)														
Effluent average loading	0.39	0.17	0.49	0.05	2.07	0.03	0.61	0.08	0.09	0.07	0.10	0.10		
May 1 to Nov 31	Compliance is an monthly average concentration of 2.0 mg/L and a monthly average loading of 2.8 kg/d in the Final Effluent													
Dec 1 to Apr 30	Compliance is an monthly average concentration of 4.0 mg/L and a monthly average loading of 5.6 kg/d in the Final Effluent													
DO (mg/L)														
Feff min value	5.9	8.6	8.6	8.0	4.0	5.3	4.8	4.7	4.4	4.8	5.8	4.6		
Feff max value	6.4	8.8	9.1	9.7	8.7	5.9	5.8	7.4	5.2	6.2	6.9	6.6		>4.0 mg/L
	Compliance means maintaining a minimum dissolved oxygen concentration of 4.0 mg/L in the final effluent													
E-Coli (CFU/100mL)														
Effluent	20	3	9	34	3	3	4	10	18	2	1	24		200/100mL
	Compliance means the monthly geometric mean density of E-Coli does not exceed 200 organisms / 100mL of Final Effluent													
pH														
Feff min value	6.9	7.2	6.9	6.9	6.8	6.5	6.9	7.0	6.7	6.8	7.0	6.5		>, = 6.0
Feff max value	8.0	7.8	7.8	7.8	7.8	7.4	7.6	7.6	7.5	7.6	7.8	7.8		<, = 9.5
	Compliance means maintaining the the pH of the final effluent within the limits 6.0 to 9.5													
TKN														
Influent	90.10	85.5	59.0	39.98	45.6	45.2	63.7	69.4	61.3	54.4	65.1	74.3	62.8	
Effluent	3.85	3.13	4.10	3.73	7.98	2.75	6.75	2.38	0.43	0.58	1.60	0.62	3.2	

2023 MONTHLY AVERAGE FINAL EFFLUENT FLOW



2023 MONTHLY AVERAGE FINAL EFFLUENT CBOD5



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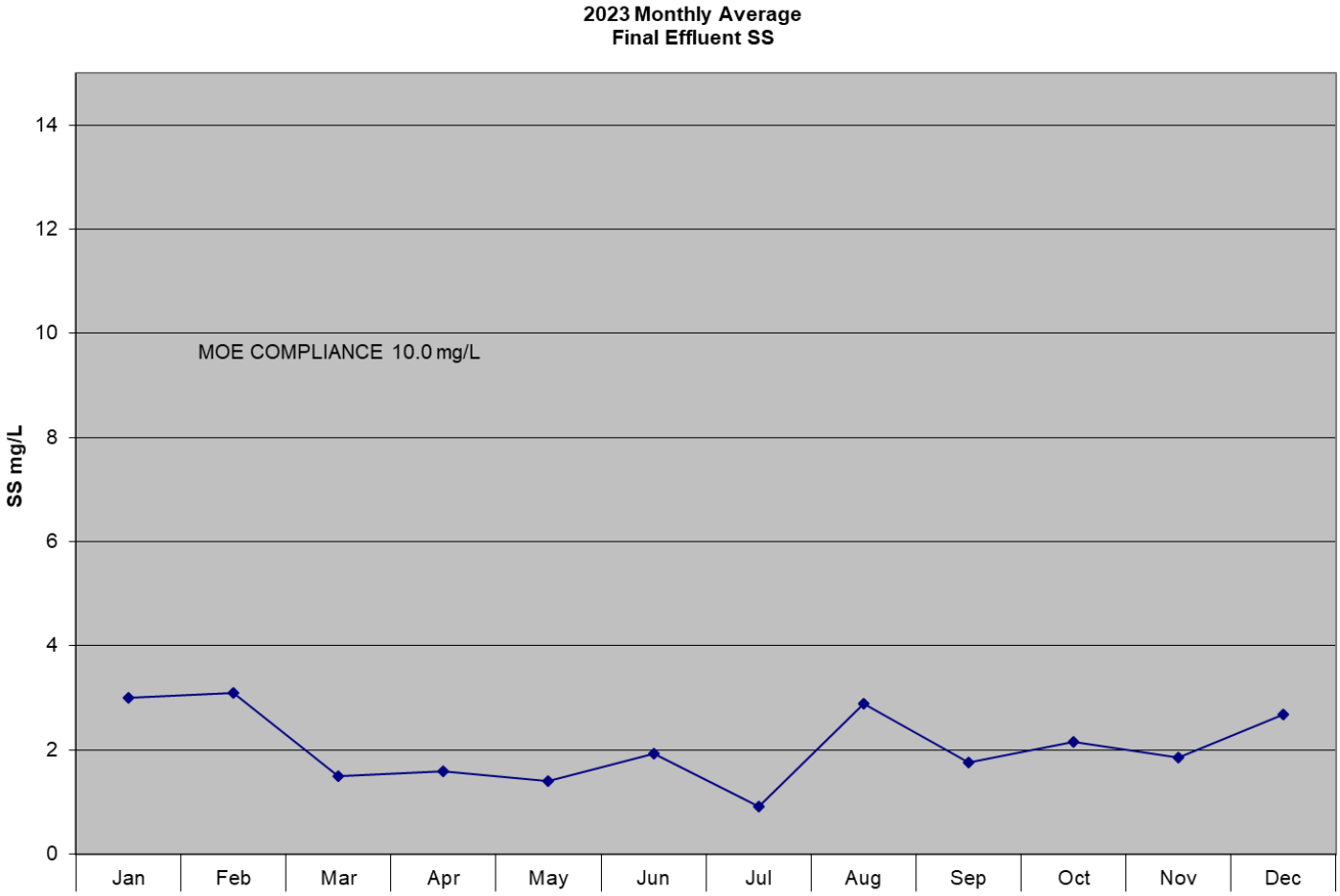

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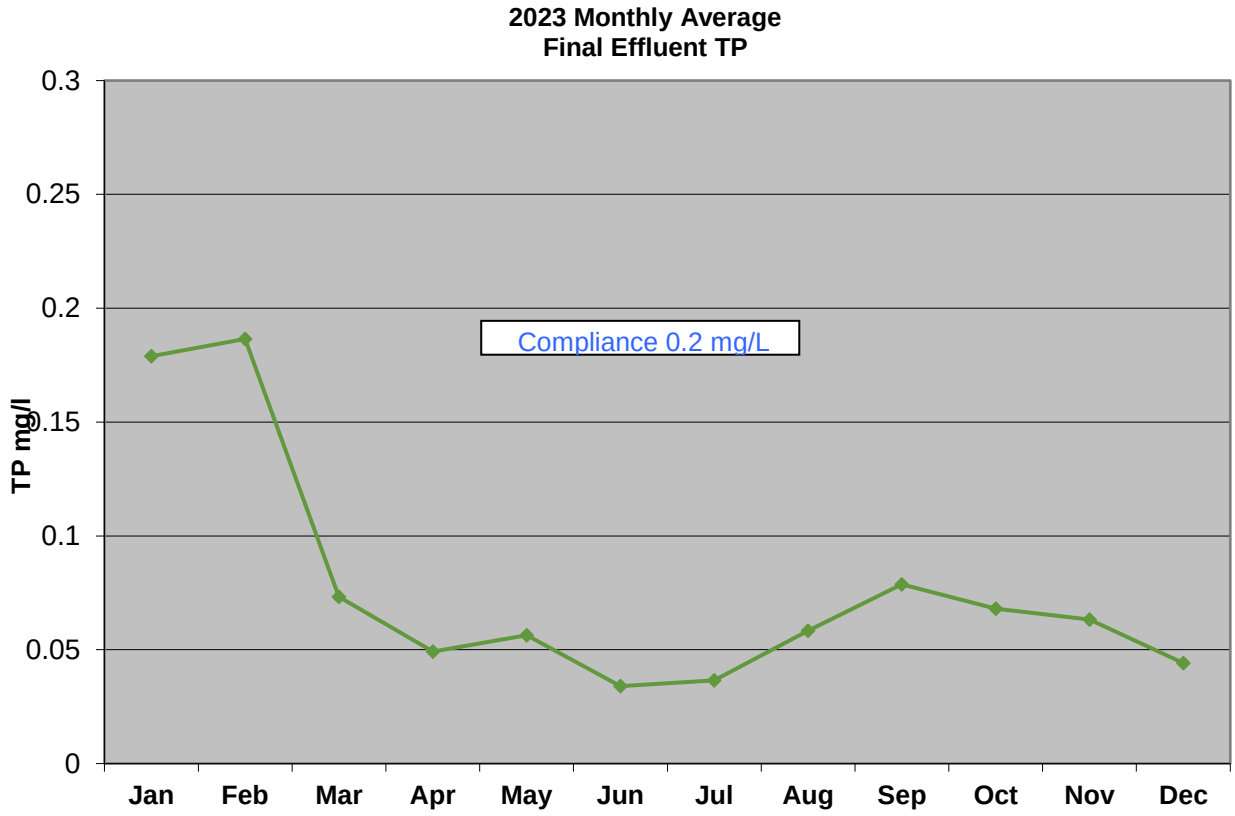
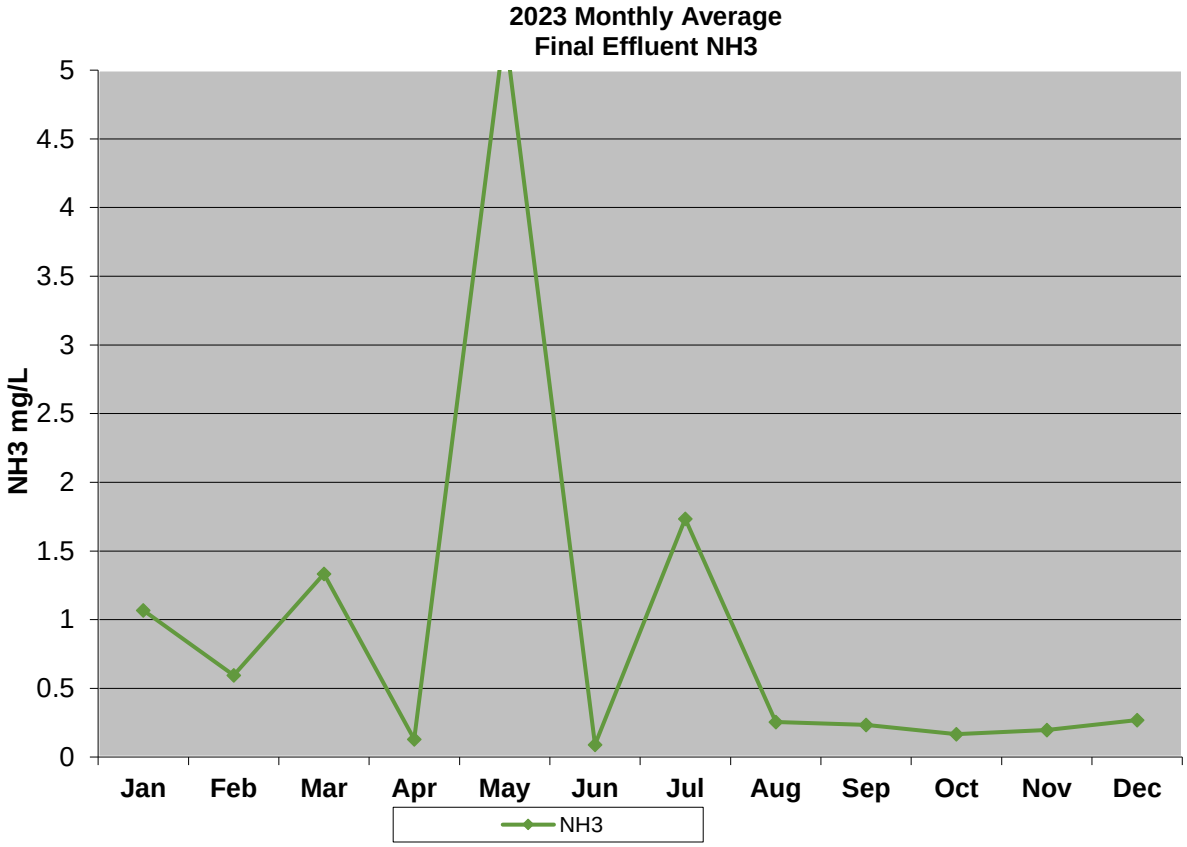
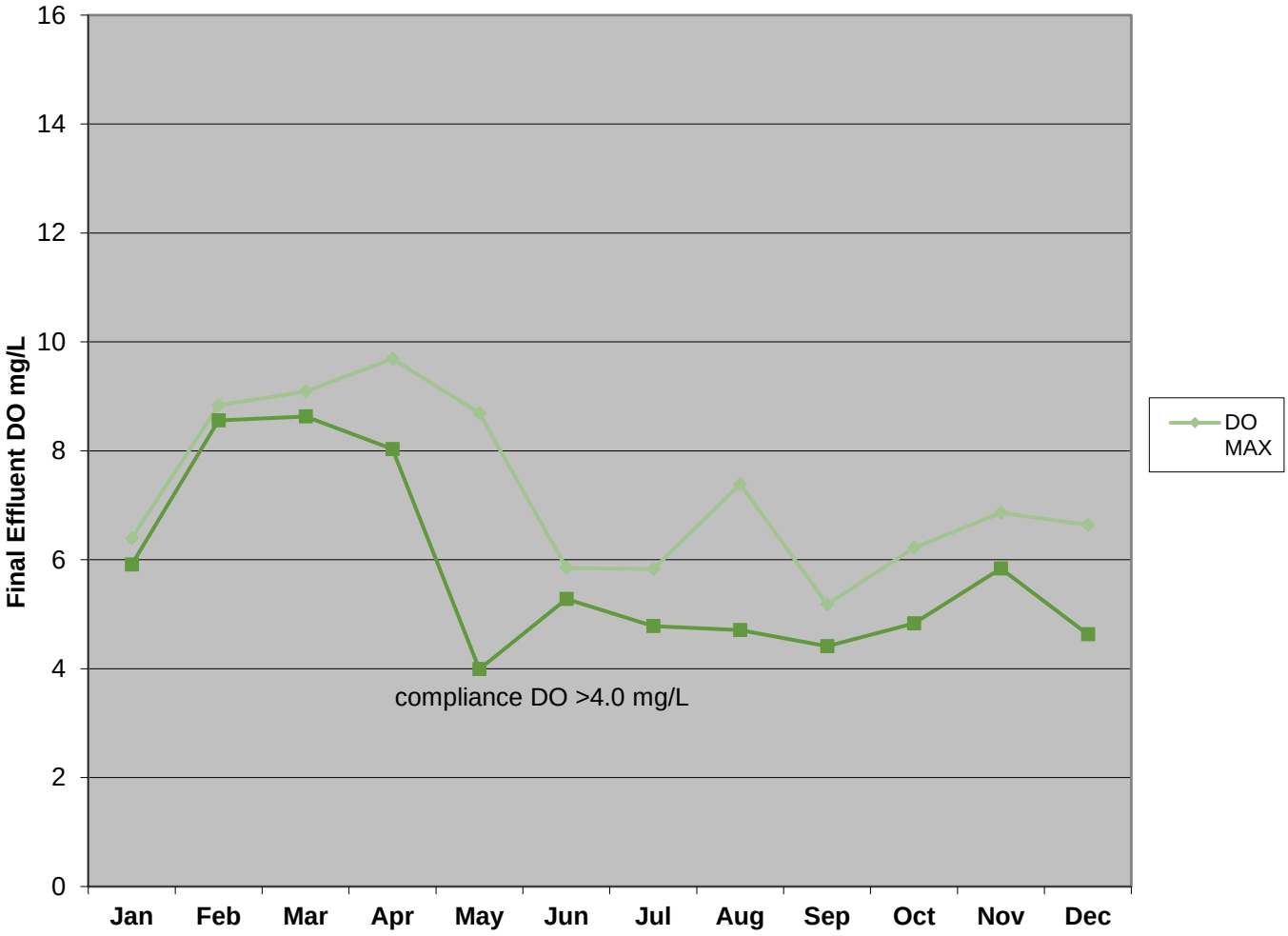


2022 MONTHLY AVERAGE FINAL EFFLUENT NH3



2023 MONTHLY AVERAGE FINAL EFFLUENT DO



Appendix C

Exceedance & Corrective Actions

June 12, 2023

Ministry of the Environment, Conservation and Parks
Barrie District Office
Unit 1203
54 Cedar Point Drive
Barrie, Ontario
L4N 5R7

Attention: Aaron Mattson, Provincial Officer

Hello Aaron,

I am writing to inform you that Creemore WPCP did not meet the monthly average compliance concentration of Total Ammonia Nitrogen (TAN) for the month of May. The compliance limit for May is 2.0 mg/L and the average achieved is 5.30 mg/L.

On May 23rd we had an extremely high result of 25.70 mg/L but the other four samples for the month are well below the design objective. I've reviewed the loading limit of 2.8 kg and will report that the average achieved was 2.0 kg.

Further to our conversation regarding investigating these instances of high nitrogen events, I am collaborating with Clearview Twp and BlueSky Engineering to have the data reviewed so we can get a better understanding of what is happening biologically in the plant. The senior consultant that we spoke with did feel we should be comfortable to relay that we are essentially running an industrial wastewater treatment plant and not a domestic sewage plant, so this complicates the understanding of process changes from a sewage operator perspective. Once a summary of the data interpretation has been received, I'll pass it along to you so we can all have a better understanding of what is happening and try to do what we can to change the process, so these effluent deposits don't happen.

TAN results
May 3 – 0.12 mg/L
May 10 – 0.35 mg/L
May 17 – 0.27 mg/L
May 23 – 25.70 mg/L
May 31 – 0.06 mg/L

Monthly average = 5.30 mg/L

Please let me know if you require any further clarification,

Appendix D

Sludge Disposal Location Summary

Creemore			2023				NASM Spreading							
NASM#	Storage	January	February	March	April	May	June	July	August	September	October	November	December	Total
Rohes storage lagoon	45.00		1,104.40	817.6	1,033.20	229.00	45.00	42.00			84.00			3,400.20
NASM #24469							84.00							84.00
NASM #24850								849.40						849.40
NASM #23760										882.00				882.00
NASM #24321										358.60				358.60
NASM #60893											109.20			109.20
														0.00
														0.00
														0.00
														0.00
														0.00
														0.00
														0.00
														0.00
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														0.00
Total	45.00	0.00	1,104.40	817.60	1,033.20	229.00	129.00	891.40	0.00	1,240.60	193.20	0.00	0.00	5,638.40

Yellow highlight represents sludge taken for storage