2024 Year End Report: Huntsville Mountview Wastewater Treatment Plant (WWTP)



Environmental Compliance Approval: # 1-0088-67-763806

Engineering and Public Works Department

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Introduction

The Mountview Wastewater Treatment Plant , which services the Town of Huntsville, is owned, and operated by the District Municipality of Muskoka. The plant is located at 20 Mountview Drive, Huntsville. It services a population of approximately 9,000 people.

The Plant operates under the Ministry of Environment Conservation and Parks (MECP) Environmental Compliance Approval (ECA) (Sewage) #1-0088-67-763806, and as amended May 13, 2010, and MECP ECA (Air) # 1771-7FJJZ5, issued June 2008. Under the terms of the ECA, the plant is permitted to treat an average daily flow of 3,640 m^3/day, and a peak flow of 13,638 m^3/day. Additionally, effluent limit criteria are as follows:

Table 1 Effluent Limit Criteria

Effluent Parameter	Concentration
CBOD	15 mg/L
Total Suspended Solids	15 mg/L
Total Phosphorous	0.50 mg/L 227.9 kg/year (combined with Huntsville Golden Pheasant WWTP)

The plant is comprised of two separate facilities, both of which are conventional activated sludge treatment processes, consisting of primary and secondary clarifiers with aeration basins. Disinfection is accomplished by chlorination. The facility is also equipped with anaerobic digesters for bio-solids stabilization. The initial plant was commissioned in 1958 and is capable of handling approximately one-third of the total treatment capacity of the facility. The remaining portion of the plant was commissioned in 1976.

Waste sludge from the plant process is digested anaerobically at the plant and periodically hauled off site for disposal.

General Information

A review of the District of Muskoka's infrastructure needs is conducted annually by the Director of Water and Sewer Services, Area Manager and Chief Operator, and recommendations for maintenance, rehabilitation and renewal programs are considered.
Efforts to eliminate the discharge of untreated or partially treated wastewater to receiving waters are being accomplished by a long-term financial commitment to correct excessive infiltration into the wastewater collection system by means of sewer main rehabilitation / replacement, manhole rehabilitation and pumping station rehabilitation programs.

The treatment facility is capable of effective operation during emergencies, maintenance shutdowns, and power failures. This is achieved through such measures as preventive maintenance of duty / standby units, the duplication of major treatment components, the provision of standby power sources and extensive use of the SCADA systems. All pumping stations and treatment control systems use SCADA (Supervisor Control and Data Acquisition), in combination with Data Highway Plus, and programmable logic controllers.

All operators are qualified to operate the systems efficiently and effectively to always achieve the highest level of treatment. A commitment to provide Operator training and certification is being sustained.

Regulatory sampling is carried out to meet the requirements outlined in the ECA, and additional in-house operational sampling beyond these regulatory requirements is being performed on a routine basis. These efforts have resulted in an effective treatment process which ensures that effluent discharges consistently meet effluent objectives and are environmentally safe.

All data in this report is a compilation of test results received from SGS Canada and their accredited laboratory, Lakefield Research. All in-plant sampling, analysis and recording of results conforms, in order of precedence, to the following 3 standards: Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works", Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" and the American Water Works Association/Water Environment Federation (AWWA/WEF) publication "Standard Methods for the Examination of Water and Wastewater".

Executive Summary

In all respects, test results of the treated effluent for the parameters of CBOD5, suspended solids, ammonia, total phosphorous, and E. Coli are in compliance with the limits outlined in the ECA regarding monthly allowable concentrations and total effluent loading throughout the entire year.

Overall, the plant treatment processes performed satisfactorily and are deemed to be adequate. All sample test results of the final effluent were within levels outlined in the plant ECA (#1-0088-67763806).

Quantity of Flow Summary

The plant has a daily average flow design capacity of 3,640 m^3/day. The actual average daily flow for the 2024 was 3,421 m^3/day, however, the 3-year average is 3,127 m^3/day, which represents 86% of the plant capacity. None of the individual system components exceeded the design flow rating.

Plant Operational Upsets or Process Failures

Event# 1-E3DNL9 – Structural damage within the headworks created a bypass event.

In the months of August and September 2024, Acute Lethality sampling had returned results of failure. Actions were taken by both the DMM and Environment and Climate Change Canada (ECCC) that involved an investigation late September early October.

Summary of Maintenance

All equipment information at this plant is entered into a computer database. From this information, a scheduled preventive maintenance program has been established. The maintenance program includes (and not limited to):

- Monthly testing (under load) of the standby generators.
- Annual servicing of emergency standby generators.
- Annual calibration of flow metering devices.
- Annual cleaning of all sewage pumping stations if required.
- Marine inspection of effluent outfall and diffuser completed in 2022. (5-year cycle)

Evaluation of the Need for Improvement Works

The treatment facility is operating at a plant capacity of 86%. In the months of August and September 2024, acute lethality sampling returned adverse results which were addressed by process and sampling changes. Actions were taken by Operators to ensure the process returned to compliance and subsequent acute lethality tests were completed without issue.

Capital works are in progress to convert the Mountview Clean Water Plant to a sewage pump station which will direct all flows to the Golden Pheasant Wastewater Treatment plant which is itself being upgraded. Peak construction was awarded the project and mobilized in early spring 2024. Completion of the transition of the treatment plant into a sewage pumping station is expected in 2026.

Evaluation Summary of Proposed Work Requiring Approval under OWRA

Mountview Clean Water Plant has long been planned for conversion to a pumping station which directs flow to the Golden Pheasant Clean Water Plant. Peak construction was awarded the project and mobilized in early spring and are committed to completing the transition of the treatment plant into a sewage pumping station in 2026.

In October 2023 ECA# 9216-CSEJWM was issued permitting Mountview's conversion to a sewage pumping station and the associated requirements.

Interpretation of Analytical Results

All sample results for Raw Sewage and Final Effluent are reported in this section. Other tables in this report include Chemical Usage, Biosolids Quality, and Biosolids Quantity.

Raw Sewage

The information reported in the Raw Sewage sample results summary table consists of test results of analysis conducted on composite samples of the plant influent flow as required by the plant ECA. Samples are sent for analysis to Lakefield Research, as well as analysis conducted on site using Standard Methods or equivalent. Weekly analysis has been performed and reported as specified under the terms outline in the ECA.

Influent Analysis

Table 2 Influent Analysis

Influent Parameter	Minimum	4 Week Average Maximum	Annual Average	Average loading kg/day
BOD5 (mg/L)	48	713	184.45	631
Suspended Solids (mg/L)	72	791	241.46	826
Total Phosphorus (mg/L)	0.49	7.4	3.47	11.87
Total Ammonia Nitrogen (mg/L)	2.7	37.7	23.95	81.93
pH	6.37	7.56	6.94	N/A

Effluent Analysis

The information reported in the Final Effluent sample results summary table 3 consists of test results of analysis conducted on final effluent composite samples. Bacteriological samples, however, consisted of grab samples. Weekly analysis has been performed and reported as specified under the terms outlined in the ECA.

Effluent Objective Analysis

The effluent objectives were met during all sample periods.

Final Effluent Analysis Summary

All final effluent samples tested for CBOD5, suspended solids, ammonia, E. Coli, and total phosphorous were below non-compliance limits outlined in the ECA.

Table 3 Final Effluent Analysis Summary

Parameter	Minimum	4 Week Average Maximum	Annual Average	Average Loading kg/day
COBD5 (mg/L)	2	7	3.67	12.56
Suspended Solids (mg/L)	3	10	5.42	18.54
Ammonia (mg/L)	10.1	24.7	15.68	53.64
E. Coli (#/100 mL)	0	5100	44.90	N/A
Total Phosphorus (mg/L)	0.04	0.29	0.15	0.51
pH	6.63	7.66	7.64	N/A

Average daily flow comparisons by day of week ensure ECA requirements for scheduled sampling are taken at a time, and in a location characteristic of the quality and quantity of the sewage stream over the time period being monitored. Average daily flow rates by day of the week compare the flow to the average daily flow for the entire year. This data is used to determine if a particular day of the week is best to ensure samples are taken to meet the requirements of scheduled monitoring sections of the ECA's. Sampling plans are reviewed and updated yearly based on the previous yearly flow data.

Final Effluent Sampling Summary

All samples were collected following the frequency and methods required by the facility approval. For the coming 2025-year, 24-hour composite samples will be collected on Monday rather than Thursday of each week as was done in 2024.

Biosolids Generation

The quality and volume of biosolids hauled from the facility for disposal is outlined in the table provided. Dewatered biosolids from the plant was hauled to an approved site for additional treatment. Private contractors were used by the District of Muskoka to transfer all material for disposal in 2024 and will continue to do so in 2025. It is not anticipated that there will be a significant increase in the total volume of biosolids produced in 2025. During the months of July

& August 2024, dewatering mechanisms within the treatment division encountered mechanical issues that took it offline. During this period, biosolids were transported off site to a third-party licensed lagoon operation.

Biosolids Co-Treatment

The quality and volume of biosolids from the facility for disposal is outlined in the table 17 provided. Dewatered biosolids from the plant was hauled to an approved site for additional treatment and re-use. Private contractors were used by the District of Muskoka to transfer all material for disposal in 2024 and will continue to do so in 2025. It is anticipated that there will be a significant increase in the frequency of biosolids hauled in 2025 due to failure of the roofing system of the secondary anaerobic digester. It is anticipated that increased frequency of haulage for additional treatment at Golden Pheasant will be far more cost efficient than replacement of the digester roof systems this close to plant decommissioning.

Summary of Complaints received throughout the reporting period.

N/A

Huntsville Mountview Wastewater Collection Summary 2024

New Sewer Services:
A total of 630m of 200mm of gravity sewer was installed in 2024.

New Maintenance Holes:
There were 7 maintenance holes installed in 2024.

Sewer Main Replacements:
There were no sewer main replacements in 2024.

Low Pressure Sewer Breaks:
There were no low-pressure sewer breaks in 2024.

Sewer Force Main Breaks:
There were no sewer force main breaks in 2024.

Sewer Force Main Replacement
There were no sewer force mains replaced in 2024.

Main Line Sewer Blockage
There was 1 sewer main blockage in 2024.

Sewer Lateral Blockage
There was one sewer lateral blockage in 2024.

Service Low Pressure Sewer Blockages:
There were no low-pressure sewer blockages in 2024.

Frozen Sewer Force Mains:
There were no frozen sewer force mains in 2024.

Frozen Sewer Service Laterals:
There were no sewer service laterals froze in 2024.

Frozen Low Pressure Sewer Services:
There were no low-pressure sewer services froze in 2024.

Sewer Flushing/Video:
There was 1406m of sanitary sewer flushed. Approximately 771m that was flushed, and video inspected in 2024.

Sewer Locates:
Field staff addressed 1091 written locate requests in 2024.

Air Release Valves:
All 42 air-vacuum release valves were inspected in 2024.

Table 4 Effluent Flow Summary - 2024

Month	Plant Total Monthly (m^3)	Average Day Flow (m^3/d)	Maximum Day Flow (m^3/d)	Minimum Day Flow (m^3/d)	Lagoons Monthly Flow (m^3)	Facility Total Monthly Flow (m^3)
January	86,480	2,790	3,768	2,252	n/a	86,480
February	79,396	2,561	4,189	1,797	n/a	79,396
March	119,825	3,865	5,964	3,181	n/a	119,825
April	130,360	4,205	6,465	3,133	n/a	130,360
May	116,780	3,767	4,530	3,191	n/a	116,780
June	102,986	3,322	8,815	2,723	n/a	102,986
July	92,230	2,975	3,436	2,499	n/a	92,230
August	81,526	2,630	6,519	2,234	n/a	81,526
September	73,378	2,367	3003	2271	n/a	73,378
October	77,840	2,511	2903	2308	n/a	77,840
November	79,588	2,653	3007	2294	n/a	79,588
December	95,777	3,090	6,045	2,254	n/a	95,777

Total Flow:1,136,167m3
Average Day: 3,113m3
Maximum Day: 8,815m3
Minimum Day: 1,797m3

Table 5 Influent Quarterly Analysis Summary – Weekly 24-Hour Composite Sample Part 1

Sample Date	Sample Identification Number	BOD5 mg/L	Phosphate	Total Phosphorus mg/L	Suspended Solids mg/L
Feb-01-24	CA12073	294	1.8	3.45	148
May-02-2024	CA13156	140	1.42	2.36	127
Aug-01-24	CA13121	225	1.55	3.5	195
Nov-07-24	CA12315	299	2.66	5.66	100
Yearly Average		239.5	1.9	3.7	142.5
Maximum		299.0	2.7	5.7	195.0
Minimum		140.0	1.8	2.4	100.0

Table 6 Influent Quarterly Analysis Summary – Weekly 24-Hour Composite Sample Part 2

Sample Date	Sample Identification Number	Total Kjeldahl Nitrogen mg/L	Nitrate Nitrogen mg/L	Nitrite Nitrogen mg/L	Total Ammonia Nitrogen mg/L
Feb-01-24	CA12073	31.4	<0.06	<0.03	26.4
May-02-2024	CA13156	21.6	<0.06	<0.03	16.8
Aug-01-24	CA13121	29.6	<0.06	<0.03	24.5
Nov-07-24	CA12315	38.3	<0.06	<0.06	35.8
Yearly Average		30.2	<0.06	0.04	25.9
Maximum		38.3	<0.06	0.060	35.8
Minimum		21.6	<0.06	0.030	16.8

Table 7 Chemical Usage Summary: Clarion A405P

Month	Average Dosage mg/L	Total kg
January	142.7	12,583.7
February	144.1	11,669.0
March	145.2	17,745.4
April	127.0	16,892.1
May	135.8	16,170.0
June	142.1	14,931.2
July	126.9	11,933.4
August	123.3	10,256.5
September	155.2	11,614.6
October	160.7	12,755.1
November	126.7	10,285.5
December	123.9	12,102.8

Total Yearly Kilograms: 158,939 kg

Table 8 Chemical Usage Summary: Chlorine Gas

Month	Average Dosage mg/L	Total kg (dry)
January	1.35	116.6
February	1.23	102.3
March	1.07	124.6
April	0.91	115.7
May	0.94	109.3
June	1.2	119.0
July	0.8	71.0
August	1.2	96.8
September	1.7	126.0
October	1.2	91.8
November	1.2	96.3
December	1.3	125.0

Total Yearly Kilograms: 1,294 kg

Table 9 Effluent Quarterly Analysis Summary – Weekly 24-Hour Composite Sample Part 1

Sample Date	Sample Identification Number	CBOD5 mg/L	pH	Phosphate	Total Phosphorus mg/L	Suspended Solids mg/L
Feb-01-24	CA12073	<4	7.53	<0.03	0.11	5
May-02-24	CA13156	<2	7.93	<0.03	0.15	5
Aug-01-24	CA13121	<4	7.48	< 0.09	0.16	4
Nov-07-24	CA12315	<4	7.43	< 0.04	0.29	6
Yearly Average		3.5	7.59	0.0475	0.18	5
Maximum		4.0	7.93	0.09	0.29	6
Minimum		2.0	7.43	0.03	0.11	4

Table 10 Effluent Quarterly Analysis Summary – Weekly 24-Hour Composite Sample Part 2

Sample Date	Sample Identification Number	Total Kjeldahl Nitrogen mg/L	Nitrate Nitrogen mg/L	Nitrite Nitrogen mg/L	Total Ammonia Nitrogen mg/L
Feb-01-24	CA12073	16.6	6.2	0.19	15
May-02-24	CA13156	12	2.8	0.2	11.6
Aug-01-24	CA13121	22.8	0.29	0.16	21.4
Nov-07-24	CA12315	18.7	3	0.7	17.3
Yearly Average		17.5	3.1	0.31	16.3
Maximum		22.8	6.2	0.70	21.4
Minimum		12.0	0.3	0.16	11.6

Table 11 Effluent Loading and Concentration Summary: CBOD5

Month	Average mg/L	Average kg/day	Maximum Daily kg/day
January	3.00	8.37	11.30
February	2.80	7.17	11.73
March	4.25	16.43	25.35
April	3.25	13.67	21.01
May	3.20	12.05	14.50
June	3.75	12.46	33.05
July	4.00	11.90	13.75
August	4.00	10.52	26.07
September	4.00	9.47	12.01
October	4.00	10.04	11.61
November	4.00	10.61	12.03
December	4.00	12.36	24.18

Table 12 Effluent Loading and Concentration Summary: Suspended Solids

Month	Average mg/L	Average kg/day	Maximum Daily kg/day
January	5.25	14.65	19.78
February	5.00	12.81	20.95
March	5.00	19.33	29.82
April	5.75	24.18	37.17
May	6.20	23.36	28.09
June	6.00	19.93	52.89
July	5.75	17.11	19.76
August	3.80	9.99	24.77
September	4.50	10.65	13.51
October	6.00	15.07	17.42
November	5.75	15.25	17.29
December	6.25	19.31	37.78

Table 13 Effluent Loading and Concentration Summary: Total Ammonia Nitrogen - Summer

Month	Average mg/L	Average kg/day	Maximum Daily kg/day
May	11.64	43.85	52.73
June	14.78	49.1	130.28
July	18.83	56.01	64.69
August	23.70	62.33	154.49
September	15.90	37.64	47.74
October	18.73	49.16	56.84

Table 14 Effluent Loading and Concentration Summary: Total Ammonia Nitrogen - Winter

Month	Average mg/L	Average kg/day	Maximum Daily kg/day
January	12.28	34.24	46.25
February	15.20	38.93	63.67
March	13.80	53.34	82.30
April	14.08	59.19	90.99
November	14.70	39.00	44.20
December	11.93	36.86	72.11

Table 15 Effluent Loading and Concentration Summary: Fecal Coliform

Month	Geomean (#/100mL)	Maximum Daily (#/100mL)
January	2.50	10.00
February	14.00	56.00
March	85.00	123.00
April	53.75	123.00
May	35.20	100.00
June	9.50	22.00
July	1680.75	5100.00
August	150.83	470.00
September	2.00	7.00
October	17.20	43.00
November	19.75	42.00
December	4.25	7.00

Table 16 Effluent Loading and Concentration Summary: Total Phosphorus

Month	Average mg/L	Average kg/day	Maximum Daily kg/day
January	0.088	0.24	0.33
February	0.108	0.28	0.45
March	0.108	0.42	0.64
April	0.140	0.59	0.91
May	0.144	0.54	0.65
June	0.15	0.51	1.35
July	0.18	0.54	0.62
August	0.19	0.50	1.24
September	0.13	0.31	0.39
October	0.10	0.25	0.29
November	0.21	0.55	0.62
December	0.18	0.54	1.06

Table 17 Liquid Sludge Production Summary 2024

Month	Hauler	Liquid Volume m^3	Cake Weight kg	Destination
January	ROHES	910	N/A	ROHES Lagoons
February	ROHES	655.2	N/A	Golden Pheasant
March	ROHES	582.4	N/A	Golden Pheasant
April	ROHES	609.0	N/A	Golden Pheasant
May	ROHES	681.8	N/A	Golden Pheasant
June	ROHES	655.2	N/A	Golden Pheasant
July	ROHES	873.6	N/A	ROHES Lagoons
August	ROHES	1164.8	N/A	ROHES Lagoons
September	ROHES	364.0	N/A	Golden Pheasant
October	ROHES	1601.6	N/A	Golden Pheasant
November	ROHES	947.6	N/A	Golden Pheasant
December	ROHES	1289.4	N/A	Golden Pheasant

Yearly Total m^3 Volume: 11,385 m^3

Table 18 Sludge Quality Analysis

Parameter Sampled (mg/L)	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Date	Feb 01/24 08:45	May 02-24 08:30	Aug 01/24 08:40	Nov 07/24 08:45
	CA12068	CA13155	CA13124	CA12317
Nitrate	<3	<3	<3	<3
Mercury	0.011	0.01	0.005	0.004
Chromium	0.18	0.20	0.18	0.15
Cobalt	0.02	0.03	0.03	0.02
Copper	5.00	4.00	5.40	4.50
Lead	0.20	0.30	0.20	0.10
Molybdenum	0.06	< 0.060	0.08	0.06
Nickel	0.13	0.12	0.13	0.1
Selenium	<0.1	<0.1	<0.1	<0.1
Arsenic	<0.1	<0.1	<0.1	<0.1
Zinc	6	5	7	6
Cadmium	0.009	0.011	0.01	0.008
Ammonia	318	411	396	339
Total Kjeldahl Nitrogen	827	884	925	782
Total Phosphorus	340	270	340	300
Total Solids	12700	12200	14000	10700
Volatile Acids	41	<40	<40	<40
Nitrite	<3	<3	<3	<3
PO4				40

Certification of Reports

I certify that the information in this document and all attachments are correct, accurate, and complete to the best of my knowledge.

Michael Currie,
Director, Water and Wastewater Services

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