COLLINGWOOD

CLEARVIEW TOWNSHIP

Creemore

2025 Annual Wastewater Performance Report

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Acronyms

BOD	Biochemical Oxygen Demand
$CBOD_5$	Five Day Carbonaceous Biochemical Oxygen Demand
CFU	Colony Forming Units
COD	Chemical Oxygen Demand
DO	Dissolved Oxygen
ECA	Environmental Compliance Approval
E.coli	Thermally tolerant forms of Escherichia
Hg	Mercury
FP	Filtered Phosphorous
GEOMEAN	Average of a set of Products
HP	Horsepower
kg	Kilograms
kW	Kilowatt
MECP	Ministry of the Environment, Conservation and Parks
mg/l	Milligrams per litre
Ml/d	Mega litres per day
m^3/d	Cubic metres per day
NH_3	Ammonia
NO_2	Nitrites
NO_3	Nitrates
pH	Acidity, potential of hydrogen
STF	Sewage Treatment Facility
SVI	Sludge Volume Index
$TBOD_5$ or BOD_5	Five Day Biochemical Oxygen Demand
TAN	Total Ammonia Nitrogen
TKN	Total Kjeldahl Nitrogen
TP	Total Phosphorous
TS	Total Solids
TSS	Total Suspended Solids
UV	Ultraviolet
VFA	Volatile Fatty Acids
VS	Volatile Solids
WPCP	Wastewater Treatment Plant

Introduction

The Town of Collingwood operates the Creemore Water Pollution Control Plant (WPCP), owned by the Township of Clearview. WPCP has class II certification, and its Wastewater Works Number is 120002683.

This report has been prepared to address the annual performance reporting requirements for the Stayer Water Pollution Control Plant (WPCP) as outlined in the Environmental Compliance Approval (ECA) 3281-AKGR3E issued April 6th, 2017.

The report summarizes the monitoring and operational results and covers the period from January 1, 2025, to December 31, 2025. All compliance objectives and limits were achieved in 2025, except for the Total Ammonia Nitrogen (TAN) concentration limit and the TAN loading limit in December, as further detailed in the report. The report is submitted to the District Manager of the Ministry of Environment, Conservation and Parks (MECP) by March 31st.

Facility Description

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 serve 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.

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

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
- 1 – Urea dosing pump for nitrogen stabilization

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 - 275 kW diesel generator set to provide stand-by power capability.

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. The objectives and limits are summarized below in Tables 1A and 1B.

Table 1A: Effluent Objectives	
Effluent Parameter	**Concentration Objective (mg/L unless otherwise indicated)**
$CBOD_5$	5.0
TSS	5.0
TP	0.1
TAN	1.0 (May 1 – Nov 30) 3.0 (Dec 1 – April 30)
E. Coli	100 organisms per 100 mL monthly geometric mean density

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

Note: 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 and Objectives Summary (Concentration and Loading)

There were two compliance limit exceedances in 2025. The effluent monthly average Total Ammonia Nitrogen (TAN) limit is 4.0 mg/L. However, the monthly average was 11.52 mg/L in December 2025. The TAN loading limit of 2.8 kg/d was also exceeded, with an average loading of 4.3 kg/d. The MECP was notified, and corrective actions were implemented as required.

The elevated TAN levels in December may have been associated with the discharge of cleaning-related chemicals linked to a temporary shutdown of a local brewery. Urea dosing was implemented, as recommended by the MECP, to help manage the large fluctuations in loading from the brewery.

During the same period, the plant also experienced excessive foaming, indicating a possible filamentous growth issue. Operational measures were implemented to address the filamentous growth, including the application of sodium hypochlorite to the surface of the foam throughout the day. A reduction in foaming has been observed over the past two weeks. In addition, plant operating setpoints were adjusted to increase the detention time in the aeration tanks to help correct the issue.

There were no other objective or limit exceedances in 2025.

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, TAN, NO_2, and NO_3. Grab samples of final effluent are also collected weekly for analysis of E. coli. 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 TAN sampling. 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 enclosed in 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.
- The influent flowmeter, effluent flowmeter, Wet Well #1 indicator, and Wet Well #2 indicator were calibrated between June 16 and June 23, 2025.

Capacity Assessment

	Design	Current year
Maximum average daily flow in m^3/d	Stage 1: 860 & 1,400 Stage 2	662.1
% of capacity based on Average Daily Flow		77% 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.

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 biosolids 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 recommend 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 3,793.00 $m^3$of biosolids was disposed of from the Creemore facility in 2025. All of the biosolids were stored with ROHES as noted above for future land application.
- A Sludge volume of 3,800.00 m^3 is predicted for the year 2026 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.”

Bypasses, Overflows and Spills

- There were no bypasses or overflows in 2025

Maintenance

- There were no urgent repairs performed in 2025 that affected the performance of the WPCP.
- 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.

2025 Maintenance/Minor modifications Tracking	
UV System	Two new bulbs, one quartz sleeve and two ballasts installed
Blower 85-1	New fan and fan motor starter
ZW#2	Replaced plumbing, hardware, modules and hoses for all four cassettes
Digester	Aeration pipe repair
Air compressor	Replaced the contact starter
Generator	Replaced two 1,135 fuel storage tanks with two 1,111 L fuel storage tanks as the old tanks failed comprehensive inspection

Thickener pump	New Guiderails installed
ZW#1 – A cassette	Replaced hoses and fittings
Vacuum pump P-92	Repaired
Influent pumps	Replaced start relays and breakers
ZW#2	Repaired the aeration header and discs
Blower B85-1	Rebuilt
Influent well	Clean out

Complaints

- There were no complaints in 2025.

Comments

- The plant continues to receive high-strength wastewater (in terms of soluble BOD_5, TSS, & TP) from the Creemore Springs Brewery.
- Foaming continues to occur sporadically in the aeration basins and has been an operational difficulty throughout 2025. It is believed that the cause of the foaming is due to loading discharges from brewery waste.
- Weekday high-strength loading to the plant, along with normal loading on the weekends, has created operational difficulties related to Ammonia Nitrogen. The addition of Urea was recommended by a consultant to assist in biological stabilization.

Appendix A Sampling and Process control

Composite samples are taken on both the influent and final effluent flow. Samples are taken Monday – Thursday, depending 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, TAN	Daily M-T
Aeration I. Mixed Liquor	Grab	TSS	Daily M-T
Sludge Stabilization I. Thickened sludge II. Digested sludge	Grab Grab	TS & VS TS & VS	As required As required
Final Effluent	Grab Composite	TSS, pH, DO, Temp, TP, TAN TSS, pH, DO, Temp, TP, TAN	Monday Tuesday, Wednesday, Thursday

External Lab Analysis			
Unit Process	**Type Sample**	**Parameters Tested**	**Frequency**
Influent	Composite	TP, TSS, BOD_5, TAN TKN, N03, N02	Weekly
Effluent	Composite Grab	TSS, $CBOD_5$, TP, TAN N03, N02, TKN E-Coli	Weekly Weekly
Bio solids (Aerobic Sludge)	Grab	TS, VS, ICAP, TP,TAN, TKN, anions, E-Coli	Twice/Month

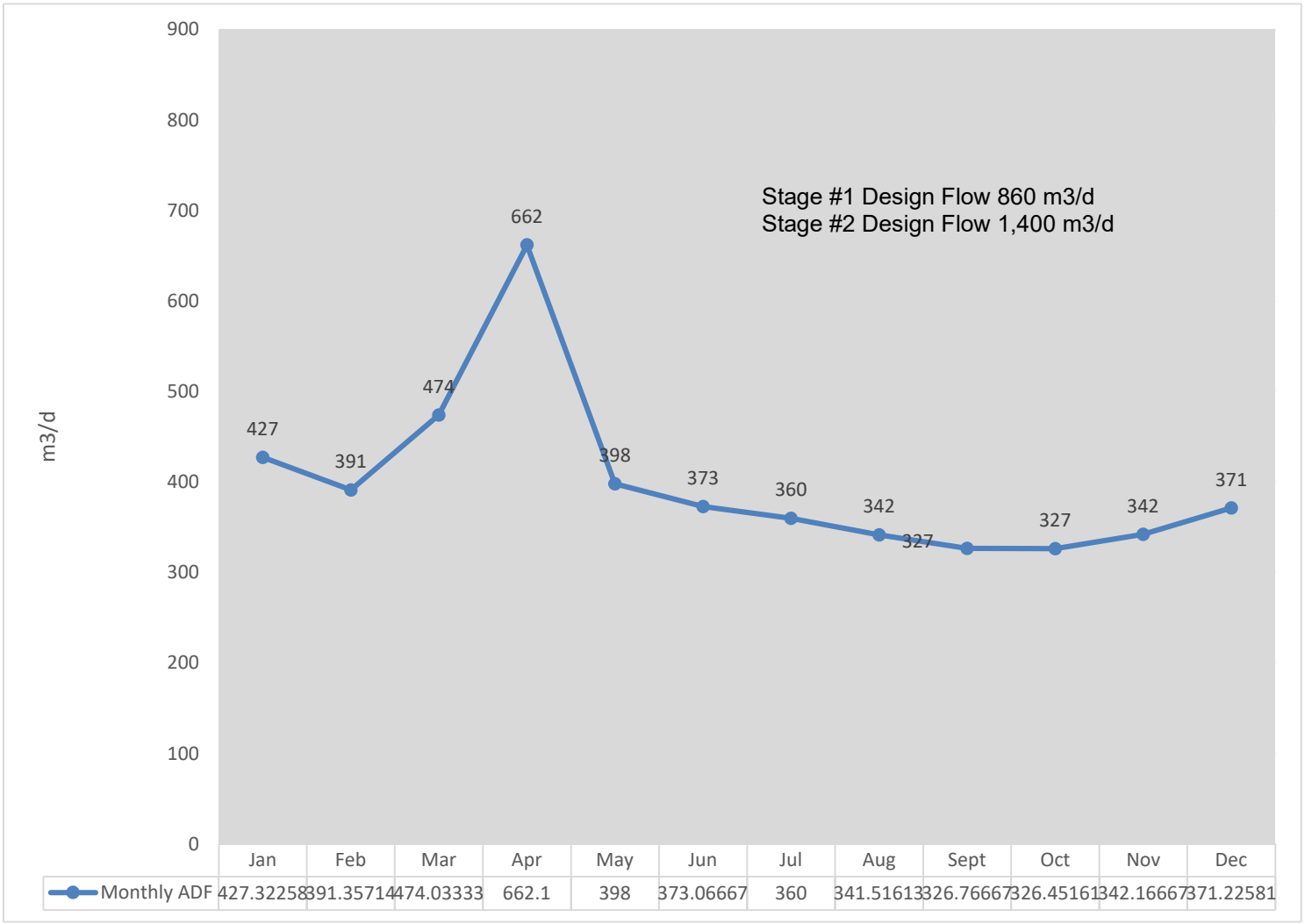
- Samples are sent to an outside Lab to supplement the testing done in-house and provide a QA/QC check.
- The external lab is an accredited lab, and these results are reported on the monthly MUMPS forms.

Appendix B Monthly Flow and Process Quality Data

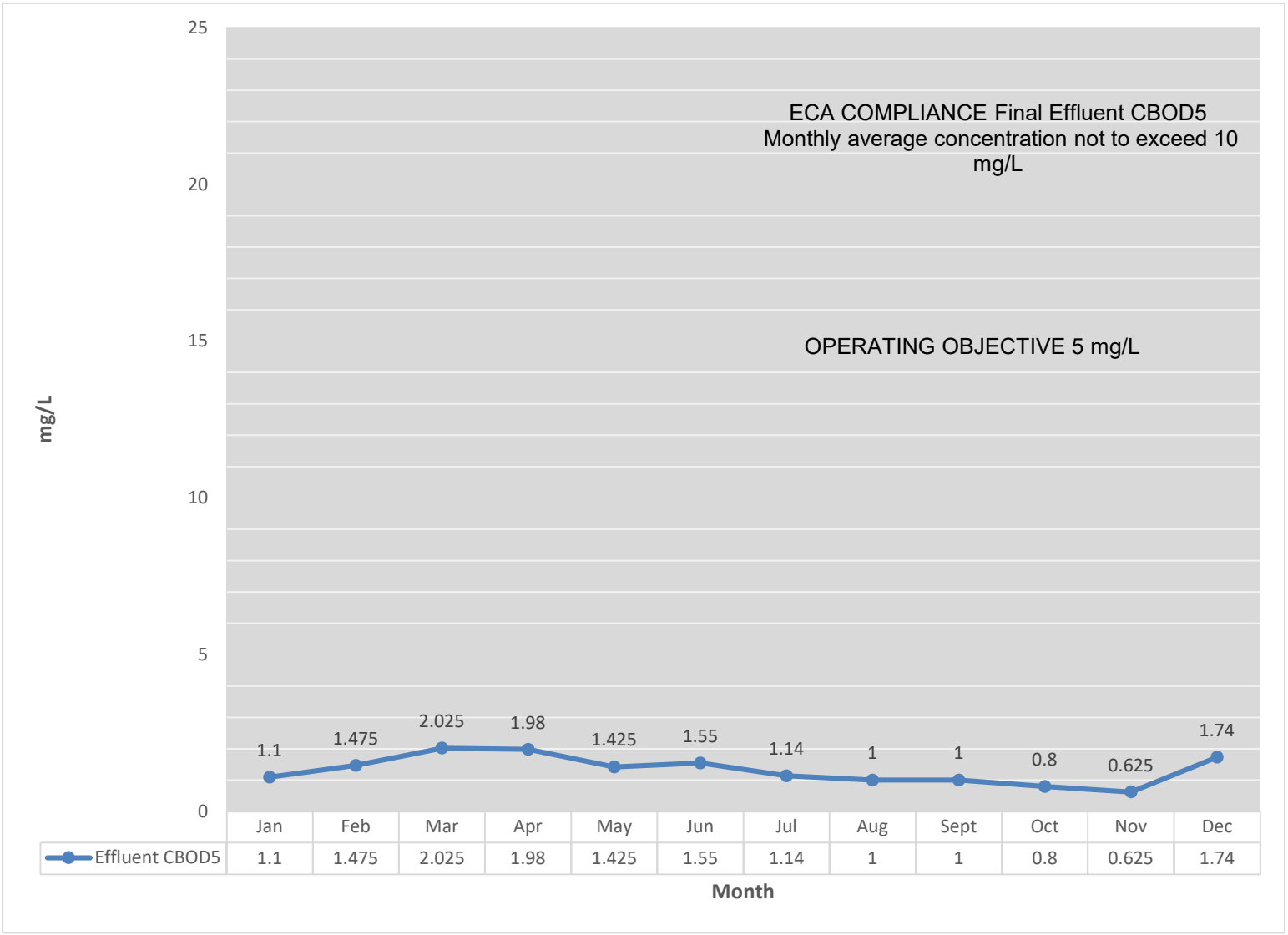
CREEMORE WPCP PERFORMANCE EVALUATION 2025

2025	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	ECA Criteria
FLOWS (m^3/d)														
Influent														
ADF	333	328	439	662	353	341	328	316	297	298	314	341	361	
Total	10,316	9,175	13,165	19,856	10,946	10,218	10,160	9,785	8,924	9,226	9,415	10,577	131,763	
Max Day	403	399	1028	1683	444	408	389	409	387	363	368	587		
Min Day	267	274	282	366	210	259	264	245	221	245	255	263		
Final Effluent														
ADF	427	391	474	662	398	373	360	342	327	326	342	371	397	
Total	13,247	10,958	14,221	19,863	12,338	11,192	11,160	10,587	9,803	10,120	10,265	11,508	145,262	
Max Day	560	524	679	1388	502	454	488	476	395	448	414	708		
Min Day	321	301	308	384	308	286	181	266	234	218	269	267		
BOD5 (mg/L)														
Influent	1425	883	300	788	1198	1045	1246	1075	993	890	895	972		
Effluent **CBOD5**	1.1	1.5	2.0	2.0	1.4	1.6	1.1	1.0	1.0	0.8	0.6	1.7		10.0 mg/L
BOD5 (kg/d)														
Effluent average loading	0.56	0.64	1.07	1.24	0.60	0.62	0.43	0.34	0.33	0.29	0.25	0.62		14.0 kg/d
	Compliance limit is a monthly average concentration of 10.0 mg/L and a monthly average loading of 14.0 kg/d limit in the Final Effluent													
TSS (mg/L)														
Influent	375	284	222	242	239	591	542	521	324	511	156	313	360	
Effluent	3.2	1.6	0.8	1.9	0.8	1.2	1.5	3.2	1.3	1.4	1.0	1.7	1.6	10.0 mg/L
TSS (kg/d)														
Effluent average loading	1.60	0.68	0.41	1.06	0.32	0.46	0.59	1.08	0.46	0.47	0.38	0.55		14.0 kg/d
	Compliance limit is a monthly average concentration of 10.0 mg/L and a monthly average loading of 14.0 kg/d limit in the Final Effluent													
TP (mg/L)														
Influent	17.1	16.1	9.6	12.4	21.9	27.9	21.6	17.1	20.8	21.3	12.8	16.6		
Effluent	0.04	0.03	0.01	0.01	0.02	0.02	0.02	0.04	0.03	0.09	0.02	0.02		0.2 mg/L
TP (kg/d)														
Effluent average loading	0.021	0.014	0.004	0.007	0.008	0.008	0.007	0.014	0.011	0.030	0.008	0.006		0.28 kg/d
	Compliance limit is a monthly average concentration of 0.2 mg/L and a monthly average loading limit of 0.28 kg/d in the Final Effluent													
TAN (mg/L)														
Influent	34.6	31.8	25.7	16.9	21.7	21.1	28.9	20.8	24.2	24.2	26.7	43.2	27	
Effluent	0.12	0.10	0.11	0.27	0.08	0.12	0.08	0.14	0.08	0.04	0.44	11.52	1.09	
TAN (kg/d)														
Effluent average loading	0.06	0.04	0.06	0.18	0.03	0.05	0.03	0.05	0.03	0.02	0.18	4.30		
May 1 to Nov 31	Compliance limit is a monthly average concentration of 2.0 mg/L and a monthly average loading limit of 2.8 kg/d in the Final Effluent													
Dec 1 to Apr 30	Compliance limit is a monthly average concentration of 4.0 mg/L and a monthly average loading limit of 5.6 kg/d in the Final Effluent													
DO (mg/L)														
Feff min value	5.5	5.6	5.2	4.4	4.2	4.7	4.3	4.5	4.2	5.2	6.1	4.7		
Feff max value	7.0	6.9	7.1	8.1	5.7	6.0	6.1	5.5	5.3	6.7	7.3	7.4		>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	3	1	1	1	1	1	1	1	1	1	2	2	3	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	7.3	7.2	7.2	7.6	7.0	7.3	6.9	6.8	7.2	7.2	7.1	7.3		>, = 6.0
Feff max value	7.8	7.9	7.9	8.1	7.9	8.0	8.1	8.1	8.1	8.2	8.3	8.3		<, = 9.5
	Compliance means maintaining the pH of the final effluent within the limits 6.0 to 9.5													
TKN														
Influent	86.33	65.5	50.7	49.90	56.1	84.4	86.3	66.6	62.1	54.9	50.0	80.8		
Effluent	2.03	1.83	1.55	2.40	1.75	1.98	1.80	2.30	3.05	1.90	3.75	13.64	3.2	

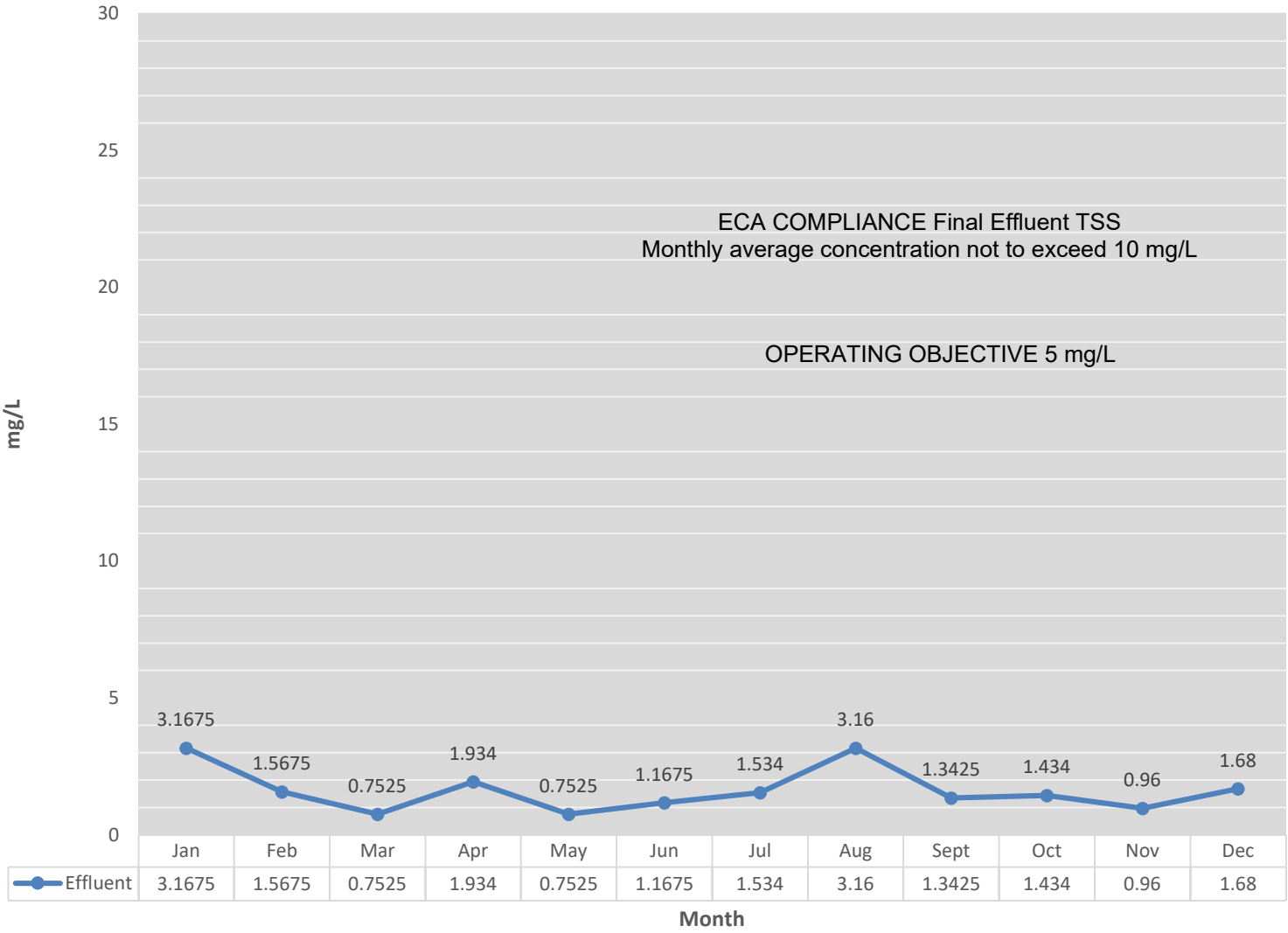
2025 MONTHLY AVERAGE FINAL EFFLUENT FLOW



2025 MONTHLY AVERAGE FINAL EFFLUENT CBOD5



2025 MONTHLY AVERAGE FINAL EFFLUENT TSS



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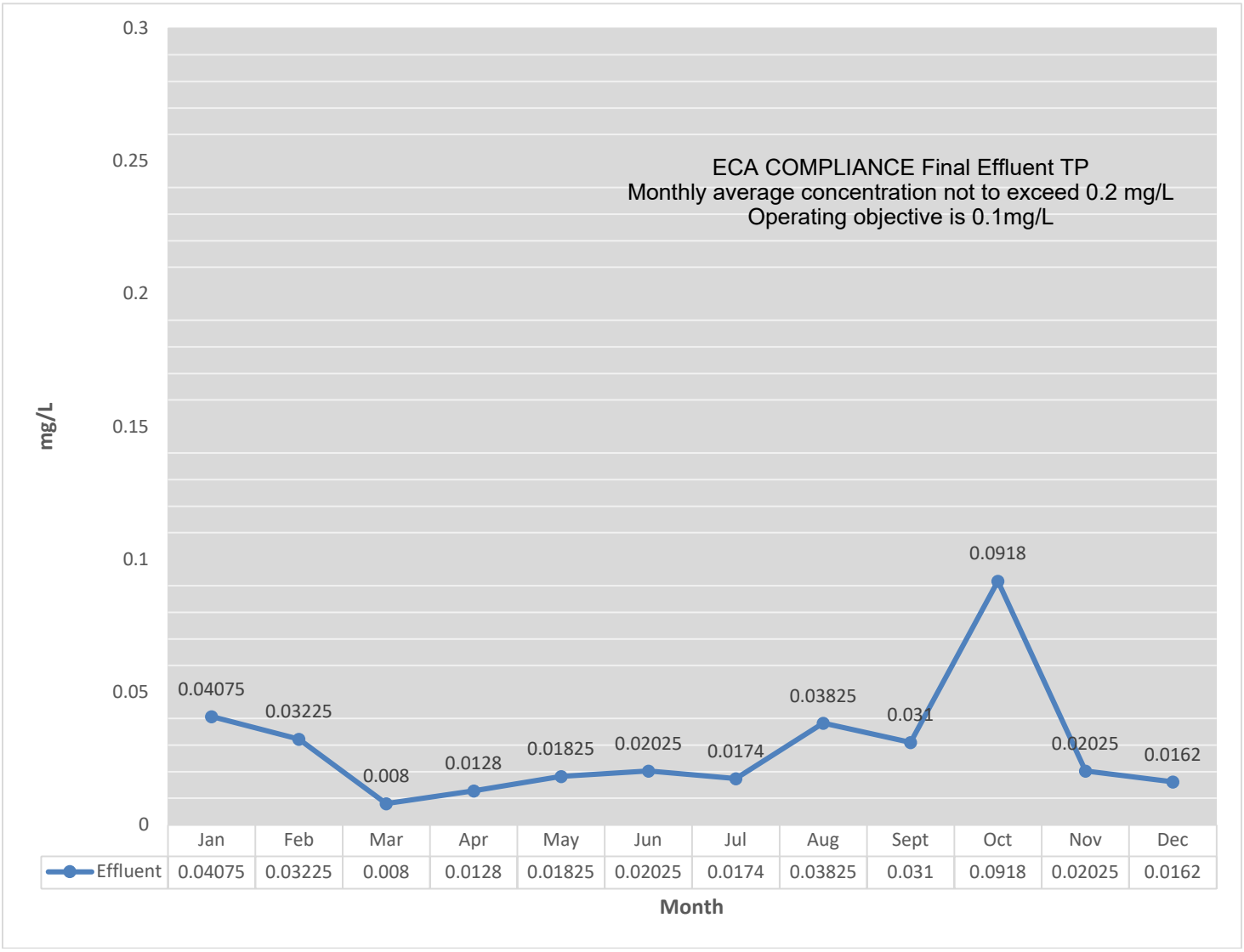

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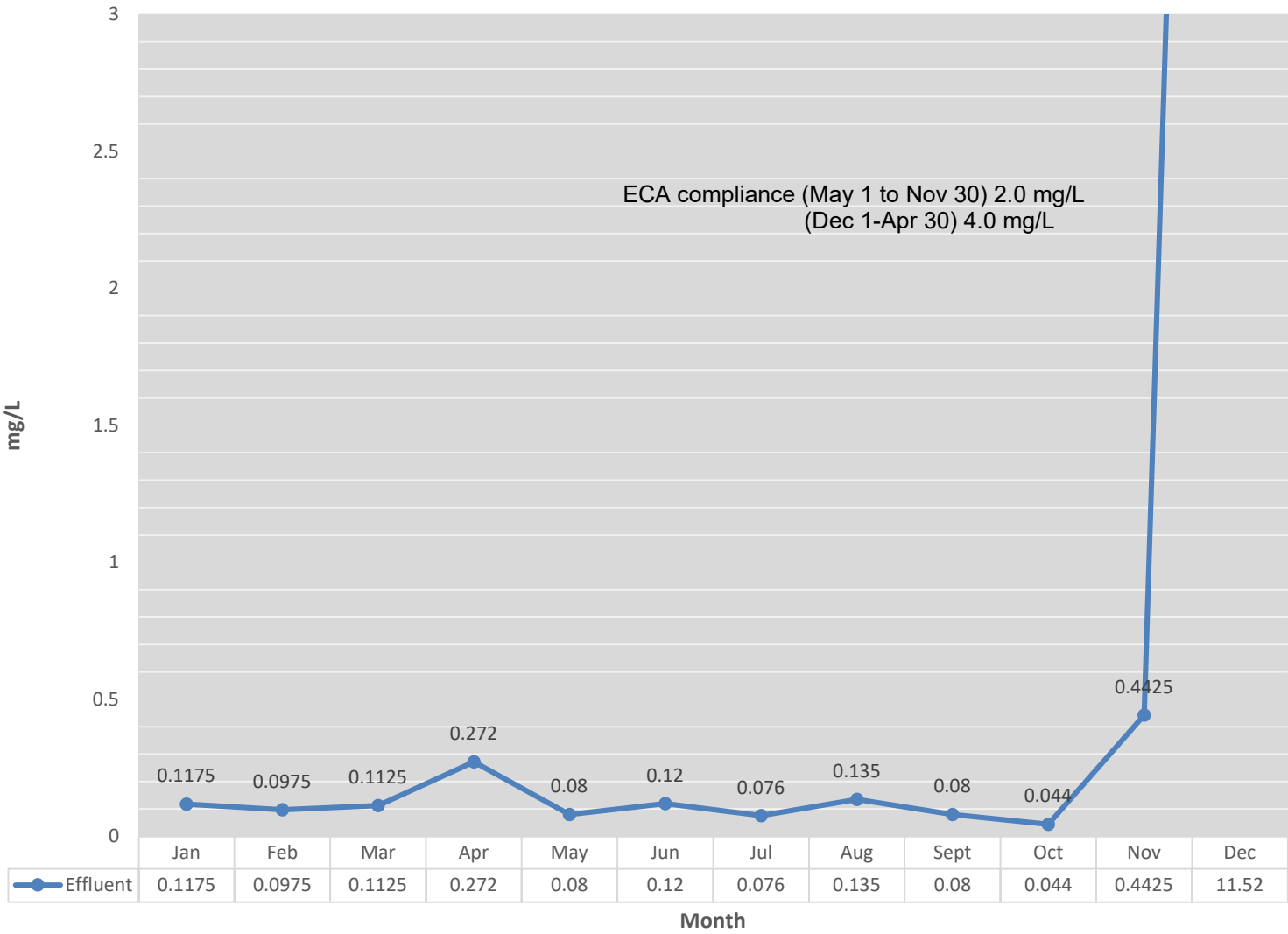

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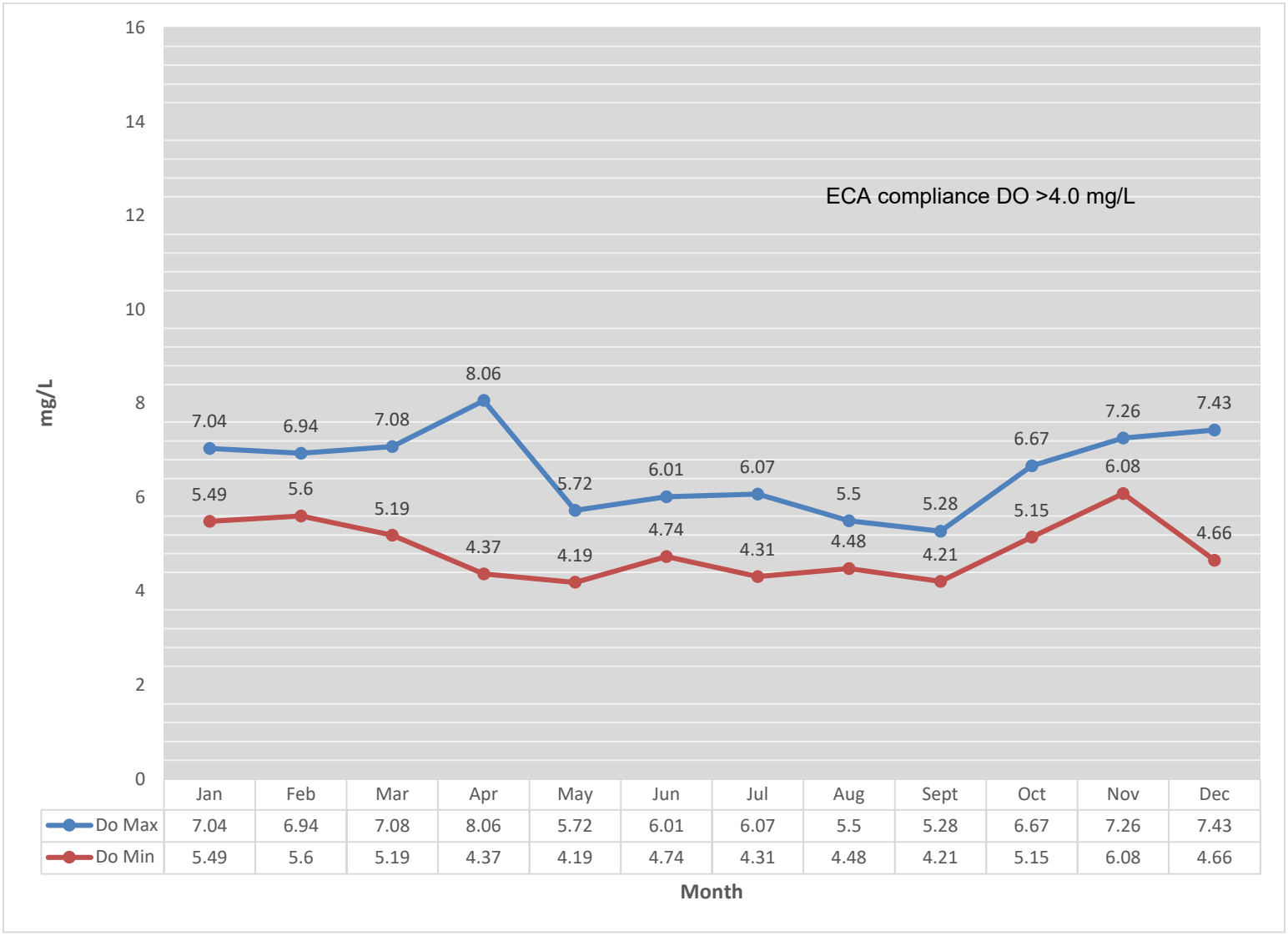

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Do Max	7.04	6.94	7.08	8.06	5.72	6.01	6.07	5.5	5.28	6.67	7.26	7.43
Do Min	5.49	5.6	5.19	4.37	4.19	4.74	4.31	4.48	4.21	5.15	6.08	4.66