2024

# Annual Performance Report

Wastewater Services Division,
Environmental Services

March 20, 2025

# Wastewater Services
# 2024 Annual Performance Report

## Contents

# Wastewater Services
# 2024 Annual Performance Report

## Executive Summary

The Guelph Water Resource Recovery Centre, operating within the Wastewater Services Division, provides treatment of domestic, commercial, institutional and industrial wastewater collected from the City of Guelph and the neighbouring community of the Township of Guelph/Eramosa. The facility, located at 530 Wellington Street West, provides tertiary treatment of wastewater, with disinfected and dechlorinated effluent being discharged to the Speed River.

This report documents the performance of the sewage works and collection system, as required by the Environmental Compliance Approval (ECA) 8835-9QJKSD and Consolidated Linear Infrastructure (CLI) ECA 017-W601.

The Guelph WRRC provides preliminary screening and grit removal, primary treatment by sedimentation, secondary treatment by conventional and extended aeration activated sludge and two-stage tertiary treatment utilizing rotating biological contactors (RBC) followed by sand filtration. Dewatering filtrate is treated through a side stream treatment process called Anammox to reduce ammonia loading and waste activated sludge is thickened prior to being pumped to primary digesters. Disinfection of the final effluent is accomplished by the addition of sodium hypochlorite. De-chlorination is achieved by the addition of sodium bisulphite prior to discharge to the receiving water.

Process loading to the facility in 2024 was largely within typical values and the sludge accountability for the facility closed within the industry best practice of +/- 15% at -1.5% and therefore validates the reliability of the data collection and analysis. The average total daily wastewater flow for this reporting period was 55,011 $m^3$/day, which is up 2.3% from 2023. A maximum total daily flow of 87,320 $m^3$ was recorded on July 16, 2024. As shown in Table 5 of this report, the effluent quality data clearly demonstrates that the WRRC satisfied the compliance conditions of the ECA throughout the reporting period. The facility recorded the following annual removal efficiencies: carbonaceous biochemical oxygen demand (CBOD5) – 98.7%, total suspended solids (TSS) – 98.9%, total phosphorus (TP) – 97.4%, total Kjeldahl nitrogen (TKN) – 95.6% and total ammonia nitrogen (TAN) – 97.6%.

Solids generated during treatment were stabilized by anaerobic digestion and subsequently mechanically dewatered. During the reporting period a total of 3,380 dry tonnes of dewatered biosolids were generated, which is down 14.9% from the previous year. One hundred percent of that material was diverted from landfill and was beneficially land applied as a Canadian Food Inspection Agency (CFIA) approved Class A fertilizer.

The facility has no provision for primary or raw sewage bypass directly to the Speed River. The facility does have provision for secondary bypass, complete tertiary bypass and partial sandfilter bypass. During this reporting period there were two partial sandfilter bypass event, as reported below in Table 10.

The WRRC voluntarily participates annually in the Grand River Watershed-Wide Optimization Program, which aims to improve the water quality of the Grand River. Through continual improvement processes, the WRRC team is committed to meeting the objectives of this Program. In 2024, the WRRC was honoured to be recognized by the Grand River Watershed Wide Optimization Program with a bronze level award for the efforts in process control to improve the quality of the Grand River in 2023.

The City of Guelph is committed to providing a high level of service in the collection, treatment and management of wastewater. The City of Guelph Wastewater Service's environmental policy outlines long-term commitments to provide reliable wastewater services and enhance environmental stewardship now and into the future.

**P**revent pollution and protect the environment;

**I**mprove our environmental performance;

**P**lan and review our objectives and targets; and,

**E**valuate and fulfill compliance requirements.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report, please contact the City of Guelph at the address listed below, or by email at wastewater@guelph.ca.

# Wastewater Services
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## Introduction

Wastewater treatment and collection systems in Ontario are governed by the Ministry of the Environment, Conservation and Parks (MECP) and are also subject to federal legislation. The purpose of a wastewater treatment system is to remove solids and nutrients in order to minimize the impact of the effluent on the receiving waterbody. The Environmental Compliance Approval's (ECAs), issued under the Environmental Protection Act, are facility or system-specific documents through which the MECP sets discharge quality limits for that facility based on the sensitivity of the receiving waters. To comply with the ECAs, the City of Guelph (the City) prepares an Annual Performance Report covering the operation and overall performance of the Water Resource Recovery Center (WRRC) and the wastewater collection system.

This Annual Performance Report, for the period of January 1st to December 31st, 2024, is a legislative requirement under Condition 10 (6) of ECA number 8835-9QJKSD and Condition 8, subsection 4 (CLI-ECA #017-W601). This report must be forwarded to the MECP no later than March 31st.

### Facility and Systems Overview

The Guelph WRRC, operating within the Wastewater Services Division provides treatment of domestic, commercial, institutional and industrial wastewater collected from the City and the neighboring community of the Township of Guelph/Eramosa. The facility, located at 530 Wellington Street West, provides tertiary treatment of wastewater, with disinfected and dechlorinated effluent being discharged to the Speed River. The Guelph WRRC is classified as a Class IV plant (Certificate #718, dated July 15, 1988) and is rated at 64,000 $m^3$/d.

Wastewater flows into the plant via two sanitary trunk sewers and is pumped up to the Headworks by Archimedes screw pumps for preliminary treatment (screening and grit removal). After Headworks, the flow is split between four plants. The plants, referred to as Plant 1, 2, 3 and 4, have a rated capacity of 16,000 $m^3$/d, 13,000 $m^3$/d, 13,000 $m^3$/d and 22,000 $m^3$/d, respectively. The wastewater then receives primary and secondary treatment in conventional activated sludge processes. Chemical phosphorous removal is achieved through a dual point ferric chloride injection system. The secondary effluent from Plants 1, 2, and 3 combines upstream of tertiary rotating biological contactors (RBCs), which provide ammonia removal via nitrification. Plant 4 is designed to provide ammonia removal in the secondary treatment process. The path of Plant 4 secondary effluent depends on the plant flow rate. Plant 4 effluent is pumped to the RBCs until the combined RBC flow reaches a flow rate of 55,000 $m^3$/d, with excess Plant 4 flows pumped directly to the tertiary sandfilters. Filtered effluent is disinfected using sodium hypochlorite, followed by dechlorination with sodium bisulfite added to the last pass of the chlorine contact chamber prior to discharging into the Speed River.

Primary sludge generated at the plant is thickened in the primary clarifiers, while waste activated sludge (WAS) that has settled in the secondary clarifiers is thickened in a rotating

drum thickener (RDT). Following thickening, sludge is anaerobically digested in the primary digesters and gravity flows to the secondary digester. Digested sludge is then drawn from the secondary digester and dewatered by the belt filter presses. Dewatered sludge is treated by the Lystek process to enable the land application of a Canadian Food Inspection Agency approved Class A fertilizer product.

The Guelph Wastewater Collection System is classified as a Class III system (Certificate #1160, dated January 10, 2020). The collection system is comprised of approximately 530 km of sanitary sewer and five Sewage Pumping Stations (SPS): Barton Estates SPS, Kortright East SPS Northern Heights SPS, Terraview SPS and Nima Trail SPS.

# Part 1: Water Resource Recovery Centre (ECA 8835-9QJKSD) Requirements

## 1(A). Summary and Interpretation of all Monitoring Data and Comparison to the Effluent Limits

### Final Effluent Quality

Primary sedimentation and secondary activated sludge treatment are provided by four separate treatment trains, namely Plants 1, 2, 3 and 4. Plants 1, 2, and 3 incorporate conventional activated sludge with the secondary effluent from each of these three plants directed to a common pump well. The combined secondary effluent is lifted by vertical turbine pumps to the rotating biological contactors (RBC) influent distribution channel and evenly split to each of the four RBC trains. Each of the four trains consists of eight RBCs in series. The process objective of the RBCs is to provide additional biological treatment for the oxidation of ammonia. Effluent from the RBC trains is discharged to a common sandfilter influent channel and distributed to the sandfilters for additional suspended solids capture. The Plant 4 treatment train incorporates extended aeration activated sludge and is capable of complete nitrification. Plant 4 secondary effluent is directed through the RBCs but can also be directed to a separate pump well which discharges to the common sandfilter influent channel. All effluent flows to the sandfilters for additional suspended solids capture. The final treated effluent passes through a Parshall flume and is measured by an ultrasonic transmitter. A plant flow diagram is included as Appendix B.

Effluent quality requirements as specified in the ECA differ for summer and winter conditions. These limits and performance charts can be reviewed in Appendix C.

An automatic sampling system collects a series of time paced aliquots from the chlorine contact chamber and combines them in a container within a refrigerated compartment to produce a 24-hour time proportional composite sample of the treated WRRC effluent. This composite sample is then analyzed by the Guelph Environmental Laboratory (GEL). The GEL received formal ISO/IEC 17025:2017 accreditation by the CALA in 2014 (Certificate #A3222, Appendix E) and has maintained this accreditation. The fulfillment of the requirements of ISO/IEC 17025:2017 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results.

A monthly summary of final effluent quality data provided by GEL is provided in Table 1. All ECA limits and objectives were achieved for 2024.

Residual chlorine and sodium bisulphite are constantly monitored in the chlorine contact chamber in keeping with the year-round requirement for disinfection. Both sodium hypochlorite and sodium bisulphite application rates are determined by proportional flow control. The

objective of 150 Escherichia coli (E. coli) CFU/100 mL of sample was met. This performance data is presented in Table 1.

As mandated by Environment Canada and the ECA, the facility has optimized the chlorination/de-chlorination system to reduce the total residual chlorine to the speed river to 0.02 mg/L or less. This is accomplished by measuring the concentration of sodium bisulphite as noted in Table 1.

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**Table 1: Final Effluent Quality, 2024**

| | | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec | Annual Avg. | Winter Avg. | Summer Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Min pH** | | 7.5 | 7.5 | 7.4 | 7.5 | 7.5 | 7.4 | 7.3 | 7.3 | 7.0 | 6.9 | 6.9 | 6.9 | 7.3 | 7.2 | 7.3 |
| **Max pH** | | 7.7 | 7.6 | 7.6 | 7.6 | 7.6 | 7.6 | 7.5 | 7.5 | 7.4 | 7.2 | 7.1 | 7.2 | 7.5 | 7.4 | 7.5 |
| **Average pH** | | 7.6 | 7.5 | 7.5 | 7.5 | 7.6 | 7.5 | 7.4 | 7.4 | 7.2 | 7.1 | 7.0 | 7.1 | 7.4 | 7.3 | 7.4 |
| **Temp** | $^0$C | 13.7 | 13.4 | 13.8 | 14.2 | 16.6 | 18.1 | 19.5 | 20.6 | 21.1 | 19.8 | 18.2 | 15.2 | 17.0 | 14.9 | 18.6 |
| **CBOD5** | Concentration (mg/L) | 2.1 | 2.2 | 2.2 | 2.2 | 2.0 | 2.2 | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 |
| **CBOD5** | Loading (kg/d) | 122 | 129 | 133 | 143 | 125 | 116 | 124 | 114 | 109 | 102 | 97.8 | 95.6 | 117 | 115 | 119 |
| **BOD5** | Concentration (mg/L) | 2.6 | 2.7 | 2.2 | 2.1 | 2.2 | 2.6 | 2.2 | 2.6 | 2.3 | 2.3 | 2.0 | 2.1 | 2.3 | 2.3 | 2.3 |
| **BOD5** | Loading (kg/d) | 156 | 155 | 133 | 136 | 138 | 133 | 141 | 137 | 119 | 112 | 97.8 | 99.1 | 130 | 128 | 131 |
| **TSS** | Concentration (mg/L) | 2.4 | 2.1 | 2.3 | 2.4 | 3.1 | 2.9 | 2.9 | 2.6 | 2.8 | 2.5 | 2.4 | 2.5 | 2.6 | 2.4 | 2.7 |
| **TSS** | Loading (kg/d) | 141 | 123 | 140 | 156 | 185 | 151 | 172 | 136 | 139 | 120 | 114 | 121 | 141 | 128 | 151 |
| **TP** | Concentration (mg/L) | 0.12 | 0.11 | 0.07 | 0.09 | 0.14 | 0.14 | 0.14 | 0.14 | 0.13 | 0.14 | 0.10 | 0.10 | 0.12 | 0.10 | 0.13 |
| **TP** | Loading (kg/d) | 6.9 | 6.6 | 4.2 | 5.9 | 8.4 | 7.2 | 8.3 | 7.5 | 6.6 | 6.6 | 4.9 | 5.0 | 6.5 | 5.5 | 7.2 |
| **TKN** | Concentration (mg/L) | 2.19 | 1.67 | 1.22 | 1.29 | 1.40 | 1.22 | 1.84 | 1.38 | 1.08 | 2.28 | 1.14 | 1.27 | 1.50 | 1.50 | 1.50 |
| **TAN** | Concentration (mg/L) | 1.66 | 0.72 | 0.48 | 0.28 | 0.48 | 0.12 | 0.27 | 0.13 | 0.17 | 1.10 | 0.24 | 0.29 | 0.50 | 0.68 | 0.36 |
| **TAN** | Loading (kg/d) | 104 | 42.4 | 29.0 | 18.2 | 29.4 | 6.3 | 19.3 | 7.00 | 9.00 | 52.2 | 11.7 | 14.2 | 28.5 | 40.2 | 20.2 |
| **NO3-N** | Concentration (mg/L) | 25.9 | 26.5 | 27.7 | 23.7 | 25.0 | 27.8 | 23.9 | 26.1 | 31.1 | 29.7 | 33.7 | 35.0 | 28.0 | 29.8 | 26.8 |
| **NO2-N** | Concentration (mg/L) | 0.30 | 0.20 | 0.18 | 0.16 | 0.14 | 0.03 | 0.07 | 0.02 | 0.06 | 0.73 | 0.13 | 0.13 | 0.18 | 0.19 | 0.17 |
| **E. Coli** | (CFU/100 mL) | 11 | 12 | 14 | 12 | 10 | 13 | 15 | 13 | 15 | 19 | 22 | 16 | 14 | 15 | 14 |
| **TCR** | (mg/L) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **SBR** | (mg/L) | 1.18 | 1.34 | 1.26 | 1.25 | 1.40 | 1.39 | 1.25 | 1.34 | 1.27 | 1.10 | 1.39 | 1.31 | 1.29 | 1.30 | 1.29 |

Notes:

*****All ECA limits and objectives were achieved for 2024.
SBR: Sodium bisulphite residual.
TCR: Total chlorine residual.
All analyses based on 24-hr time paced composite samples.
All CBOD5 and BOD5 analysis is conducted by an independent CALA accreditation laboratory only.
The summer period is April 1 to October 31. The winter period is November 1 to March 31.
Escherichia coli values are calculated geometric mean.

## Process Loading Assessment

A key component of the Comprehensive Performance Evaluation (CPE) is a Process Loading Assessment. This evaluation examines the measured flow and mass loading for the population and compares it to typical per capita contributions.

As described in Table 2, all parameters in the process loading evaluation were at or below typical averages for the watershed.

**Table 2: Process Loading Evaluation, 2024 (Population at 2021 Census 143 740)**

| Parameter | Actual | Typical |
|---|---|---|
| **Per Capita Flows and Loads** | | |
| Per Capita Wastewater Flow | 380 L/d per person | 350-500 L/d per person |
| Per Capita BOD5 Loading | 73 g/d per person | 80 g/d per person |
| Per Capita TSS Loading | 91 g/d per person | 90 g/d per person |
| Per Capita TKN Loading | 13 g/d per person | 13 g/d per person |
| Per Capita TP Loading | 1.79 g/d per person | 2.1 g/d per person |
| **Ratios** | | |
| Flows: Peak Day/Annual Average | 1.60 | 2.5-4.0 |
| Raw: TSS/BOD5 | 1.24 | 0.8-1.2 |
| Raw: TKN/BOD5 | 0.18 | 0.1-0.2 |

## Recognition

In 2024, the WRRC was honoured to be recognized by the Grand River Watershed Wide Optimization Program with a bronze level award for the process control efforts made to improve the quality of the Grand River in 2023.

The demonstrated commitment of Wastewater Services to the optimization of all aspects of the process control has made the facility known as one of the leading wastewater treatment systems along the Grand River Watershed. The main objective of an optimization program is to work with staff, regulatory agencies, external partners and stakeholders to achieve exemplary, sustainable and economical performance from physical and human assets.

A copy of the letter received from Grand River Conservation Authority in 2024 to recognize the Guelph WWTP for the 2023 Performance is included as Appendix A.

## Wastewater Flow

This section summarizes the influent characteristics for the Guelph WRRC. Flow data for the 2024 reporting period is listed in Table 3 of this report and represented in Figure 1. Total flow for this reporting period was 20,132 ML, which was 2.6% higher than in 2023.

A comparison of average flow per month between 2023 and 2024 can be seen in Figure 2.

The average total daily flow for the year 2024 was 55.011 MLD. A maximum total daily flow of 87.320 ML was recorded on July 16, 2024.

**Table 3: Wastewater Flow Data, 2024**

| | **Average Total Flow** (MLD) | **Maximum Total Daily Flow** (ML) |
|---|---|---|
| **January** | 58.929 | 82.582 |
| **February** | 57.743 | 66.770 |
| **March** | 59.456 | 68.517 |
| **April** | 65.455 | 75.173 |
| **May** | 59.674 | 69.853 |
| **June** | 52.328 | 60.962 |
| **July** | 59.294 | 87.320 |
| **August** | 52.916 | 61.779 |
| **September** | 50.427 | 55.685 |
| **October** | 47.718 | 52.924 |
| **November** | 48.34 | 53.423 |
| **December** | 47.854 | 55.829 |
| **Annual Average** | 55.011 | - |
| **Winter Average** | 54.464 | - |
| **Summer Average** | 55.402 | - |

**Figure 1, 2024 Average Daily Flow and Maximum Daily Flow**

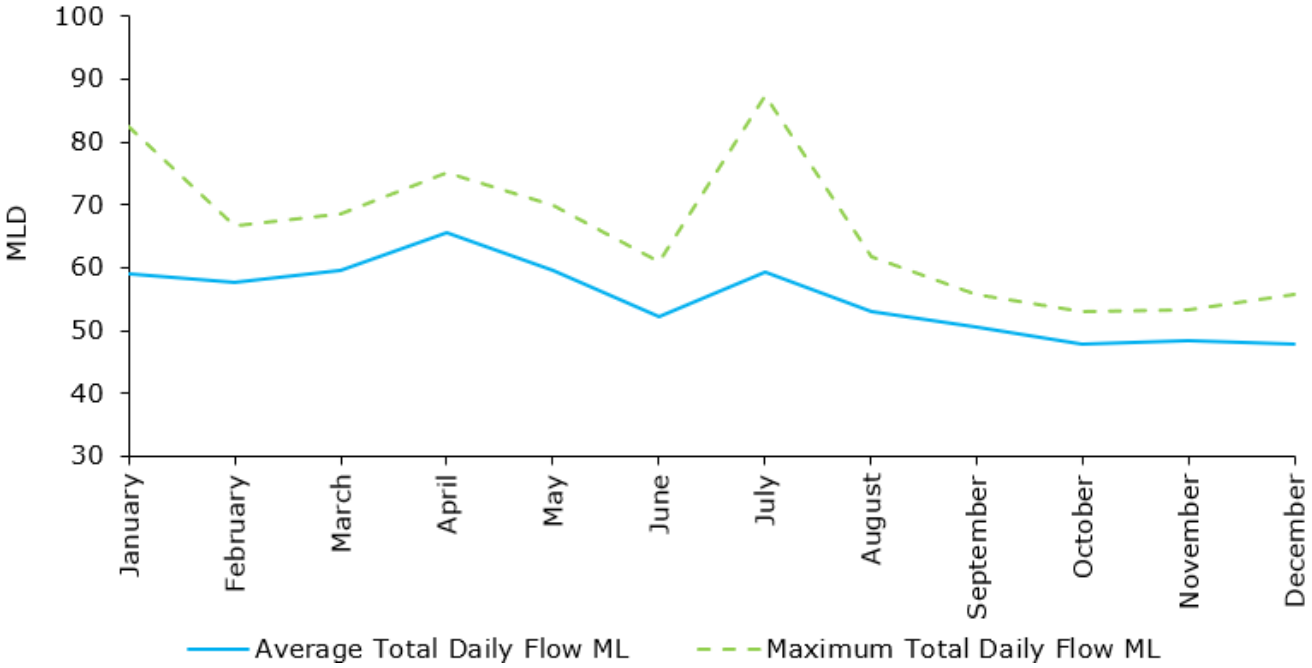
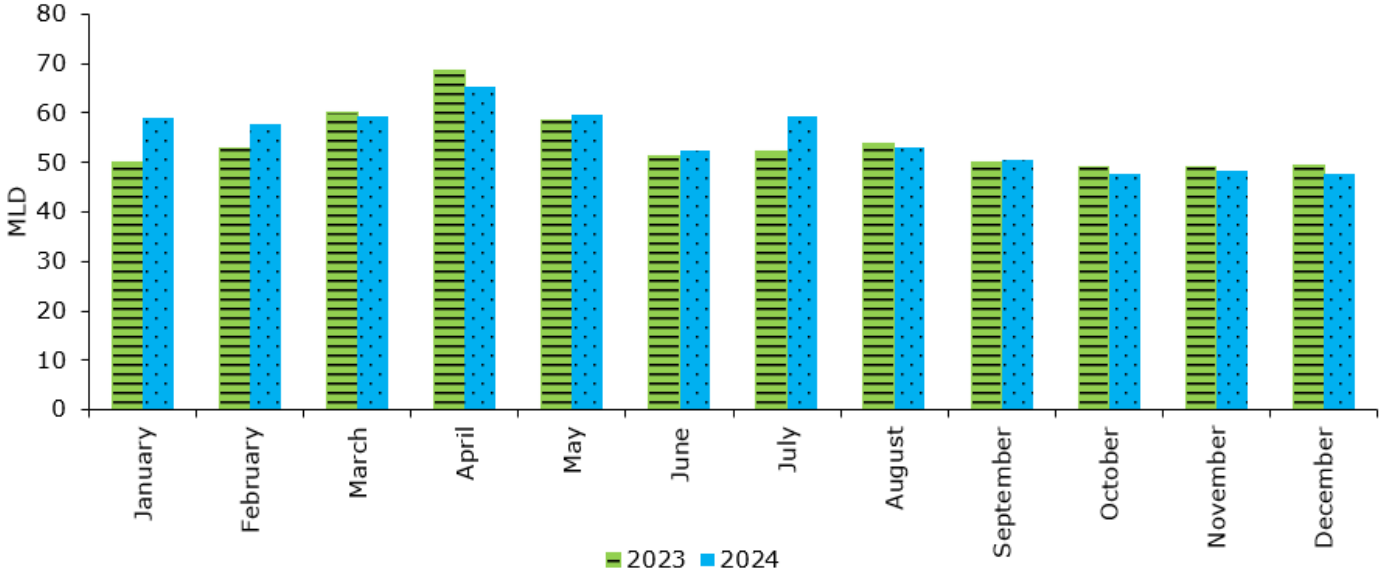



**Figure 2, 2023 vs. 2024 Average Monthly Flow**




## 1(B). Operating Problems and Corrective Actions

See Section 1(C). Maintenance Performed on Major Equipment, Structures, Equipment.

## 1(C). Maintenance Performed on Major Equipment, Structures, Equipment

A summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the WRRC, including repairs resulting from operating problems, is listed in Table 4.

**Table 4: Maintenance Project Summary, 2024**

| Project | Status |
|---|---|
| **Headworks** | |
| Headworks grit blower replacement. | Completed |
| Replaced motor on the 50 HP grit blower. | Completed |
| New VFD installed and commissioning on 111 and 113 Archimedes screw. | Completed |
| Asbestos remediation of Archimedes screw room. | Completed |
| **Plants 1-4** | |
| Plant #4 flow meter to digester removal, cleaning and verification. | Completed |
| Plant #4 East 4VP101 main tank isolation valve replaced. | Completed |
| Installation and commissioning of new flow meter on Plant #4 WAS sludge return line. | Completed |
| Plant #3 East primary collector system inspection and partial rebuild. Replaced baffles and wear shoes. | Completed |
| Plant #3 East final collector system inspection and partial rebuild. Replaced baffles and wear shoes. | Completed |
| Plan #1 Final sump pumps replaced and commissioned with new units. | Completed |
| Plant #3 West primary repaired/replaced collectors. | Completed |
| **Tertiary Treatment** | |
| Sandfilter rail replacement on north sandfilter bridge system. | Completed |

| Project | Status |
|---|---|
| Sandfilter rail replacement on south sandfilter bridge system. | Completed |
| Replaced pump and actuator or east sandfilter bridge system. | Completed |
| South sandfilter wash water pump replacement and commissioning. | Completed |
| **Waste Gas Burner, Energy Facility and Digester Gas Conditioning System** | |
| Cogen 506 and 507 annual service including all TSSA regulated inspections. | Completed |
| Boiler 504 and 505 annual service including all TSSA regulated inspections. | Completed |
| Siloxane media replacement on the gas conditioning system. | Completed |
| Digestor 1,2 hot water pump 523 replacement. | Completed |
| **Dewatering, Conveyors and Dewatered Biosolids Cake Storage Bin** | |
| Replaced three of the four belt press belts. | Completed |
| Rebuild 050 conveyor including bearings, liners, flights, hangers and inspection of frame. | Completed |
| **Lystek Biosolids Treatment** | |
| Storage tank level sensor replacement on batch tank. | Completed |
| Batch tank isolation valve replacement. | Completed |
| Replacement and retrofit of new Seepex pump for Lystek process. | On-Going |
| **Other/Whole Site** | |
| Annual substation maintenance on site. | Completed |
| Final Effluent flow meter calibration. | Completed |
| Final Effluent PH meter calibration. | Completed |
| Annual backup generator load bank testing and annual maintenance. | Completed |

| Project | Status |
|---|---|
| Exit light system upgrades to new efficient LED units. | Completed |
| Quarterly required CSS ESA electrical inspections. | Completed |
| Removed and installed 2 new main substation breakers. | Completed |
| Annual IR scanning done on site electrical and lift station electrical panels and feeders. | Completed |
| Fabricated new drain pans, wear strips, frame components, for belt press #2 and rebuild drain system. | Completed |
| Rebuilt and replaced sludge pump on belt press #2. | Completed |
| Pump 24A replace vertical wash water pump motor. | Completed |
| Complete rebuild of TWAS drum thickener. | Completed |
| Conveyor 051 gearbox replacement. | Completed |
| Conveyor 052 replaced gearbox and auger. | Completed |

## 1(D). Effluent Quality Assurance and Control Measures

### Raw Influent Wastewater Quality

Considerable effort goes into monitoring the characteristics of WRRC influent, effluent and intermediate process streams. This monitoring provides the necessary data for process optimization by plant staff and is required to meet the ECA monitoring and reporting conditions. Twenty-four hour time proportional composite samples are routinely collected and analyzed. The raw influent wastewater data analyzed by the Guelph WRRC and Guelph Environmental Laboratory (GEL), which is ISO 17025 accredited by the Canadian Association for Laboratory Accreditation (CALA), is combined and a monthly summary is presented in Table 5.

**Table 5: Raw Influent Wastewater Quality Date, 2024**

| | **pH** | **CBOD5** (mg/L) | **BOD5** (mg/L) | **TSS** (mg/L) | **TP** (mg/L) | **TKN** (mg/L) | **TAN** (mg/L) |
|---|---|---|---|---|---|---|---|
| **January** | 7.60 | 167 | 190 | 257 | 5.01 | 40 | 21.2 |
| **February** | 7.60 | 163 | 192 | 258 | 5.43 | 40 | 23.3 |
| **March** | 7.60 | 146 | 150 | 218 | 4.69 | 38 | 22.4 |
| **April** | 7.60 | 164 | 194 | 221 | 4.30 | 34 | 18.5 |
| **May** | 7.60 | 128 | 139 | 238 | 4.50 | 25 | 16.7 |
| **June** | 7.60 | 160 | 180 | 210 | 4.49 | 22 | 16.7 |
| **July** | 7.60 | 126 | 137 | 198 | 3.94 | 21 | 15.5 |
| **August** | 7.60 | 154 | 195 | 196 | 4.21 | 24 | 17.8 |
| **September** | 7.60 | 176 | 189 | 235 | 4.60 | 37 | 23.8 |
| **October** | 7.60 | 165 | 178 | 285 | 4.61 | 43 | 25.0 |
| **November** | 7.70 | 158 | 187 | 245 | 4.28 | 41 | 24.9 |
| **December** | 7.60 | 219 | 281 | 316 | 5.85 | 45 | 28.5 |
| **Annual Average** | 7.61 | 161 | 184 | 240 | 4.66 | 34.2 | 21.2 |
| **Winter Average** | 7.62 | 171 | 200 | 259 | 5.05 | 40.8 | 24.1 |
| **Summer Average** | 7.60 | 153 | 173 | 226 | 4.38 | 29.4 | 19.1 |

The summer period is April 1 to October 31. The winter period is November 1 to March 31.

For any additional information please see Section 1(A). Summary and Interpretation of all Monitoring Data and Comparison to the Effluent Limits.

## 1(E). Calibration and Maintenance of Effluent Monitoring Equipment

The ultrasonic transmitter measuring the effluent flow is calibrated annually to ensure accuracy of total flows. The calibration records can be found in Appendix D.

## 1(F). Meeting the Effluent Objectives of Condition 6

Please see Section 1(A). Summary and Interpretation of all Monitoring Data and Comparison to the Effluent Limits.

## 1(G). Solids/Sludge Handling and Disposal

The raw sludge produced at the WRRC is thickened in the primary clarifiers via gravity settling and pumped to the anaerobic digestion system which consists of four primary digesters and one secondary digester. The waste activated sludge from all plants are thickened in a rotary drum thickener and then transferred to one of the primary digesters.

Following stabilization by anaerobic digestion, biosolids are transferred from the secondary digester to the dewatering facility. The dewatering facility consists of four belt filter presses and associated auxiliary equipment. Dewatering filtrate is treated in the Anammox side stream process to reduce ammonia loading before being returned to headworks. Stabilized biosolids are dewatered and either transported from site as biosolids cake or further treated on site with both conditions utilizing the Lystek process. The resulting Lystek material is land applied as a Canadian Food Inspection Agency (CFIA) registered Class A fertilizer. This results in a biosolids management program that is 100% landfill divergent and environmentally sustainable.

A simplified solids flow diagram of the WRRC is presented in Appendix B.

A summary of solids production, handling and disposal is presented in Table 6 and biosolids management in Table 7.

The rotary drum thickener (to thicken waste activated sludge) is automated to run 24 hrs/day, provided sufficient waste activated sludge is available. The unit uses a combination of cationic and anionic polymers at a ratio of approximately 1.32:1 to assist in thickening the waste activated sludge to 3.33% solids. The rotary drum thickener was out of service from June to November for maintenance repairs required to repair a crack in the drum. See Table 8 for details and monthly totals.

During this reporting period 3,380 dry tonnes of dewatered biosolids were generated. This reporting period resulted in 100% biosolids diversion from landfill. The dewatered biosolids were land applied during land application season or stored off site and processed for land application. A similar volume of sludge is expected to be generated in 2025 as was generated in 2024.

**Table 6: Solid Handling and Disposal, 2024**

| | **Average Digested Total Solids** (%) | **Digested Solids Pumped to Dewatering** ($m^3$/month) | **Average Dewatered Cake Total Solids** (%) | **Cake Production** (wet tonnes) | **Cake Production** (dry tonnes) |
|---|---|---|---|---|---|
| **January** | 2.20 | 21,763 | 22.85 | 1397.88 | 319.42 |
| **February** | 2.10 | 20,662 | 24.51 | 1301.90 | 319.10 |
| **March** | 2.00 | 20,454 | 24.28 | 1362.34 | 330.78 |
| **April** | 1.99 | 16,277 | 22.18 | 1164.61 | 258.31 |
| **May** | 1.78 | 23,707 | 23.35 | 1904.45 | 306.16 |
| **June** | 1.74 | 24,023 | 23.32 | 1879.49 | 278.84 |
| **July** | 2.02 | 22,025 | 23.78 | 1426.31 | 191.55 |
| **August** | 2.06 | 21,759 | 24.00 | 1937.87 | 290.68 |
| **September** | 2.08 | 21,679 | 24.27 | 1940.63 | 294.52 |
| **October** | 1.93 | 19,667 | 25.08 | 1399.27 | 203.14 |
| **November** | 1.75 | 20,460 | 23.15 | 1309.77 | 303.21 |
| **December** | 1.64 | 20,574 | 22.33 | 1274.49 | 284.59 |
| **Average** | 1.94 | 21,088 | 23.59 | 1,524.92 | 281.69 |
| **Total** | - | 253,050 | - | 18,299.01 | 3,380.30 |

Note: Total Volume for Land Application = 18,299 Wet Tonnes

**Table 7: Guelph Biosolid Volumes, 2024**

| | **Unit of Measure** | **Estimated Quantity** | **Actual Quantity** |
|---|---|---|---|
| **On site Lystek production** (April to November) | $m^3$ | 8,000 | 9,048 |
| **Cake transported off site** (April-November) | wet tonnes | 8,000 | 3,915 |
| **Cake** (December-March) | wet tonnes | 7,500 | 5,337 |
| **Lystek** (December-March) | $m^3$ | 1,000 | 0 |

**Table 8: Thickened Waste Activated Sludge (TWAS), 2024**

| | Volume to Rotating Drum Thickener ($m^3$) | Volume from Rotating Drum Thickener ($m^3$) | % Reduc-tion | % Dry Solids | Cationic Polymer Consumption ($m^3$) | Anionic Polymer Consumption ($m^3$) |
|---|---|---|---|---|---|---|
| **January** | 3,254 | 150 | 95 | 4.60 | 21 | 21 |
| **February** | 5,442 | 557 | 90 | 3.10 | 35 | 38 |
| **March** | 6,355 | 214 | 97 | 2.90 | 39 | 38 |
| **April** | 1,971 | 89 | 95 | 2.65 | 12 | 11 |
| **May** | 206 | 194 | 6 | 0.75 | 2 | 3 |
| **June** | - | - | - | - | - | - |
| **July** | - | - | - | - | - | - |
| **August** | - | - | - | - | - | - |
| **September** | - | - | - | - | - | - |
| **October** | - | - | - | - | - | - |
| **November** | 1,710 | 14 | 99 | 4.70 | 10 | 15 |
| **December** | 8,566 | 489 | 94 | 4.60 | 52 | 62 |
| **Average** | 3,929 | 244 | 82 | 3.33 | 24 | 27 |
| **Totals** | 27,505 | 1,707 | | | 171 | 188 |

Note: The rotary drum thickener was out of service from June to November for maintenance repairs required to repair a crack in the drum

Another important part of the CPE is the Process Sludge Accountability Assessment. Sludge accountability compares measured sludge production from the data collected with projected sludge production results. This comparison, which has a best practice acceptable range of plus/minus 15%, is valuable in measuring the reliability of the data being collected to properly represent the facility's performance. Contributing factors to successful sludge accountability include accurate sampling and knowledgeable facility staff to take care of the day-to-day process requirements.

For 2024, the City of Guelph sludge accountability assessment was -1.5% which is within the acceptable variability of plus/minus 15% and therefore validates the reliability of the data collection and analysis. Please see Table 9 for details.

**Table 9: Sludge Accountability Assessment, 2024**

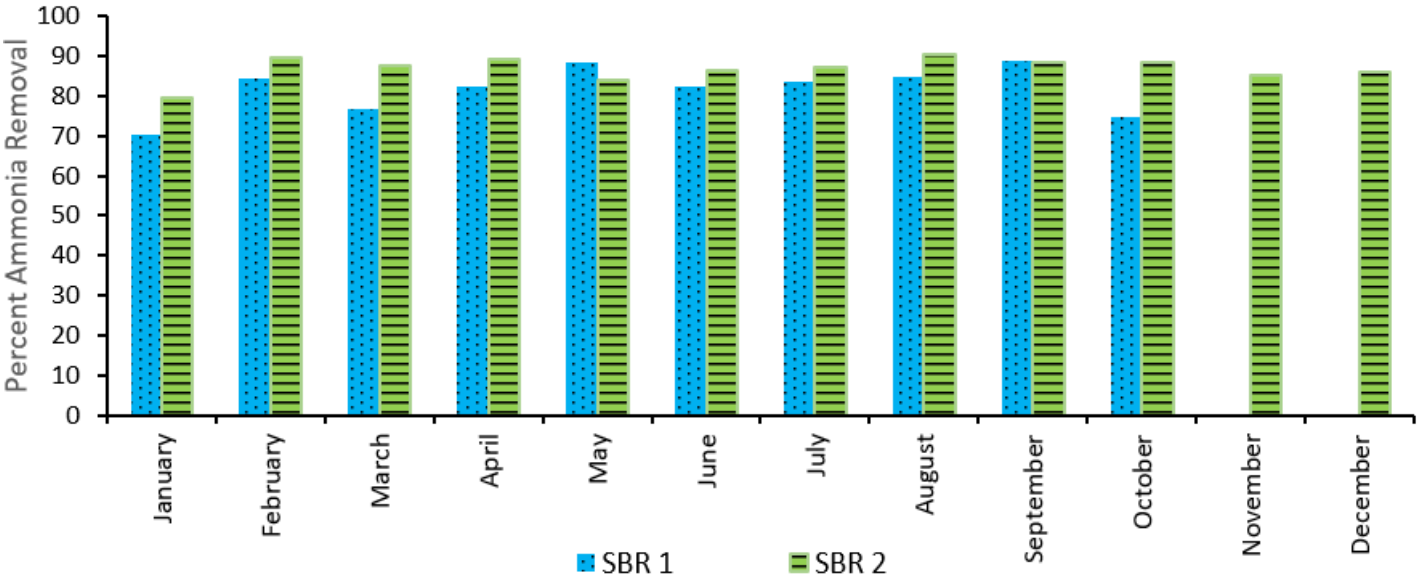
| Reported Sludge | kg/d |
|---|---|
| **Intentional Wasting** | 14,460.1 |
| **Unintentional Wasting** | 126.5 |
| **Side Stream** | 517 |
| Total | **14,069** |
| | |
| Projected Sludge | **kg/d** |
| **Primary Sludge Production** | 7,316 |
| **Biological Sludge Production** | 5,413 |
| **Chemical Sludge Production** | 1,130 |
| Total | **13,859** |
| | |
| **Sludge Accountability** | -1.5 % |

## Side Stream Process

### Anammox

The Anammox process is a side stream ammonia treatment of filtrate from solids dewatering consisting of two sequencing batch reactors (SBR). Each SBR is designed to remove 173 kg/day of ammonia from the side stream filtrate. The annual average percent removal by SBR 1 is 81.7% and SBR 2 is 86.9%. Figure 3 represents the percent removed per month in each SBR. SBR 1 was out of service for November and December, this was a result of a pH probe failure.

**Figure 3, Percent Ammonia Removal via Anammox, 2024**




## 1(H). Complaints

There were 3 complaints made to Wastewater Services regarding the WRRC in 2024.

**Complaint 1:** Complaint made 2024/09/12. An odour near Imperial and West Acres drive was suspected from coming from the WRRC.

**Action Taken**: Hourly monitoring over 3 days. No odour was detected at the site.

**Complaint 2:** Complaint made 2024/10/03. The Complainant indicated that there was a strong odour coming from the plant occasionally and irregularly at times for the last "few years".

**Action Taken**: Investigation found no source of the odour from relevant infrastructure. Ongoing maintenance activity occurring on the East Truck Sewer upstream of the facility could have contributed to the odour. Implemented a vapor barrier around the open manhole at the East truck sewer.

**Complaint 3:** Complaints made 2024/10/18, 2024/10/23, 2024/10/28. A resident reported an odour coming from the WRRC.

**Action Taken**: Multiple investigations found no source of the odour from relevant infrastructure.

## 1(I). By-pass, Spill or Abnormal Discharge Events

### Overflows

An overflow is a controlled discharge of wastewater to the environment from a designed location at the plant other than the approved final effluent outfall. There were no overflow events during the reporting period.

### Spills

A spill is an unplanned discharge of wastewater to the environment from any location that is not specifically designed for this purpose. There were three spill events during the reporting period, as well as 2 contractor/utility additional spills that were called into the Spills Action Centre by City Staff.

**Event 1**

| | |
|---|---|
| Date: | March 30, 2024 |
| Occurrence: | 1-5BS6VQ |
| Event Description: | Biosolids leak from digester 2 draft tube. |

**Event 2:**

| | |
|---|---|
| Date: | April 15, 2024 |
| Occurrence: | 1-5SQEBL |
| Event Description: | Wastewater spill from plant 1 sump hose. |

**Event 3:**

| | |
|---|---|
| Date: | June 14, 2024 |
| Occurrence: | 1-7NDGQA |
| Event Description: | Contractor spilled lystek material from truck. |

### Byasses

A bypass is a diversion of excess wastewater around one or more wastewater treatment process(es). The bypassed portion of wastewater undergoes part of the treatment process followed by disinfection and is mixed with fully treated flow prior to release to the Speed River at the approved discharge location and sampling point. Final effluent is sampled and tested during bypass events to assess its quality.

Occasionally, a planned bypass is necessary in order to repair an essential part of the treatment process or during construction. In those cases, the City submits a request to the MECP District Office to perform the bypass, including a plan to minimize its impact.

The Guelph WRRC has no provision for primary treatment or raw sewage bypass directly to the Speed River. The facility does have provision for secondary treatment bypass, complete tertiary bypass or partial sandfilter bypass. During this reporting period there were two unplanned partial sandfilter bypass event as reported below in Table 10. A partial sandfilter bypass sees full

RBC treatment, partial sandfilter treatment, chlorination and dechlorination before discharge. These events were reported to the Spills Action Center (SAC) as per standard operating protocol and are summarized in Table 10.

**Table 10: Bypass Summary, 2024**

| SAC # | Start Date | Duration | Volume ($m^3$) | CBOD5 (mg/L) | BOD5 (mg/L) | TSS (mg/L) | TP (mg/L) | TAN (mg/L) | e. Coli (cfu/100 mL) |
|---|---|---|---|---|---|---|---|---|---|
| 1-8ZRKUP | July 16 | 3h 52m | 4,384 | <2 | 4 | 3 | 0.19 | 2.61 | 50 (avg) |
| 1-DN9TE1 | Nov 20 | 50m | 179 | <2 | <2 | <2 | 0.11 | 0.17 | 35 (avg) |

*Reported to SAC as a spill.

## 1(J). Notice of Modifications

A copy of all Notice of Modifications are located in Appendix I. A status report on the implementation of each modification is summarized in Section 1(K).

## 1(K). Modifications

The following table lists the capital projects (including those falling under the ECA Limited Operational Flexibility (LOF) criteria), upgrades and major maintenance conducted or completed during the reporting period.

**Table 11: Capital Project Summary, 2024**

| **Project** | **Status** |
|---|---|
| Facility Wide Aeration Equipment and Controls Upgrades (Notice of Modification signed July 30, 2021, Appendix I) | Completed. |
| WWTP Effluent - River Backflow Prevention Valve | Completed. |
| Digester #4 Structural Upgrades (Notice of Modification submitted dated January 31, 2024, Appendix I) | Ongoing. Substantial completion scheduled for Q2 2025. |
| Supply & Installation of Roof Railing and Ladders | Completed. |

| Project | Status |
|---|---|
| TWAS Interim Upgrade | Delayed. Modifications to be completed under Schedule 'A', Section 3. Substantial completion scheduled for Q4 2025. |
| Roadway Upgrade | Completed. |
| Headworks Generator Installation | Delayed. Substantial completion scheduled for Q2 2026. |
| Chlorinated Effluent Shed Replacement | Reassessed and merged with WRRC Tertiary Treatment and UV Disinfection Upgrade |
| WRRC Tertiary Treatment and UV Disinfection Upgrade | Ongoing. Substantial completion scheduled for Q2 2028. Schedule C amendment required. |
| WRRC Leaking Air Header Trenchless Repair | Ongoing. Modifications to be completed under Schedule 'A', Section 3. Substantial completion scheduled for Q3 2025. |

## 1(L). Other

### Ministry Inspections

Wastewater treatment ECA's set effluent quality compliance limits (requirements) and objectives (targets). Compliance limits are mandatory and WRRC owners/operators must report when any limit is not met. WWT systems must also strive to achieve the plant design objectives.

Wastewater System inspections are performed by the MECP to ensure systems are operating as required and comply with the terms and conditions of their ECA. Performance data is reviewed against the compliance objectives and limits. The inspections also verify that the City meets sampling, testing and treatment standards, as well as staff competency requirements. This includes Ministry-approved Class 1-3 licenses to operate the Class III wastewater collection system, and Class 1-4 licenses to operate the Class IV wastewater treatment system. Additional inspections can be triggered through a variety of factors such as frequency of events or inconsistent system performance (e.g. increased number of overflow events or incidents reported), in response to a complaint or concern, or as part of a follow-up from prior violations.

In 2024, the MECP did not complete an inspection of the Guelph WRRC.

## Part 2: Sewage Collection System (CLI-ECA #017-W601) Requirements

The Guelph Wastewater Collection System is classified as a Class III system (Certificate #1160, dated January 10, 2020). The collection system is comprised of approximately 530 km of sanitary sewer and five Sewage Pumping Stations (SPS): Barton Estates SPS, Kortright East SPS Northern Heights SPS, Terraview SPS and Nima Trail SPS.

## 2(A). Summary of Required Monitoring Data

### Sewage Pumping Stations (SPS)

The following is a summary of flow monitoring data for Kortright East SPS, Northern Heights SPS and Nima Trail SPS, including an overview of the adequacy of the works. Barton Estates SPS and Terraview SPS were not constructed with flow meters. Discharge flow monitoring calibrations were completed on November 13, 2024. All City operated sewage pumping stations performed as designed throughout the reporting period.

**Figure 4: 2023 vs. 2024 Monthly Flow for Kortright East SPS**

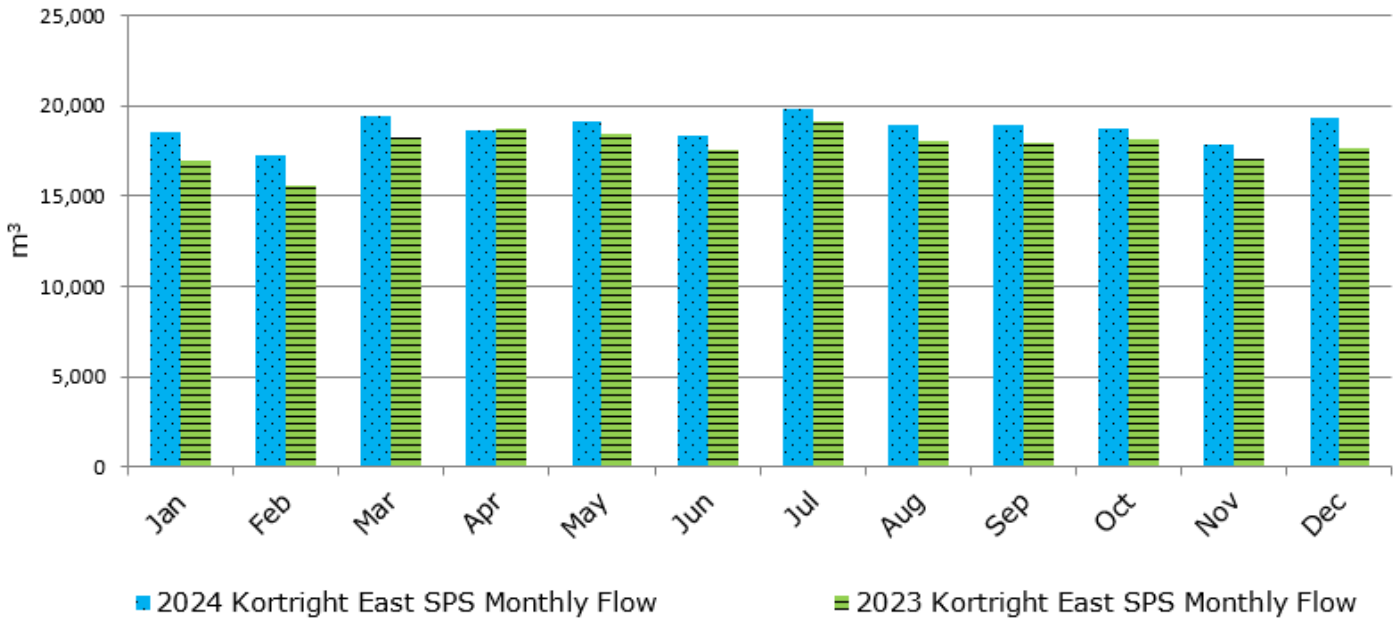



Figure 4 presents the monthly total discharge for Kortright East SPS. As shown in Figure 4, the total wastewater flow was marginally higher (increase of 5.11%) in 2024 than in 2023 for much of the year. These minor increases are consistent with expectations as additional property within the Kortright subdivision becomes occupied.

**Figure 5: 2023 vs. 2024 Monthly Flow for Northern Heights SPS**

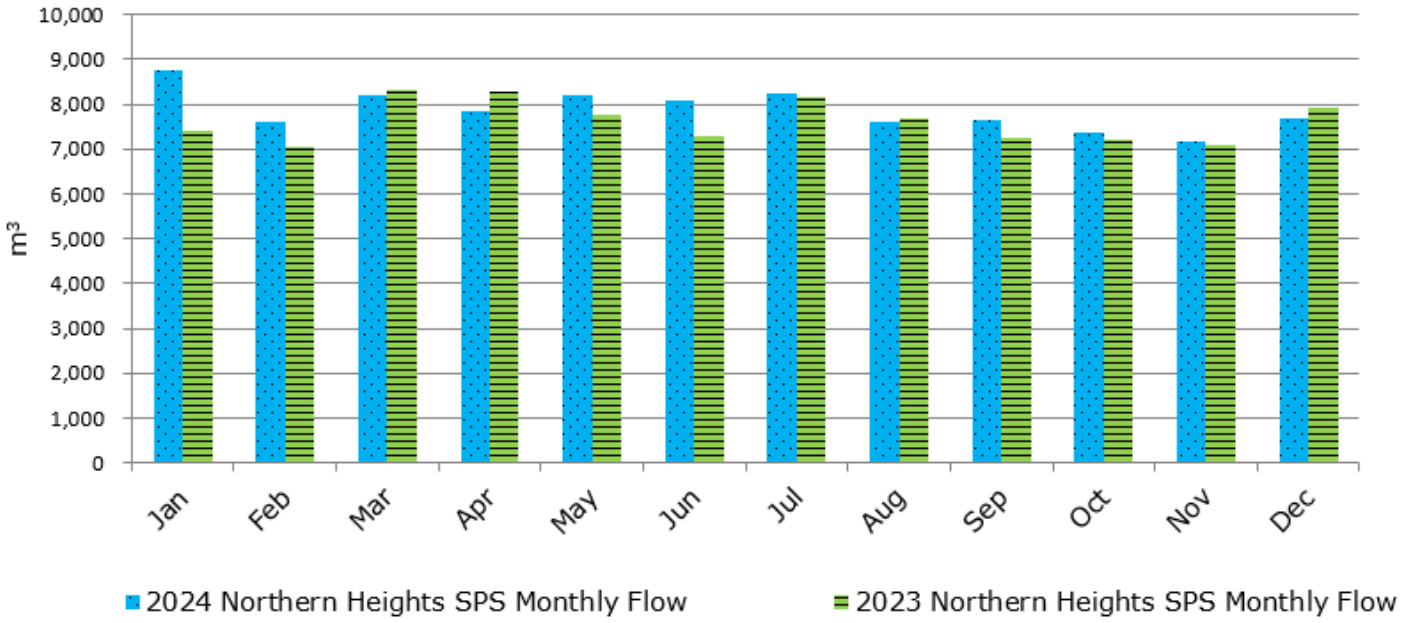



Figure 5 presents the monthly total discharge for Northern Heights SPS. As shown in Figure 5, the total wastewater flow was marginally higher (increase of 3.00%) in 2024 than in 2023 for the entirety of the year.

**Figure 6: 2023 vs. 2024 Monthly Flow for Nima Trail SPS**

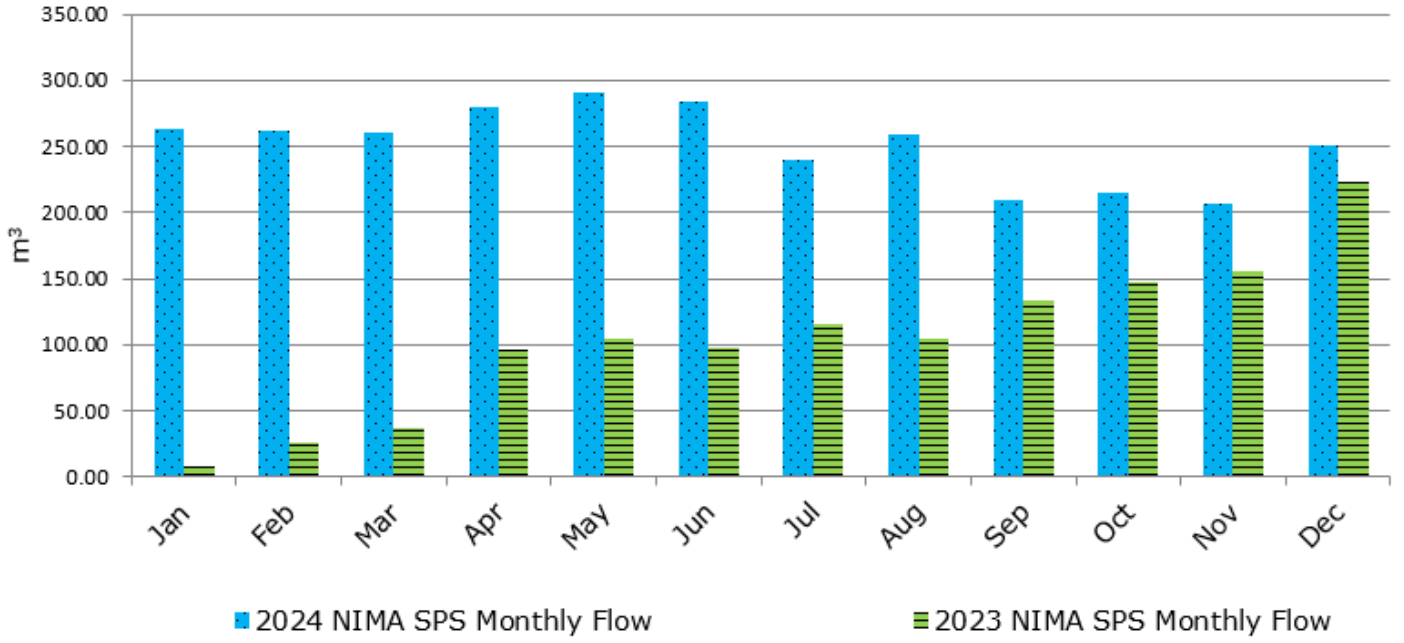



Figure 6 presents the monthly total discharge for Nima Trail SPS. As shown in Figure 6, the total wastewater flow was significantly higher (increase of 58.6%) in 2024 than in 2023 for the entirety of the year. Figure 6 shows that the total flow rate for 2024 has remained consistent

month to month with peak-flow rates of 279.60 $m^3$, 290.96 $m^3$, 283.23 $m^3$ in the spring season (April, May, and June). The increase in domestic sewage flow is consistent with expectations as Phase 1 of the subdivision is fully occupied.

## 2(B). Operating Problems and Corrective Actions Taken

Table 12 provides a summary of collection system and SPS operating problems and the corresponding corrective actions taken in 2024.

**Table 12: Collection System Operating Problems, 2024** (MH=maintenance hole, GM=gravity main, SL=sanitary lateral)

| Location | Operating Problem | Corrective Actions Taken |
|---|---|---|
| 31 June Ave (SL) | Significant root intrusion issues. | Point repair. |
| Municipal St (MH and GM) | Sanitary maintenance hole partial blockage. | Sanitary mainline flushing and vacuum removal of debris, maintenance hole visual inspection. |
| 125 Rickson Ave (MH) | Damaged maintenance hole structure. | Point repair. |
| 95 Simmonds Dr (MH) | Damaged maintenance hole structure. | Point repair. |
| 574 Grange Rd (MH) | Damaged maintenance hole structure. | Point repair. |
| 79 Beaver Meadow (MH) | Damaged maintenance hole structure. | Point repair. |
| Water St (MH and GM) | Sanitary maintenance hole partial blockage. | Sanitary mainline flushing and vacuum removal of debris, maintenance hole visual inspection. |
| 109 Gosling Gardens (MH) | Damaged maintenance hole structure. | Point repair. |
| 352 Hanlon Creek (MH) | Damaged maintenance hole structure. | Point repair. |
| 50 St Arnaud St (SL) | Sanitary lateral damage and foreign object blockage. | Point repair. |

| Location | Operating Problem | Corrective Actions Taken |
|---|---|---|
| Bailey Ave (MH and GM) | Sanitary mainline blockage. | Sanitary mainline flushing and vacuum removal of debris, maintenance hole visual inspection. |
| 1 Forest Hill Dr (MH and GM) | Sanitary mainline blockage. | Sanitary mainline flushing and vacuum removal of debris, maintenance hole visual inspection. |
| 65 Rhonda Rd (SL) | Significant root intrusion issues. | Point repair. |
| 763 Woolwich St (MH and GM) | Sanitary mainline blockage. | Sanitary mainline flushing and vacuum removal of debris, maintenance hole visual inspection. |
| Harvard Rd & Harrow Crt (MH) | Damaged maintenance hole structure. | Point repair. |
| Imperial Rd S (MH and GM) | Sanitary maintenance hole partial blockage. | Sanitary mainline flushing and vacuum removal of debris, maintenance hole visual inspection. |
| 148 Delhi St (GM) | Sanitary gravity mainline collapse. | Point repair. |
| 763 Woolwich St (SL) | Significant misalignment and grease build up. | Point repair. |
| 21 Yarmouth St (SL) | Sanitary lateral collapse | Point repair. |
| 29 Elginfield Dr (GM) | Sanitary gravity mainline collapse. | Point repair. |
| 199 Stevenson St S (MH) | Damaged maintenance hole structure. | Point repair. |
| 146 Harvard Rd (MH) | Damaged maintenance hole structure. | Point repair. |
| Clair Rd E & Farley Dr (MH) | Damaged maintenance hole structure. | Point repair. |
| 3 Goldie Ave (GM) | Sanitary gravity mainline collapse. | Point repair. |

| Location | Operating Problem | Corrective Actions Taken |
|---|---|---|
| 123 Stevenson St N (MH) | Damaged maintenance hole structure. | Point repair. |
| 210 Kortright Rd W (MH) | Damaged maintenance hole structure. | Point repair. |
| 16 Delmar Blvd (MH) | Damaged maintenance hole structure. | Point repair. |
| Exhibition Park Washroom (SL) | Significant misalignment and lateral collapse. | Point repair. |
| Boult Ave (MH and GM) | Sanitary mainline blockage. | Sanitary mainline flushing and vacuum removal of debris, maintenance hole visual inspection. |
| 58 Mont St (SL) | Lateral hit by third party. | Point repair from cross bore. |
| 9 Gosling Garden (MH) | Damaged maintenance hole structure. | Point repair. |
| WRRC West Trunk (MH and GM) | Overstrength sanitary effluent discharge. | Sanitary mainline flushing and maintenance hole visual inspection. |
| 65 Oxford St (SL) | Lateral root intrusion. | Outside clean out installation and lateral CIPP lining. |
| 4 Oakwood Ave (SL) | Blockage caused by sag. | Outside clean out installation and point repair. |
| 66 Bishop Crt (SL) | Lateral hit damaged by third party. | Point repair. |
| Poppy Crt (MH) | Damaged maintenance hole structure. | Point repair. |
| 368 Ironwood Rd (MH) | Damaged maintenance hole structure. | Point repair. |
| Admiral Place (MH) | Damaged maintenance hole structure. | Maintenance hole channel rehabilitation. |
| 95 Willow Rd (MH) | Damaged maintenance hole structure. | Maintenance hole channel rehabilitation. |

| Location | Operating Problem | Corrective Actions Taken |
|---|---|---|
| Renfield St (GM) | Sanitary gravity mainline collapse. | Point repair. |
| 155 Imperial Rd (MH) | Damaged maintenance hole structure. | Point repair. |
| 95 Waverley Rd (MH) | Damaged maintenance hole structure. | Point repair. |
| 34 Beaver Meadow Dr (MH) | Damaged maintenance hole structure. | Point repair. |
| 251 Speedvale Ave E (MH) | Damaged maintenance hole structure. | Point repair. |
| 135 Waverley Dr (GM) | Sanitary gravity mainline collapse. | Point repair. |
| Barton Estates SPS | Pump 1 & Pump 2 overflow, and high-level alarm. | Alarm cycle cleared by SCADA department and pump cycles reset at station. |
| Barton Estates SPS | Gas monitor high LEL alarm. | SPS station gas monitor was replaced and recalibrated. |
| Barton Estates SPS | Building intrusion alarm – multiple. | Site inspection and resealing of station doors and wet well hatch’s. |
| Barton Estates SPS | Diesel tank vacuum pressure alarm. | Vacuum pressure sensor replacement. |
| Kortright East SPS | Power failure & blower fault alarm – multiple. | Inspection and alarm acknowledgement. |
| Kortright East SPS | Pump 1 fail to start alarm – multiple. | Inspection and wet well cleaning. |
| Kortright East SPS | Generator room high temperature alarm – multiple. | Cleared blower alarm, reset fan and lowered temperature setting. |
| Kortright East SPS | Generator room low temperature alarm – multiple. | Cleared blower alarm, reset fan and lowered temperature setting. |

| Location | Operating Problem | Corrective Actions Taken |
|---|---|---|
| NIMA Trails SPS | Generator fault & low gas pressure alarm – multiple. | Inspection and alarm acknowledgement. |
| NIMA Trails SPS | Odour system alarm. | Inspection and alarm acknowledgement. |
| NIMA Trails SPS | Grinder fault alarm – multiple. | Inspection and alarm acknowledgement. |
| NIMA Trails SPS | Building intrusion alarm. | Site inspection and resealing of station doors. |
| NIMA Trails SPS | Generator run alarm. | Inspection and alarm acknowledgement. |
| Northern Heights SPS | Low level lockout alarm – multiple. | Inspection and alarm acknowledgement. |
| Northern Heights SPS | Pump 1 & 2 fail to start alarm – multiple. | Inspection and wet well cleaning. |
| Northern Heights SPS | Communication alarm. | Inspection and replacement of cell card and communication box. |
| Northern Heights SPS | Building intrusion alarm. | Site inspection and resealing of station doors. |
| Terraview SPS | UPS battery failure alarm – multiple. | Inspection and alarm acknowledgement. |
| Terraview SPS | Building low temperature alarm. | Reset exhaust fan and increased building temperature setting. |
| Terraview SPS | High level alarm. | Inspection, pump test and alarm acknowledgement. |
| Municipal Siphon | Communication failure alarm. | Inspection, alarm acknowledgement and router reset. |

## 2(C). Calibration, Maintenance and Repairs

Table 13 summarizes the calibration, maintenance and repairs carried out on major structures, equipment, apparatus, mechanism or thing forming part of the collection system. For repairs resulting from operating problems, please see section 2(B). SPS flow meters are calibrated annually. See Appendix J for the certificates for 2024.

**Table 13: Calibration and Maintenance Performed on Collection System and SPS, 2024**

| Location and Asset | Maintenance/Calibration/Repairs Performed |
|---|---|
| Downey Rd | Sanitary bypass from water booster station to MH on GM. On-site with Waterworks for bypass oversite during spill cleanup. |
| York Rd | Sanitary bypass from MH on GM. On-site for bypass oversite during sanitary maintenance hole installation and gravity mainline reconstruction. |
| Silvercreek Parkway | Sanitary bypass from MH on GM. On-site for bypass oversite during sanitary maintenance hole installation and reconstruction. |
| University Ave E | Sanitary bypass from to MH on GM. On-site for bypass oversite during sanitary gravity mainline reconstruction and CIPP lining. |
| College Ave E | Sanitary bypass from MH on GM. On-site for bypass oversite during sanitary maintenance hole installation and gravity mainline reconstruction. |
| Silvercreek Parkway | Sanitary bypass from MH on GM. On-site for bypass oversite during gravity mainline CIPP lining. |
| WRRC East Trunk | Sanitary bypass from MH to WRRC head works. On-site for bypass oversite of sanitary trunk main inspection and cleaning. |
| 135 Waverley Dr | Sanitary bypass from to MH on GM. On-site for bypass oversite during sanitary gravity mainline reconstruction. |
| All SPSs | Weekly generator inspections and alarm tests performed. |
| All SPS | Wet well cleaning – multiple. |
| All SPS | Backflow preventor was inspected by contractor. |
| All SPS | Annual fall restraint equipment certification completed with contractor. |

| Location and Asset | Maintenance/Calibration/Repairs Performed |
|---|---|
| All SPS | Completed monthly generator ATS testing (January to December 2024). |
| Kortright East, NIMA, Barton Estates SPS | Annual generator inspection and load testing completed. |
| Kortright East, NIMA Trails, Northern Heights, Terraview SPS | SPS overflow pond sampling completed (bi-annually). |
| Barton Estates SPS | SPS ETM infrared panel inspection performed by contractor. |
| Barton Estates SPS | Wet well hatch lock replacement was completed. |
| Kortright East SPS | Washroom ventilation fan replacement was completed. |
| Kortright East SPS | Building exterior soffit replacement was completed. |
| Kortright East SPS | Soil sampling completed to identify soil stability around generator venting stack. |
| Kortright East SPS | Inspection of fiber optic conduits completed for future installation of fiber optics to station. |
| Kortright East SPS | SPS ETM infrared panel inspection performed by contractor. |
| Kortright East SPS | Security system adjustments made to edit accessible operators for entry gate. |
| Kortright East SPS | Fiber optic network installed at station. |
| NIMA Trails SPS | Utility shutdown occurred due to subdivision development. The shutdown resulted in low gas pressure alarm at station. |
| NIMA Trails SPS | Guard-It auto dialer replacement completed. |
| NIMA Trails SPS | SPS ETM infrared panel inspection performed by contractor. |
| NIMA Trails SPS | Emergency exit lighting batteries were replaced. |

| Location and Asset | Maintenance/Calibration/Repairs Performed |
|---|---|
| NIMA Trails SPS | Installation of backup modem performed by SCADA department. Modem was hooked up to secondary internet network. |
| NIMA Trails SPS | Oil pan replaced on generator by contractor. |
| NIMA Trails SPS | Sensor batteries were replaced on sensor operated sink in station bathroom. |
| Northern Heights SPS | Low level float inspection and height adjustment. |
| Northern Heights SPS | Soil sampling completed to identify soil stability around generator venting stack. |
| Northern Heights SPS | SPS ETM infrared panel inspection performed by contractor. |
| Terraview SPS | Pump 2 electrical contact and pump start relay replacement. |
| Municipal St Siphon | Wet well cleaning – multiple. |
| West End Rec Centre | Wet well cleaning – multiple. |
| West End Rec Centre | Pump 1 and 2 activation float replacement. |

## 2(D). Complaints

Wastewater Services received 6 complaints regarding the collection system in 2024.

**Complaint 1:** Complaint made 2024/03/05. A member of the public reported a sewage smell within a commercial building at 80 Regal Rd.

**Action Taken**: Inspected MH3330, MH3329, and MH3328. No odours or unusual gas readings detected. A dry pit in the floor of the wood working shop was identified as the likely odour source. No issues with the sanitary system identified.

**Complaint 2:** Complaint made 2024/05/29. A strong sewer odour smell was reported by a resident at 29 Freshmeadow Way.

**Action Taken**: Maintenance hole inspection performed both up and downstream of odour. No odours or unusual gas readings detected. No issues with the sanitary system identified.

**Complaint 3:** Complaint made 2024/08/15. A strong sewer odour smell was reported by a resident at 16 Maple St.

**Action Taken**: Inspected MH2811, MH2812, MH2813, and MH2814. No odours or unusual gas readings detected. Installation of an odour control unit was completed in MH2813.

**Complaint 4:** Complaint made 2024/10/01. A member of the public reported a sewage smell in the area of McTague St.

**Action Taken**: Inspected MH657 and MH658. No odours or unusual gas readings detected. During the site inspection the property owner indicated she has a plumber complete work on the sanitary lateral earlier in the day which likely released some odour into the basement. A follow up CCTV inspection to determine the condition of the City side lateral was performed on Oct 3, 2024. No problems were observed.

**Complaint 5:** Complaint made 2024/10/03. A member of the public reported a sewage smell in the area of 195 College Ave W.

**Action Taken:** No odours or unusual gas readings detected. During the Site inspection the strong odour located at the back of the building was determined to be the source of the odour. No additional follow-up required.

**Complaint 6:** Complaint made 2024/10/23. A strong sewer odour smell was reported by a resident at 785 York Rd.

**Action Taken**: Inspected MH8415 and MH4247. $H_2S$ readings of 16ppm. Odours present in proximity to MH4247. Confirmed wind direction to be heading toward complainant area and likely the cause for the ambient odours. Installed charcoal filter into MH8415 to assist with odour filtration at complainant site.

## 2(E). Alterations

Table 14 summarizes the alterations made to the collection system in 2024. No projects were identified as a significant drinking water threat (SDWT).

**Table 14: Alterations to the System, 2024**

| Project | Alteration Type | Status |
|---|---|---|
| Whitelaw Road Reconstruction | Reconstruction Project | SS1 Part 4 signed 2024-01-27. |
| Dawn Avenue | Sewer Extension | SS1 Part 4 signed 2023-09-01. |
| Baker Street | Reconstruction Project | Complete. |
| Silvercreek Parkway North | Sewer Upgrade | SS1 Part 4 signed 2023-06-22. |
| 8 Lynwood Ave | Sewer Extension | SS1 Part 4 signed 2024-08-16. |
| Lowes Road West at Dawn | Sewer Extension | SS1 Part 4 signed 2024-10-08. |
| 64 Queen Street | Reconstruction Project | SS1 Part 4 signed 2024-08-16. |
| Kendrick Avenue and Hanlon | Sewer Extension | SS1 Part 4 signed 2024-06-28. |
| McCrea Blvd and James Street | Sewer Extension | Complete. |
| York Road Phase 3 | Reconstruction Project | SS1 Part 4 signed 2024-08-22. |
| Silvercreek Phase 2 | Reconstruction Project | SS1 Part 4 signed 2024-09-18. |

## 2(F). Overflows and Spills

There was 1 spill from the collection system in 2024. This is described below.

**Event 1**

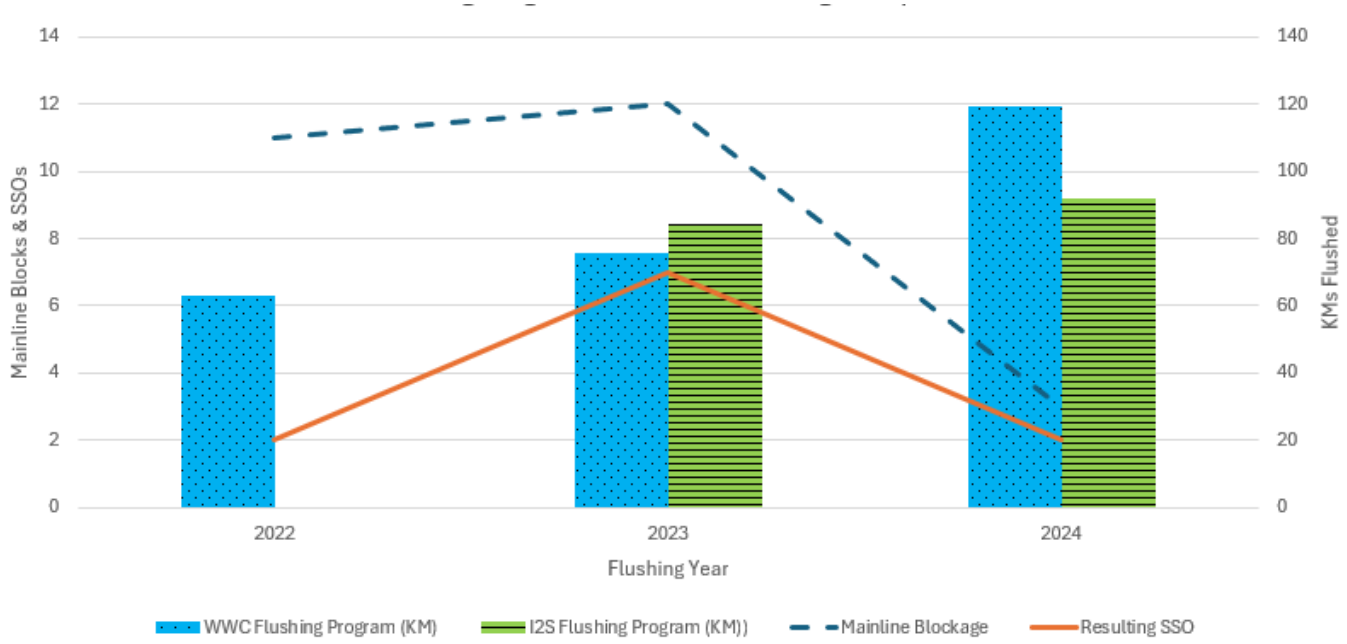
| | |
|---|---|
| Date: | June 4, 2024 |
| Event Description: | After the completion of routine sewer cleaning work the Vactor keg rear hatch did not seal correctly and was leaking from the seal O-ring. |
| Occurrence: | 1-7BXL9S |
| Volume: | 2-3L |
| Duration: | 15min |
| Lab Results: | Not applicable |
| Disinfection: | Localized disinfection of the spill area with a granular chlorine solution. |
| Adverse Impacts: | No |
| Corrective Actions: | Downgradient Catch basins were isolated with absorbent booms. Vactor keg hatch was packed with absorbent booms to temporarily seal the leak from the keg hatch to allow transport of the Vactor back to WRRC. The seal O-ring was inspected, cleaned, and washed to remove excess debris that was preventing a full watertight seal. Additionally, the Vactor keg seal was replaced on 2024-07-07. |

## 2(G). Efforts Made to Reduce Overflows, Spills and Bypasses

Wastewater Collection utilizes a progressive CCTV and flushing program, visual maintenance hole inspection process with dashboard support, smart cover technology for monitoring known problem areas supported with mobile alerts and weather pattern analysis. In addition, public reporting is achieved through the annual uploading of the annual report to the city website.

Figure 7 presents a comparison of the progressive CCTV and flushing programs against the yearly mainline blockage response for 2002, 2023, and 2024. As shown in Figure 7 the utilization of the progressive CCTV and flushing program has increased by 158% year over year. In 2024 WWC responded to 3 sanitary mainline blockages. In 2023 WWC responded to 12 sanitary mainline blockages. This represents a decrease in sanitary mainline blockages with the City of 75%.

**Figure 7: CCTV and Flushing Program vs. Mainline Blockage Response**




## 2(H). SPS Overflow Quality Assurance and Control Measures

This monitoring provides the necessary data for SPS stormwater retention overflow ponds and is required to meet the ECA monitoring and reporting conditions. Twenty-four hour time proportional composite samples are collected and analysed biannually. Two composite samples are collected from just downstream of the inlet (A) and just downstream of the outlet (B) of each overflow retention pond at Kortright East SPS, NIMA Trails SPS, and Northern Heights SPS. A summary of the results of the raw surface water analysis is presented in Table 16, 17, and 18. There were no overflows from the SPSs in 2024. Results of the analysis represent the natural state of the pond. No parameters of concern were identified through 2024 testing.

**Table 15: Storm Pond Surface Water Quality Data, Kortright SPS 2024**

| **Date** | **Sample Name** | **E. Coli** (CFU) | **Oil and Grease** | **TBOD** (mg/L) | **TSS** (mg/L) | **TP** (mg/L) | **TKN** (mg/L) | **TAN** (mg/L) |
|---|---|---|---|---|---|---|---|---|
| June 2024 | A | 200 | 0.7 | <2 | <10 | 0.038 | 0.41 | <0.050 |
| June 2024 | B | 30 | 1.3 | 4 | 20 | 0.032 | 0.41 | <0.050 |
| Oct 2024 | A | <10 | 1.0 | 3 | 45 | 0.073 | 0.45 | <0.050 |
| Oct 2024 | B | <10 | 1.0 | 3 | 38 | <0.020 | 0.48 | <0.050 |

**Table 16: Storm Pond Surface Water Quality Data, NIMA Trails SPS 2024**

| **Date** | **Sample Name** | **E. Coli** (CFU) | **Oil and Grease** | **TBOD** (mg/L) | **TSS** (mg/L) | **TP** (mg/L) | **TKN** (mg/L) | **TAN** (mg/L) |
|---|---|---|---|---|---|---|---|---|
| June 2024 | A | 210 | 1.40 | 3 | <10 | 0.025 | 0.27 | <0.05 |
| June 2024 | B | <10 | 0.90 | <2 | <10 | <0.020 | 0.32 | <0.05 |
| Oct 2024 | A | <10 | <0.50 | <2 | <10 | <0.020 | 0.99 | 0.26 |
| Oct 2024 | B | <10 | <0.50 | <2 | <10 | 0.022 | 0.91 | 0.20 |

**Table 17: Storm Pond Surface Water Quality Data, Northern Heights SPS 2024**

| **Date** | **Sample Name** | **E. Coli** (CFU) | **Oil and Grease** | **TBOD** (mg/L) | **TSS** (mg/L) | **TP** (mg/L) | **TKN** (mg/L) | **TAN** (mg/L) |
|---|---|---|---|---|---|---|---|---|
| June 2024 | A | 30 | 0.90 | 8 | 420 | 0.65 | 2.7 | 0.35 |
| June 2024 | B | 30 | 1.00 | <2 | <10 | 0.029 | 0.30 | <0.050 |
| Oct 2024 | A | 30 | 0.80 | <2 | <10 | 0.026 | 0.51 | <0.050 |
| Oct 2024 | B | 10 | 0.80 | 5 | 11 | 0.035 | 0.53 | <0.050 |

## Appendix

Appendix A – GRCA Recognition Letter

Appendix B – Plant Flow Diagram

Appendix C – Facility Performance Charts

Appendix D – Calibration Records for WRRC

Appendix E – Guelph Environmental Laboratory Accreditation Certificate

Appendix F – Summary of Existing Works

Appendix G – ECA and CLI-ECA

Appendix H – Sludge Accountability Calculations

Appendix I – Notice of Modification to Sewage Works

Appendix J – Calibration Records for SPS Flow Meters

# Appendix A

# GRCA Recognition Letter

Accessible version of this document available by contacting the City of Guelph at 519-837-5627 or TTY 519-826-9771 text here

Administration Centre: 400 Clyde Road, P.O. Box 729 Cambridge, ON N1R 5W6

Phone: 519-621-2761 Toll free: 1-866-900-4722 Fax: 519-621-4844 www.grandriver.ca

November 14th, 2024

The City of Guelph
1 Carden Street,
Guelph, Ontario N1H 3A1

**Attention:** **Tim Robertson, Division Manager, Environmental Sevices, Wastewater**

**Subject:** Recognition of the Guelph Water Resource Recovery Centre for 2023 performance

On behalf of the Grand River Watershed-Wide Wastewater Optimization Program (GRWWOP), I would like to thank you for your efforts to improve the water quality of the Speed River. The GRWWOP aims to improve the water quality in the Grand River watershed and has developed a recognition program for wastewater treatment facilities that meet the criteria outlined in the following table:

**Table 1 - 2023 Summary of Recognition Program Criteria and Points Earned for Mechanical Plants**

| Earned/Available Points | Criteria |
|---|---|
| **Yes** | Was the plant in compliance with ECA effluent limits for all parameters in 2023?* |
| **20/25** | Monthly average final effluent quality meets voluntary final targets for TP |
| **5/25** | Monthly average final effluent quality meets voluntary final targets for TAN |
| **10/10** | Include enhanced reporting in annual performance report (e.g. per capita flows and loads, sludge accountability, etc.) |
| **20/20** | Conduct sludge accountability |
| **20/20** | Sludge accountability closes within ±15% |
| **75/100 = 75%** | **Total points** |
| *Note: If compliance is not achieved in all months, the plant is not eligible for recognition. | |

A score of 70% to <80% will receive a Bronze level recognition, from 80% to <100% will receive Silver and 100% will receive Gold. Based on the 2023 data submitted to us, the Guelph plant achieved a total score of 75%.

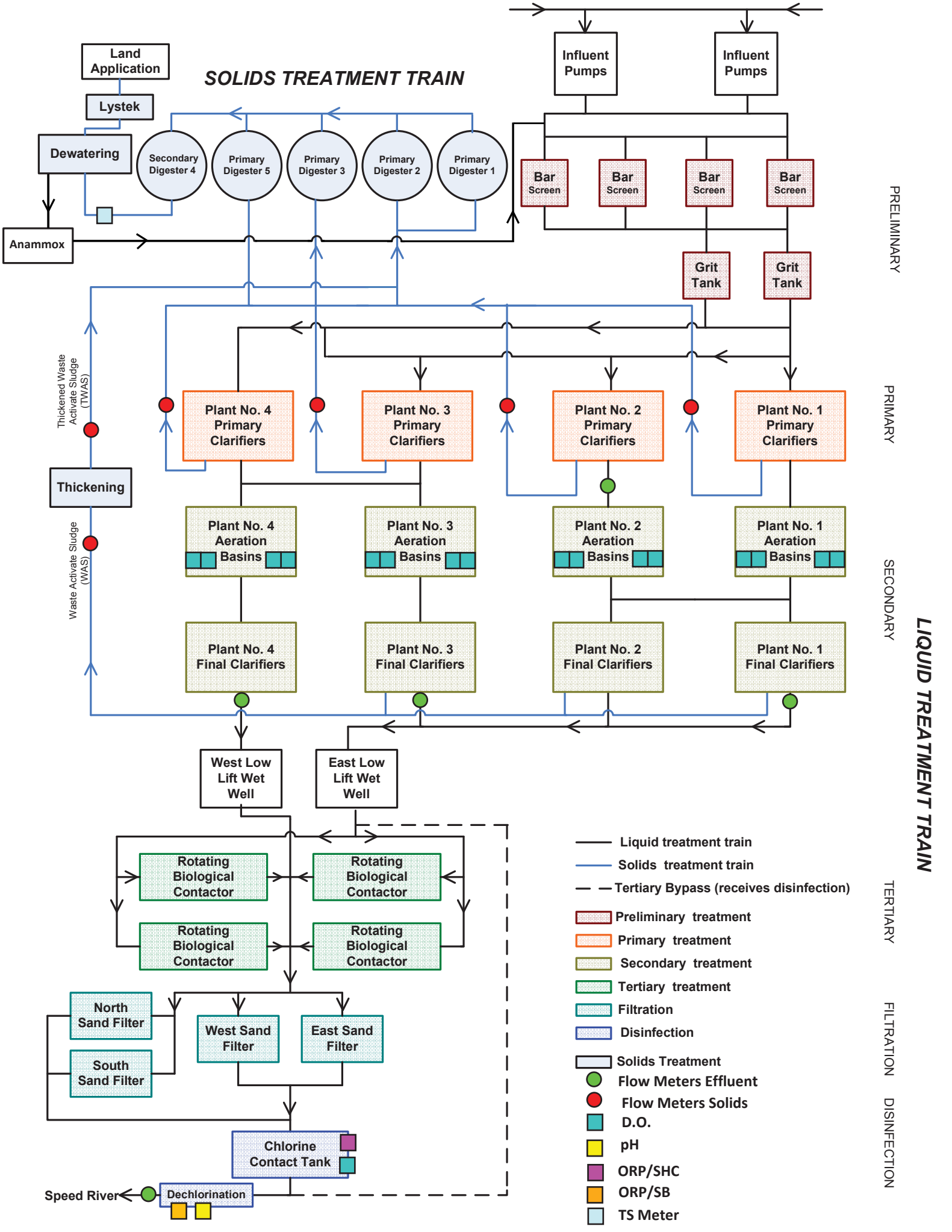
I am pleased to inform you that the Guelph plant has achieved the **Bronze** recognition level based on 2023 data. I congratulate you on this achievement and encourage you to continue your efforts to reduce pollutant discharges to the Speed River. A spreadsheet template will be sent to you from the GRCA at the beginning of 2025 to gather required data for the 2024 watershed annual report on wastewater treatment performance and support the GRWWOP recognition program.

Yours truly,

Samantha Lawson
*Chief Administrative Officer*
**Grand River Conservation Authority**

# Appendix B

# Plant Flow Diagram


SOLIDS TREATMENT TRAIN
Land Application
Lystek
Dewatering
Anammox
Secondary Digester 4
Primary Digester 5
Primary Digester 3
Primary Digester 2
Primary Digester 1
Influent Pumps
Influent Pumps
Bar Screen
Bar Screen
Bar Screen
Bar Screen
Grit Tank
Grit Tank
Thickened Waste Activate Sludge (TWAS)
Thickening
Waste Activate Sludge (WAS)
Plant No. 4 Primary Clarifiers
Plant No. 3 Primary Clarifiers
Plant No. 2 Primary Clarifiers
Plant No. 1 Primary Clarifiers
Plant No. 4 Aeration Basins
Plant No. 3 Aeration Basins
Plant No. 2 Aeration Basins
Plant No. 1 Aeration Basins
Plant No. 4 Final Clarifiers
Plant No. 3 Final Clarifiers
Plant No. 2 Final Clarifiers
Plant No. 1 Final Clarifiers
West Low Lift Wet Well
East Low Lift Wet Well
Rotating Biological Contactor
Rotating Biological Contactor
Rotating Biological Contactor
Rotating Biological Contactor
North Sand Filter
South Sand Filter
West Sand Filter
East Sand Filter
Chlorine Contact Tank
Dechlorination
Speed River
Liquid treatment train
Solids treatment train
Tertiary Bypass (receives disinfection)
Preliminary treatment
Primary treatment
Secondary treatment
Tertiary treatment
Filtration
Disinfection
Solids Treatment
Flow Meters Effluent
Flow Meters Solids
D.O.
pH
ORP/SHC
ORP/SB
TS Meter
PRELIMINARY
PRIMARY
SECONDARY
TERTIARY
FILTRATION
DISINFECTION
LIQUID TREATMENT TRAIN

# Appendix C

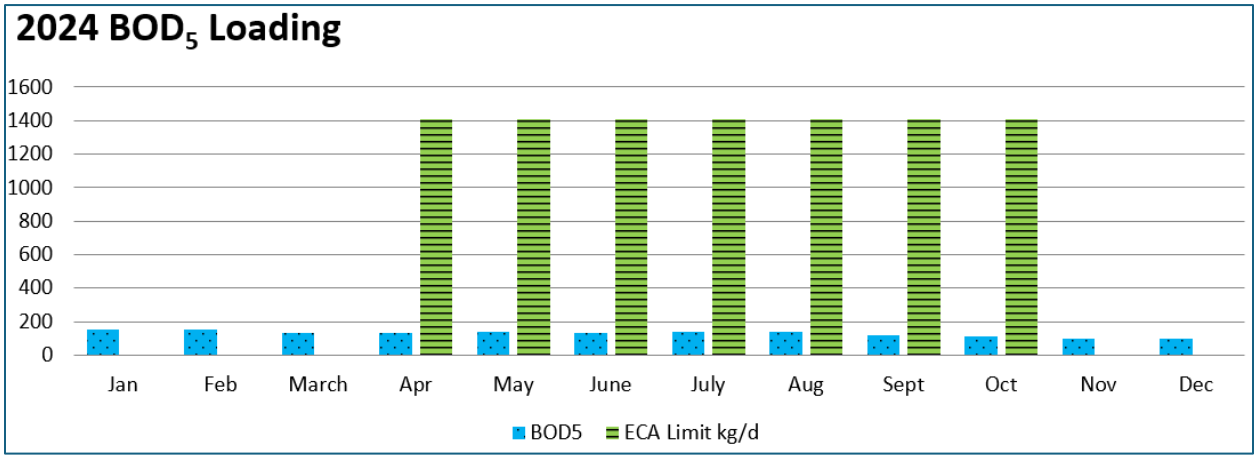
# Facility Performance Charts

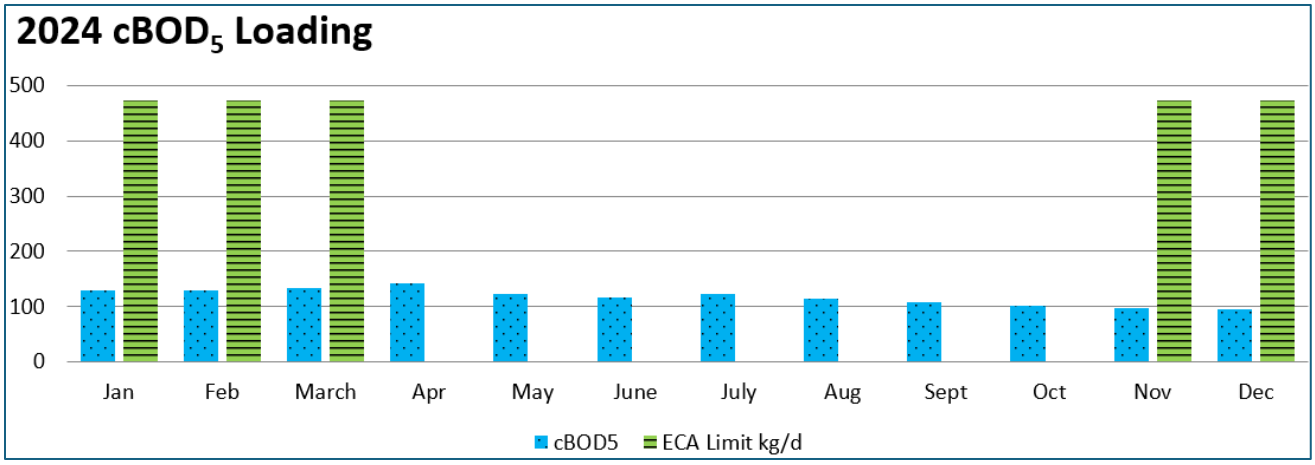
# City of Guelph Wastewater Treatment Plant

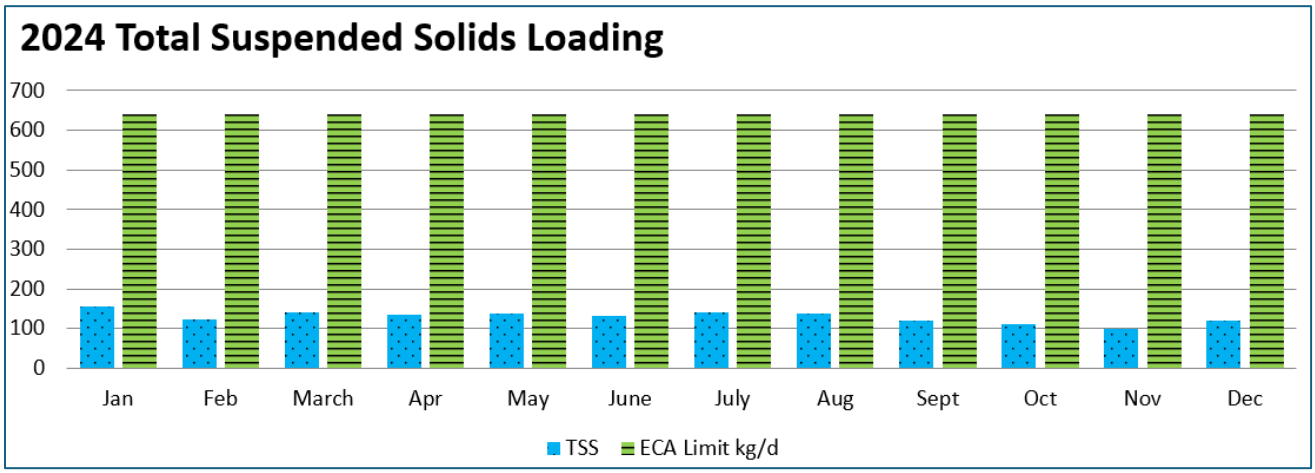
# Facility Performance Charts 2024

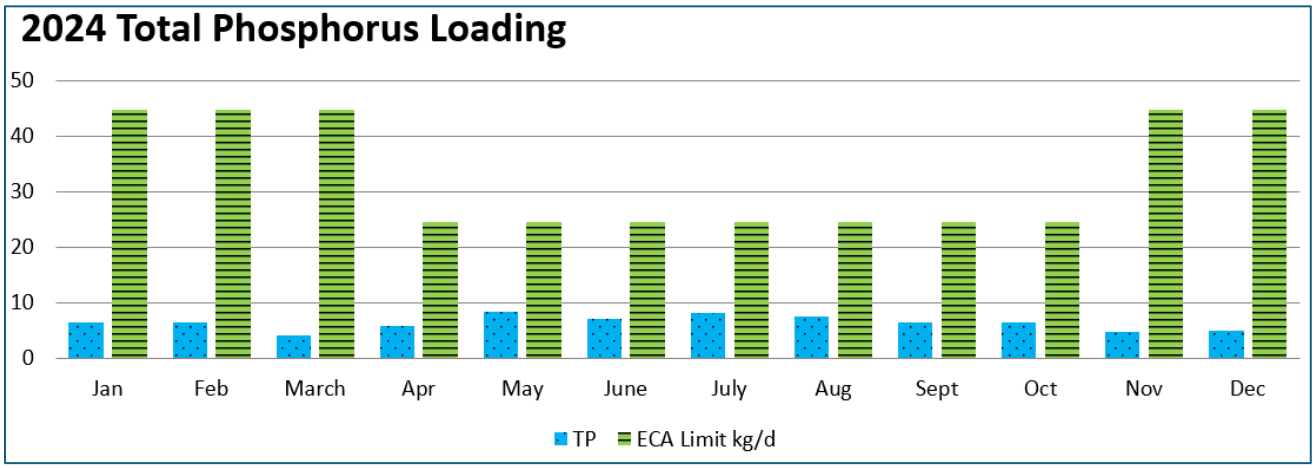
### WRRC Effluent Limits

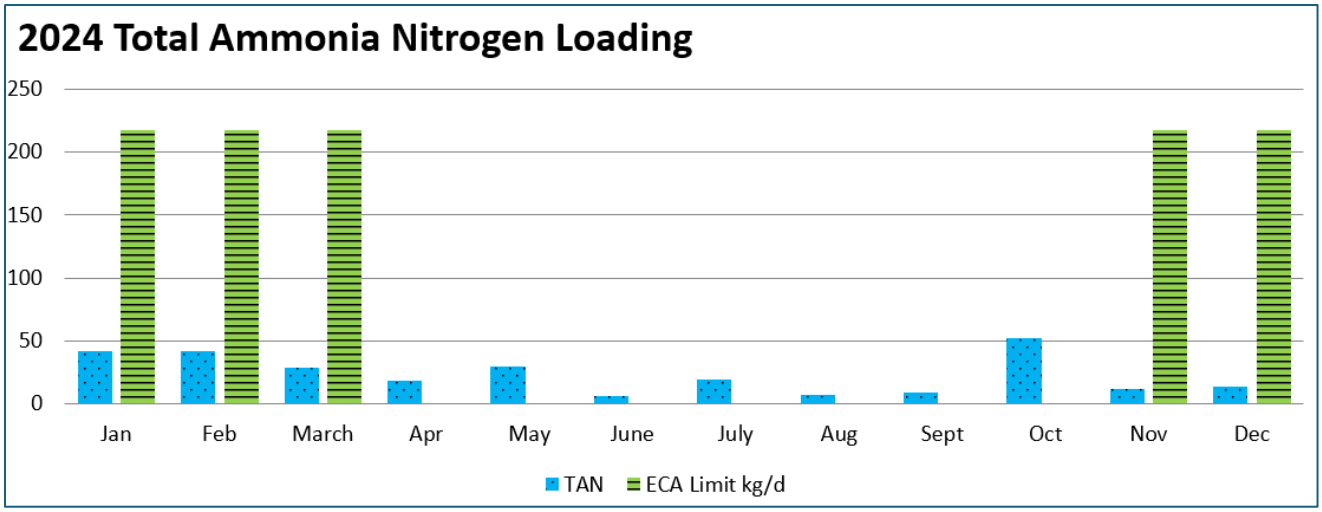
| Effluent Parameter | Average Concentration (mg per litre) | Average Waste Loading (kg) |
|---|---|---|
| BOD5 | 22 (Apr 1 to Oct 31) | 1,408 (Apr 1 to Oct 31) |
| CBOD | 7.4 (Nov 1 to Mar 31) | 473.6 (Nov 1 to Mar 31) |
| Total Suspended Solids | 10 | 640 |
| Total Phosphorus | 0.38 (Apr 1 to Oct 31), 0.7 (Nov 1 to Mar 31) | 24.5 (Apr 1 to Oct 31), 44.8 (Nov 1 to Mar 31) |
| Total Ammonia Nitrogen | 3.4 (Nov 1 to Mar 31) | 217.6 (Nov 1 to Mar 31) |
| Total Residual Chlorine | 0.02 | - |




2024 cBOD5 Loading
500
400
300
200
100
0
Jan
Feb
March
Apr
May
June
July
Aug
Sept
Oct
Nov
Dec
cBOD5
ECA Limit kg/d


2024 Total Suspended Solids Loading
700
600
500
400
300
200
100
0
Jan
Feb
March
Apr
May
June
July
Aug
Sept
Oct
Nov
Dec
TSS
ECA Limit kg/d


2024 Total Phosphorus Loading
50
40
30
20
10
0
Jan
Feb
March
Apr
May
June
July
Aug
Sept
Oct
Nov
Dec
TP
ECA Limit kg/d


2024 Total Ammonia Nitrogen Loading
250
200
150
100
50
0
Jan
Feb
March
Apr
May
June
July
Aug
Sept
Oct
Nov
Dec
TAN
ECA Limit kg/d

# Appendix D

# Calibration Records for WRRC

Accessible version of this document available by contacting the City of Guelph at 519-837-5627 or TTY 519-826-9771

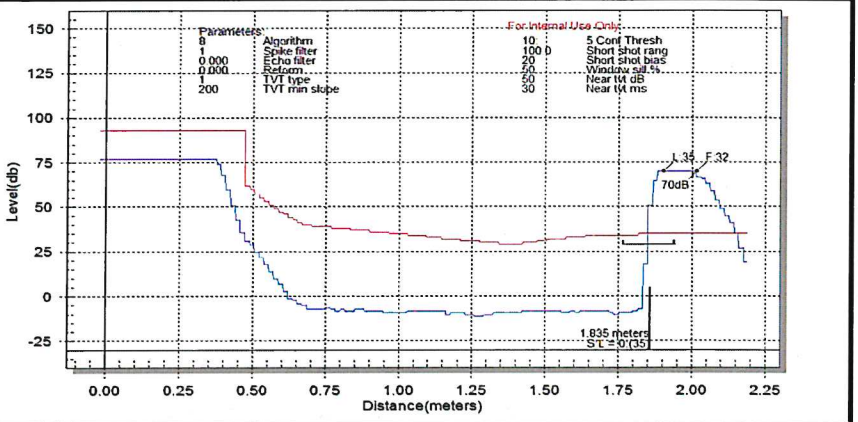
# CALIBRATION REPORT

| | |
|---|---|
| TAG NO.: | FIT-FINAL EFF |
| REPORT NO.: | 240603 |
| DATE: | 03-Jun-24 |

| | | | |
|---|---|---|---|
| **SITE:** | Guelph WWTP | **DATE:** | June 3, 2024 |
| **PROCESS AREA:** | Final Effluent | | |
| **INSTR. TAG:** | FIT-FINAL EFF | **TECHNICIAN:** | Mike Humphries |
| **MANUFACTURER:** | Siemens | | |
| **MODEL:** | Sitrans Multiranger 200 HMI | **REPORT NO.:** | 240603 |
| **SERIAL No.:** | | | |
| **INSTR. RANGE:** | 0 to 200326.5m³/Day | | |

| | | | |
|---|---|---|---|
| **PRIMARY DEVICE:** | **5ft Parshall Flume** | | |
| **MAX FLOW:** | 200326.5 | m³/Day | |
| **MAX HEAD:** | 74.00 | cm | |
| **CONSTANT:** | 323048.45 | | |
| **EXPONENT:** | 1.587 | | 1.587 |

| **Output:** | **mA** | **Flow** |
|---|---|---|
| **Zero:** | 4 | 0.00 |
| **Max:** | 20 | 200326.5 |




## OCM Flow Table

| Head Applied (cm) | Head Displayed (cm) | Error (%) | Calculated Flow (m³/d) | Flow Displayed (m³/d) | Error (%) | Calculated mA Output | Measured mA Output | Error (%) |
|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.00 | 4.00 | 0.00 |
| 15.00 | 15.05 | 0.33 | 15912 | 15980 | 0.43 | 5.27 | 5.28 | 0.17 |
| 30.00 | 29.91 | -0.30 | 47803 | 47367 | -0.92 | 7.82 | 7.75 | -0.88 |
| 45.00 | 44.90 | -0.22 | 90974 | 90766 | -0.23 | 11.27 | 11.23 | -0.32 |
| 60.00 | 59.87 | -0.22 | 143613 | 142952 | -0.46 | 15.47 | 15.38 | -0.59 |
| 73.90 | 73.81 | -0.12 | 199897 | 199685 | -0.11 | 19.97 | 19.93 | -0.18 |

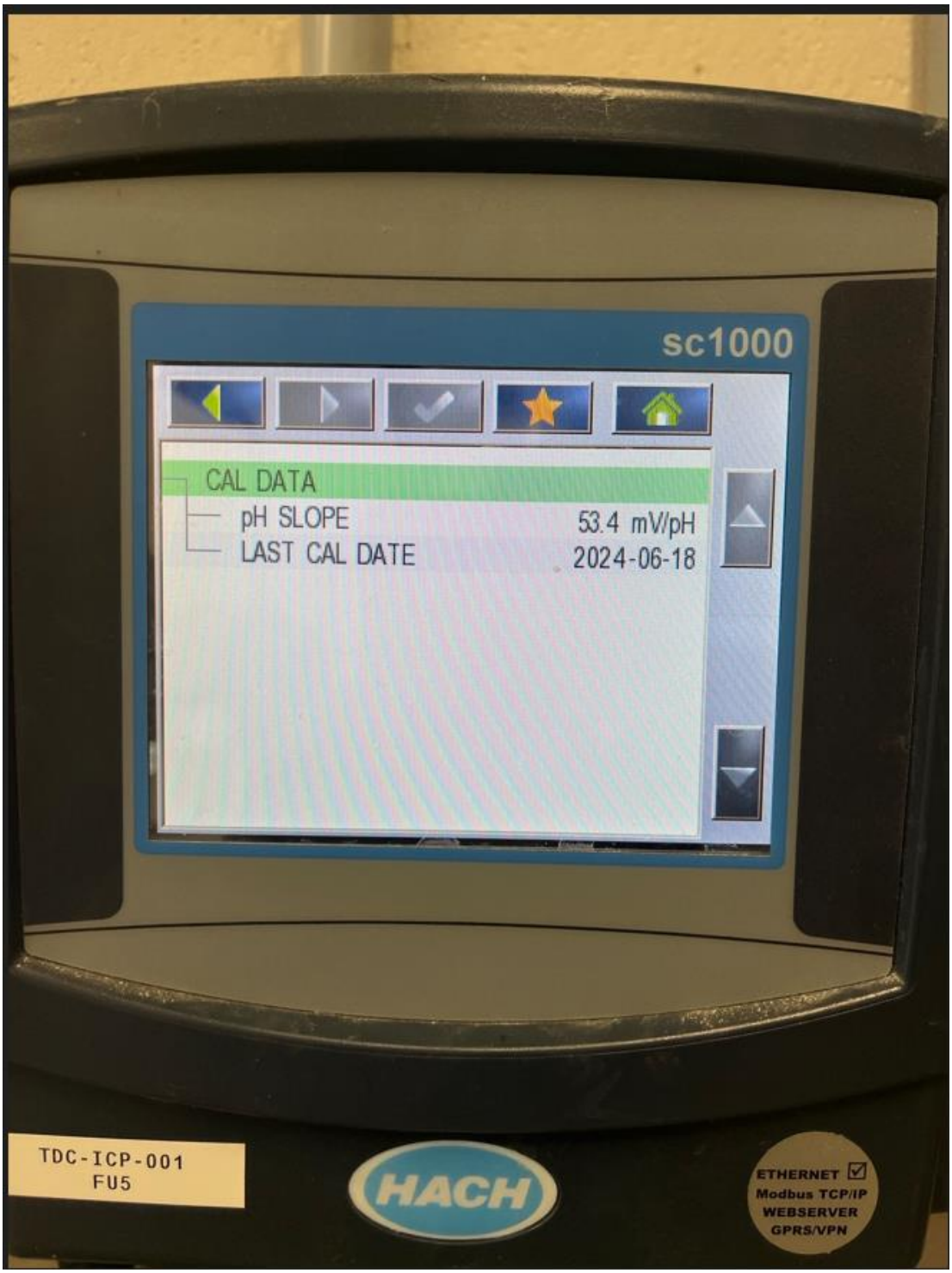
| | |
|---|---|
| Totalizer As Found | 321991.23 m³ |
| Totalizer As Left | 322824.17 m³ |
| Zero As Found | 184.590 cm |
| Zero As Left | 183.700 cm |
| Change in Zero | 0.890 cm |

**Comments**

Relay #1 set to LOE

**AS FOUND:** PASS **AS LEFT:** PASS **CERTIFIED BY:** Mike Humphries

## Calibration of pH Meter 2024



# Appendix E

# Guelph Environmental Laboratory Accreditation Certificate

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# Canadian Association for Laboratory Accreditation Inc.

## Certificate of Accreditation

City Of Guelph Environmental Laboratory
City of Guelph - Environmental Services Dept., Wastewater Services
530 Wellington Street W
Guelph, Ontario

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

Accreditation No.: 1003222
Issued On: 11/23/2022
Accreditation Date: 3/4/2014
Expiry Date: 5/23/2025

President and CEO

# Appendix F

# Summary of Existing Works

# SUMMARY OF EXISTING WORKS

## Headworks

- Influent Wet Well receiving raw sewage from the 1,200 mm diameter west sewer and 1,650 mm diameter east truck sewers

## Raw sewage Pumping Station

- Four (4) screw pumps, each rated at minimum capacity of 65 MLD

## Screening collection and removal (bar screen)

- Four (4) multi-rake mechanical screens, each with 12 mm bar spacing, and each rated for a minimum flow of 48,900 $m^3$/d
- Two (2) wash presses, three (3) shaftless screw screenings conveyors
- One (1) screenings washer/compactor, capable of processing a minimum of 70.8 L/min of solids with a maximum wash water flow of 90.8 L/min

## Aerated grit removal

- Two (2) grit tanks, each 12 m X 5 m X 4 m (water depth)
- Two (2) variable speed grit pumps, torque flow recessed impeller type, with a minimum rated capacity of 12.5 L/s @ 18.2 m TDH, transferring grit slurry to two (2) cyclone and classifier grit separation systems, with a minimum rated capacity of 12.5 L/s
- One (1) shaftless screw grit conveyor, with a minimum rated capacity of 2 tonne/hr transporting grit from the classifier discharge to the waste disposal company's lugger bin
- One (1) positive displacement type channel air blower with a minimum nominal capacity 81.4 $m^3$/min @ discharge pressure of 1 bar
- One (1) positive displacement type grit tank blower with a minimum nominal capacity of 16.9 $m^3$/min @ discharge pressure of 1 bar
- One (1) manual effluent flow isolation gate

## Plant 1

A two (2) train activated sludge plant with a rated capacity of 16 MLD and consisting of:

- Two (2) 30 m X 12.2 m X 3.5 m (water depth) primary settling tanks complete with chain and fight collector mechanisms
- Two (2) 30 m X 15.75 m X 4.6 m (water depth) aeration tanks, complete with fine bubble diffuser system
- Two (2) 38.4 m X 14.64 m X 3.65 m (water depth) final settling tanks complete with chain and fight collector mechanisms
- Two (2) raw sludge pumps, rotor type positive displacement, each pump a minimum rated capacity of 3.8 L/s @ 15.2 m TDH
- Three (3) 150hp aeration high speed turbo blowers each with an operating range of 2,000 – 5,600 Nm3/hr at 48 kPa

- Three (3) variable speed return sludge pumps, each horizontal centrifugal type with a minimum rated capacity of 13,100 $m^3$/d @ 9.0 ft TDH
- One (1) waste activated sludge (WAS) pump with a minimum rated capacity of 3.5 L/s, discharging to either the WAS distribution chamber or to the WAS Thickening Facility (note: standby for this pump is provided by the existing Plant 1 RAS flow splitting structure)
- One (1) secondary scum pump with a minimum rated capacity of 567 L/min
- One (1) primary two inch submersible scum pump with a minimum rated capacity of 567 L/min
- One (1) automated influent flow control gate

**Plant 2**

A two (2) train activated sludge plant with a rated capacity of 13 MLD and consisting of:

- Two (2) 29.26 m X 9.76 m X 2.9 m (water depth) primary settling tanks complete with chain and fight collector mechanisms
- Two (2) 33.5 m X 20.1 m X 3.7 m (water depth) aeration tanks, complete with fine bubble diffuser system
- Two (2) 27.74 m X 9.76 m X 3.65 m (water depth) final settling tanks complete with chain and fight collector mechanisms
- Two (2) raw sludge pumps, rotor type positive displacement, each pump a minimum rated capacity of 2.5 L/s
- Three (3) 100 hp aeration high speed turbo blowers each with an operating range of 1,200 – 3,900 $Nm^3$/hr at 39 kPa
- Two (2) variable speed return sludge pumps, each vertical centrifugal type with a minimum rated capacity of 3,900 $m^3$/d @ 5.2 TDH
- One (1) constant speed return activated sludge (RAS) pump with a minimum rated capacity of 75 L/s @ 7.6 m head
- WAS wasting system comprising branch piping from the RAS discharge header and directing WAS by automated valves to either the WAS distribution chamber or to the WAS Thickening Facility
- One (1) primary two inch submersible scum pump with a minimum rated capacity of 567 L/min
- One (1) secondary two inch submersible scum pump with a minimum rated capacity of 567 L/min
- Two (2) automated influent flow control gates

## Plant 3

A two (2) train activated sludge plant with a rated capacity of 13 MLD and consisting of:

- Two (2) 14.8 m X 18.3 m X 3 m (water depth) primary settling tanks complete with chain and fight collector mechanisms
- Two (2) 25.9 m X 18.3 m X 4.3 m (water depth) aeration tanks, complete with fine bubble diffuser system
- Two (2) 23.16 m X 14.64 m X 3.65 m (water depth) final settling tanks complete with chain and fight collector mechanisms
- Two (2) raw sludge pumps, rotor type positive displacement, each with a minimum rated capacity of 3.5 L/s
- Three (3) 150 hp aeration high speed turbo blowers each with an operating range of 2,100 – 5,500 $Nm^3/hr$ at 48 kPa
- Two (2) variable speed return sludge pumps, each horizontal centrifugal type with a minimum rated capacity of 8,280 $m^3/d$ @ 6.4 ft TDH
- One (1) constant speed return activated sludge (RAS) pump having a nominal minimum capacity of 47 L/s @ 7.6 m head (13 MLD)
- WAS wasting system comprising branch piping from the RAS discharge header and directing WAS to either automated valves is accomplished by diverting a portion of the WAS to either the WAS distribution chamber or to the WAS Thickening Facility
- One (1) primary two-inch submersible scum pump with a minimum rated capacity of 567 L/min
- Two (2) secondary two-inch submersible scum pump with a minimum rated capacity of 567 L/min

## Plant 4

A two (2) train activated sludge plant with a rated capacity of 22 MLD and consisting of:

- Two (2) 21.25 m X 14.3 m X 4 m primary clarifiers complete with chain and fight collector mechanisms
- Two (2) 67.4 m X 21.7 m X 4.4 m aeration tanks (each 6,500 $m^3$ volume)
- Two (2) 30.55 m X 20.1 m X 4.4 m final clarifiers complete with chain and fight collector mechanisms
- Two (2) primary sludge pumps each with a minimum rated capacity of 3.8 L/s @ 7.9 m head to 7.8 L/s @13.7 m head
- Two (2) primary scum pumps each with a minimum rated capacity of 12.6 L/s
- Four (4) variable speed return activated sludge (RAS) pumps each with a minimum rated capacity of 69 L/s @ 0.6 m head to 127 L/s @ 2.0 m head
- One (1) secondary scum pump rated at a minimum capacity of 9.4 L/s
- One (1) secondary effluent pump rated at a minimum capacity of 110 L/s @ 8.8 m head to 510 L/s @ 5.1 m head

- Three (3) 250 hp aeration high speed turbo blowers each with an operating range of 3,500 – 7,800 $Nm^3/hr$ at 63 kPa

**Chemical Facilities**

- Two (2) ferric chloride storage tanks in a concrete containment area, each with a maximum volume of 45.9 $m^3$
- Two (2) ferric chloride peristaltic metering pumps rated at 198 L/hr serving Headworks North & South
- Six (6) ferric chloride peristaltic metering pumps servicing Plants 1, 2, 3 East, 3 West, 4 East and 4 West each rated at a maximum of 198 L/min (operating average 189 L/hr)

**Chlorine storage**

- One (1) sodium hypochlorite day tank with a maximum capacity of 1.5 $m^3$.
- Two (2) sodium hypochlorite storage tanks each with a maximum of 15.7 $m^3$ each chlorine pumps
- Five (5) sodium hypochlorite dosing pumps each rated at a minimum of 3.3 L/min

**Tertiary Treatment**

Secondary Effluent Pump Station:

- One (1) vertical turbine secondary effluent pump having a minimum rated capacity of approximately 69,000 $m^3/d$ discharging the combined secondary effluent from Plants 1-4 to the influent channel of the RBC's
- One (1) vertical turbine secondary effluent pump having a minimum rated capacity of approximately 55,000 $m^3/d$ discharging the combined secondary effluent from Plants 1-4 to the influent channel of the RBC's,
- One (1) vertical turbine secondary effluent pump having a minimum rated capacity of approximately 40,000 $m^3/d$ discharging the combined secondary effluent from Plants 1-4 to the influent channel of the RBC's,
- One (1) submersible centrifugal effluent pump having a minimum rated capacity of approximately 44,000 $m^3/d$ discharging the combined secondary effluent from Plants 1-4 to the influent channel of the RBC's.

Bypass channel under Secondary Effluent Pumping Station:

- One 1,500mm Backflow Prevention Inline Check Valve

**Rotating Biological Contactors (RBCs)**

- Four (4) tanks, each 39.45 m X 8.03 m X 1.6 m (water depth)
- Thirty-two (32) contactors; eight (8) contactors per tank; each 3,600 mm media diameter, 7,600 mm shaft length, providing a surface area of 13,750 $m^2$
- Three (3) centrifugal blowers, each with a minimum rated capacity of 1.43 $m^3/s$

**Filtration**

- Two (2) continuous backwash travelling bridge tertiary filters, each with a surface area of 263 $m^2$
- Two (2), filter backwashing pumps each with a minimum rated capacity of 11 L/s @ 4.2 m head
- Two (2) low head, continuous backwash travelling bridge tertiary filters each with a surface area of 170 $m^2$
- Two (2) filter backwashing pumps each with a minimum rated capacity of 62.5 L/s @ 4.2 m head

**Two (2) Filter Buildings**

- Housing all filter equipment together with associated appurtenances, piping, heating and ventilation, electrical and controls systems, and site works

**Disinfection and Dechlorination**

- One (1) contact tank, 3.7 m X 12 m X 2.5 m (water depth)
- Two (2) sodium bisulphite peristaltic pumps each rated at a maximum capacity of 3.3 L/min
- Two (2) sodium bisulphite storage tanks, with a maximum capacity of 5,800 L each

**Effluent Outfall**

- One 1,520 mm Parshall flume rated for 0 to 15,000 $m^3/d$
- One 1,830 diameter effluent outfall pipe, approximately 123 m in length terminating at the south bank of the Speed River

**TWAS**

- Mechanical thickening System to thicken Waste Activated Sludge (WAS) from Plants 1 through 4 and discharging Thickened Waste Activated Sludge (TWAS) to Primary Digesters 1 and 2
- One (1) 1.2 m diameter mix tank with mixer
- One (1) rotary drum thickener with 2.25 kW motor drum drive, with a minimum rated hydraulic capacity of 50 $m^3/hr$
- One Supply Pump (1) 7.5 kW rotary lobe pump WAS with a capacity of 15-50 $m^3/hr$
- One Discharge Pump (1) 7.5 kW rotary lobe TWAS pump with a capacity of 18 $m^3/hr$

**Polymer system**

- One (1) emulsion polymer unit with multi-zone mixing chamber
- One (1) neat polymer diaphragm metering pump, with a minimum capacity of 0.19 L/hr
- One (1) static mixer
- One (1) dilution water control system with a minimum capacity of 114 L/hr of makeup water for primary mixing and 114 L/hr for post dilution

### Digestion

- Two-stage anaerobic digestion including four primary digesters and one secondary digester
- Four (4) primary digesters, each approximately 2,440 $m^3$ in volume and each mechanically mixed with four (4) 7.5 kW draft tube style mixers
- One (1) secondary digester, approximately 2,350 $m^3$ in volume

### Control Building Number 1:

- Two (2) Sludge Recirculation Pumps, each having a minimum rated capacity of 25.2 L/s @ 6.1 m TDH located in Control Building No. 1 and utilized to pump sludge from Digesters No. 1 and No. 2 through their associated Sludge Heat Exchangers
- Two (2) Sludge Transfer Pumps each having a minimum rated capacity of 18.9 L/s @ 10.7 m, TDH located in Control Building No. 1 and utilized to pump sludge from Digesters No. 1 or Digester No. 2 to the Dewatering Facility or to Control Building No. 2
- Two (2) sludge heat exchanger of the spiral type, using hot water and having one heating circuit each with a minimum rated capacity of 275 kW located servicing Digesters No. 1, & 2 and located in Control Building No.1

### Control Building Number 2:

- Two (2) Sludge Recirculation Pumps each having a minimum rated capacity of 19.4 L/s @ 6.1 m, TDH located in Control Building No. 2 and utilized to pump sludge from Digesters No. 3, 4 and 5 through their associated Sludge Heat Exchangers
- Two (2) Sludge Recirculation Pumps each having a minimum rated capacity of 13.14 L/s @ 9.5 m TDH located in Control Building No. 2 and utilized to pump sludge from Digesters No. 3, 4 and 5 through their associated Sludge Heat Exchangers
- One (1) Sludge Transfer Pump having a minimum rated capacity of 15.8 L/s @ 11.6 m TDH located in Control Building No. 2 and utilized to pump sludge from Digesters No. 3 or Digester No. 4 to the Dewatering Facility or to Control Building No. 1
- Two (2) sludge heat exchangers of the concentric tube, counter-flow type, using hot water and each having one heating circuit with a minimum rated capacity of 275 kW located servicing Digesters No. 3 and 5 and located in Control Building No. 2

### Waste Gas Burner

- Waste gas burner, having a capacity to com bust approximately 1,450 $m^3/h$ of digester gas; complete with natural gas fired pilot, back pressure regulator, flame arrester and thermal check valve, combustion controls and burner alarms connected to the plant SCADA system, digester gas piping, flow meter and structural steel platform

### Energy Facility

Energy facility, consisting of gas handling and utilization equipment, digester gas scrubber, cogeneration equipment including cogeneration engines, boilers and digester gas booster pumps

- Three (3) primed condensate moisture and sediment traps
- One (1) VAREC Gas Purifier $H_2S$ removal system

- One (1) emergency pressure relief valve complete with flame arrester
- Two (2) 18.7 kW gas boosters, each having a minimum capacity of 288 $m^3$/hr at a discharge pressure of 48 kPa (gauge pressure)
- One (1) flame arrester
- Automatic low pressure drip traps
- Two (2) cogeneration digester gas or natural gas fired engines, each with a minimum electrical generator output capacity of 290 kilowatts (natural gas) 270 Kilowatts (digester gas)
- Two (2) Exhaust gas heat exchangers
- Two (2) closed-loop cooling system, one for each of the two (2) cogeneration engines, each including:
    - One (1) auxiliary air-cooled radiator with 7.5 kW motor
    - One (1) glycol/water piping system between the engine jacket, oil cooler and heat exchanger, complete with one (1) expansion tank
    - One (1) booster pump
    - One (1) plate-and-frame type heat exchanger, sized for minimum 300 kW at 15.8 L/s of flow, to exchange heat between the closed-loop cooling system and plant hot water system
    - One (1) 75 kW (100 hp) hot water boiler firing natural gas or digester gas
    - One (1) 111.855 kW (150 hp) hot water boiler firing natural gas or digester gas

**Digester Gas Conditioning System, with a minimum capacity of 7,000 m3/d @ 35 kPa gauge pressure**

- One (1) refrigeration dryer, consisting of refrigerant system with compressor and air-cooled condenser with an and glycol loop with pump, a gas-to-chilled glycol heat exchanger, a high efficiency moisture separator, a gas-to-gas heat exchanger, and instrumentation
- One (1) dual carbon adsorption system consisting of two (2) approximately 1.2 m diameter cylindrical carbon towers with conical bottoms, arranged to operate in series, configured for refrigerated and dried gas to flow upwards through the media bed in each tower and then to a 0.3 micron coalescing filter building
- Building housing all cogeneration and boiler equipment, together with associated appurtenances, piping, heating and ventilation, electrical and controls systems, and site works

**Dewatering**

- Two (2) belt filter presses, each with a capacity to handle a minimum of 9.5 L/s per unit of anaerobically digested sludge
- Two (2) belt filter presses, each with a capacity to handle a minimum of 12 L/s per unit of anaerobically digested sludge
- Two (2) washwater feed pumps, each rated at 25 L/s (minimum)
- Two (2) submersible centrifugal filtrate transfer pumps, each rated at 15.3 L/s (minimum) and one (1) submersible centrifugal filtrate transfer pump rated at 31.5 L/s (minimum)
- Two (2) belt filter feed sludge pumps, each rated at 9.5 L/s (minimum)
- Two (2) belt filter feed sludge pumps, each rated at 12 L/s (minimum)

**Polymer Feed System**

- One (1) 800 kg capacity bulk bag dry polymer make down unit (uses liquid polymer never used dry polymer)
- Two (2) polymer mixing tanks, each with a minimum capacity of 11.4 $m^3$ and a 3.75 kW mixer
- Six (6) polymer metering pumps each with a minimum rated capacity of 0.57 L/s @ 17.4 TDH
- Four (4) in-line static mixers in the sludge line to facilitate polymer mixing prior to the belt filter press
- Four (4) 0.75 kW polymer supply pumps, each with a minimum capacity of 7.6 L/min

**Conveyors**

- One (1) screw conveyor system to handle sludge cake from the filter presses, consisting of two (2) horizontal conveyors, one (1) cross conveyor, one (1) inclined conveyor, one (1) horizontal conveyor, which discharges to the sludge cake storage bin

### Dewatered Biosolids Cake Storage Bin

- One (1) dewatered sludge storage bin having a volume of 100 m3 equipped with discharge screws designed to withdraw up to 36 m3/hr of dewatered sludge
- One (1) final discharge screw conveyor, rated at 150 $m^3$/h

### Lystek Biosolids Treatment

- One (1) dewatered biosolids off-take chute with slide gate in existing 20 m3/hr screw conveyor, discharging into a 42 $m^3$/d capacity progressive cavity pump
- One (1) KOH chemical day tank with an approximate capacity of 6,430 L
- One (1) KOH Outdoor storage tank 4050 USG
- Two (2) chemical transfer pumps, each with a minimum rated capacity of 115 L/hr @ 1,034 kPa (gauge pressure)
- Two (2) 6,000 L processing tanks, each with a working volume not less than 5.0 $m^3$, each equipped with a 37.5 kW disperser (mixer) and each with one (1) 25.2 L/s capacity centrifugal pump for product transfer
- One (1) 586 kW natural-fired gas steam boiler, equipped with a boiler feed water conditioning system and a flue vent, to supply steam to the processing tanks
- Above ground temporary storage tanks, to provide temporary storage of up to 1,000 $m^3$ of processed biosolids product

### Septage Receiving Facility

- Septage receiving consists of a Metacon IEA card access system for security of loads including a data logger, a 100 mm cam-lock connection fitting running to a rock trap and in-line grinder next to a magnetic flow meter as well to an auto sampler

### Vacuum Truck Unloading Bay

- Vacuum truck unloading bay, capable of dewatering solids from vacuum trucks with capacity of approximately 10,000 liters (80% in organic and 20% liquid), allowing dried solids to be removed to transfer station/landfill, liquids pass through to sanitary system to plant

### Anammox –Side stream treatment process

- One (1) Equalization tank
- Blower Building
- Two Sequencing batch reactors with Aeration panels, mixers, decanters and cyclones used to selectively retain Anammox organisms in the SBR's

## Summary of Existing Works – Sewage Pumping Stations

### Kortright Sewage Pumping Station

- 4.2m X 3.6m wet well
- 450 mm inlet sewer
- 450 mm emergency overflow
- Three (3) 46hp non-clog submersible sewage pumps rated at 65.3 L/s
- Design capacity of 11,284 $m^3/d$
- Inlet channel grinder
- Odour control system rated at 600 cfm
- 200 kW diesel generator
- One (1) 100 L fuel storage
- One (1) 400 m long 350 mm diameter PVC forcemain-peak flow of 130.6 L/s
- 350 mm forcemain bypass
- Two (2) automatic air and vacuum release valves

### Northern Heights Sewage Pumping Station

- 3.8m X 3.0 m wet well
- 250 mm inlet sewer
- 300 mm emergency overflow
- Two (2) 34hp non-clog submersible sewage pumps rated at 33.0 L/s
- Design capacity of 2,851 $m^3/d$
- Manually operated screen basket

- Odour control system rated at 400 cfm
- 125 kW diesel generator
- One (1) 100 L fuel storage
- 1,008 m long 150 mm diameter PVC forcemain-peak flow of 33 L/s
- 200 mm forcemain bypass
- One (1) automatic air and vacuum release valve

**Terraview Sewage Pumping Station**

- 3.0m diameter wet well
- Two (2) submersible pumps rated at 13.0 L/s
- 30 kW diesel generator
- 680 L fuel storage
- 45 $m^3$ emergency storage in oversized upstream sanitary sewers

**Barton Estates Sewage Pumping Station**

- 3.0 m diameter wet well
- Two (2) submersible pumps rated at 6.3 L/s
- 25 kW diesel generator
- 225 L fuel storage
- Emergency bypass connection

**Nima Trails Pumping Station**

- 3.6 m diameter wet well
- Three (3) submersible pumps rated at 1892 $m^3/d$
- 60 kW natural gas generator
- Emergency bypass piping

# Appendix G

# ECA and CLI-ECA

# AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 8835-9QJKSD
Issue Date: November 21, 2014

The Corporation of the City of Guelph
1 Carden St, City Hall
Guelph, Ontario
N1H 3A1

Site Location: Guelph Wastewater Treatment Plant
530 Wellington Street West
City of Guelph, County of Wellington

*You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:*

construction of biosolids storage facility and de-watered filtrate treatment system at the Guelph Wastewater Treatment Plant at the above site location (UTM coordinates 17N 559300, 4819200) for the treatment and disposal of sewage, having a Rated Capacity of 64,000 m³/d and consisting of the following Works:

## PROPOSED WORKS

Biosolids Storage Facility

- two (2) 60m$^3$ capacity each, intermediate storage tanks;
- two (2) biosolids feed pumps, each pump rated at 6 m$^3$/hr and equipped with variable frequency drives;
- two (2) above ground storage tanks;
- two (2) Rotary Lobe Pumps for tank mixing and truck loading, each pump rated at 400 m$^3$/hr;
- one (1) ammonia scrubber type odour control system complete with a chemical dosing system;
- one (1) carbon bed scrubber type odour control system,

De-watered Biosolids Filtrate Treatment System

A treatment system to treat the filtrate from the belt filter presses prior to being discharged to the head end of wastewater treatment plant, consisting of the following:

- a solids removal and equalization tank, overall dimensions of 8.1m long x 9.1m wide x 5m high with an operating depth of 4.6m plus 0.4m freeboard and a capacity of approximately 339 $m^3$, having one (1) cell and equipped with two (2) feed pump (on duty) and one (1) standby pump rated at 100 $m^3$/hr plus one(1) sump pump rated at 68.4 $m^3$/hr;

- two (2) sequential batch reactors (SBR), operating in parallel on a 6 hour time basis, each SBR consisting of a 425 $m^3$ (max. water volume) tank with dimensions 10.2m long x 9.11m wide x 5.0m high with a minimum and maximum water depth of 3.5m and 4.6m respectively, with the decant from the SBR directed to the washwater sump and returned to the plant headworks by a 200mm diameter forcemain, and each SBR equipped with a 6.7 kW mixer and a cyclone feed pump rated at 10 $m^3$/hr at 32m TDH;

- four (4) air blowers to supply to the SBRs (two blowers for each SBR), two blowers rated at 325 cfm and two blowers rated at 115 cfm, all to provide 27 kg oxygen/hr to each reactor at an air flow rate of 700 $Nm^3$/hr;

- two (2) cyclones, one per reactor and rated at 10 $m^3$/hr, with the separated feed returned to the SBR and the waste feed directed to the washwater sump and returned to the plant headworks by a 200mm diameter forcemain,

all in accordance with the supporting documents listed in Schedule 'B'.

## EXISTING WORKS

### Influent Sewers

- 1,200 mm diameter west and 1,650 mm diameter east trunk gravity sewers, discharging to the influent wet well of the raw sewage pumping station;

### Septage Receiving Facility

- septage receiving station with cam-lock connection, rock trap, in-line grinder, magnetic flowmeter and auto sampler;
- processed septage discharge pipe connected to the existing 1,200 mm diameter west trunk sewer at a location approximately 700 m upstream of the plant headworks;

### Vacuum Truck Unloading Bay

- a vacuum truck unloading bay connected to the inlet sewer;

**Headworks**

**Raw sewage pumping Station**

- four (4) screw pumps, each rated at 65,000 $m^3$/d;

**Screens**

- four (4) mechanical screens with 12 mm bar spacing and each with a Peak Flow Rate of 48,900 $m^3$/d;
- two (2) wash presses, three (3) screenings conveyors, one (1) screenings washer/compactor;

**Grit Removal**

- two (2) 12 m x 5 m x 4 m SWD grit tanks;
- two (2) grit pumps, each with rated at 12.5 L/s at 18.2 m TDH
- two (2) cyclone and classifier grit separation systems;
- one (1) grit conveyor;
- one (1) channel air blower rated at 81.4 $m^3$/min at 101 kPa;
- one (1) grit tank blower rated at 16.9 $m^3$/min at 101 kPa;

**Secondary Treatment**

**Plant 1 (Rated Capacity 16,000 $m^3$/d)**

- two (2) 30 m x 12.2 m x 3.5 m SWD primary settling tanks complete with chain and flight collector mechanisms;
- two (2) 30 m x 15.75 m x 4.6 m SWD aeration tanks equipped with fine bubble diffuser system;
- two (2) 38.4 m x 14.64 m x 3.65 m SWD final settling tanks complete with chain and flight collector mechanisms;
- two (2) raw sludge pumps, each rated at 3.8 L/s at 15.2 m TDH;
- two (2) aeration blowers, each rated at 1,800 L/s at 55 kPa;
- three (3) return activated sludge (RAS) pumps, each rated at 13,100 $m^3$/d at 9.0 m TDH;
- one (1) waste activated sludge (WAS) pump rated at 3.5 L/s, discharging to either the WAS distribution chamber or to the WAS Thickening Facility (standby for this pump provided by the Plant 1 RAS flow splitting structure);
- one (1) primary scum pump rated at 567 L/min;
- one (1) secondary scum pump rated at 567 L/min;

**Plant 2 (Rated Capacity 13,000 $m^3$/d)**

- two (2) 29.26 m x 9.76 m x 2.9 m SWD primary settling tanks complete with chain and flight collector mechanisms;
- two (2) 33.5 m x 20.1 m x 3.7 m SWD aeration tanks equipped with fine bubble diffuser system;

- two (2) 27.74 m x 9.76 m x 3.65 m SWD final settling tanks complete with chain and flight collector mechanisms;
- two (2) raw sludge pumps, each rated at 2.5 L/s;
- air pipings for air supply from either Plant 1 and/or Plant 3;
- two (2) return activated sludge (RAS) pumps, each rated at 3,900 $m^3$/d at 5.2 m TDH and one (1) return activated sludge (RAS) pump rated at 75 L/s at 7.6 m TDH;
- WAS system comprising branch piping from the RAS discharge header and directing WAS by automated valves to either the WAS distribution chamber or to the WAS Thickening Facility;
- one (1) primary scum pump rated at 567 L/min;
- one (1) secondary scum pump rated at 567 L/min;

**Plant 3 (Rated Capacity 13,000 $m^3$/d)**

- two (2) 14.8 m x 18.3 m x 3 m SWD primary settling tanks complete with chain and fight collector mechanisms;
- two (2) 25.9 m x 18.3 m x 4.3 m SWD aeration tanks equipped with fine bubble diffuser system;
- two (2) 23.16 m x 14.64 m x 3.65 m SWD final settling tanks complete with chain and fight collector mechanisms;
- two (2) raw sludge pumps, each rated at 3.5 L/s;
- three (3) aeration blowers, each rated at 1,410 L/s at 48 kPa;
- two (2) return activated sludge (RAS) pumps, each rated at 8,280 $m^3$/d at 6.4 m TDH and one (1) return activated sludge (RAS) pump rated at 47 L/s at 7.6 m TDH;
- WAS system comprising branch piping from the RAS discharge header and directing WAS by automated valves to either the WAS distribution chamber or to the WAS Thickening Facility;
- one (1) primary scum pump rated at 567 L/min;
- one (1) secondary scum pump rated at 567 L/min;

**Plant 4 (Rated Capacity 22,000 $m^3$/d)**

- two (2) 21.25 m x 14.3 m x 4 m SWD primary settling tanks complete with chain and fight collector mechanisms;
- two (2) 67.4 m x 21. 7 m x 4.4 m SWD aeration tanks equipped with fine bubble diffuser system;
- two (2) 30.55 m x 20.1 m x 4.4 m SWD final settling tanks complete with chain and fight collector mechanisms;
- two (2) raw sludge pumps, each rated at 3.8 L/s at 7.9 m TDH to 7.8 L/s at 13.7 m;
- two (2) aeration blowers, each rated at 250 $m^3$/min at 62 kPa;
- four (4) return activated sludge (RAS) pumps, each rated at 69 L/s at 0.6 m TDH to 127 L/s at 2.0 m TDH;
- WAS bleed-off piping from the RAS pump discharge header for return to the primary settling tanks or the waste activated sludge thickening facilities;
- two (2) primary scum pump rated at 12.6 L/s;
- one (1) secondary scum pump rated at 9.4 L/s;
- one (1) secondary effluent pump rated at 110 L/s at 8.8 m TDH to 510 L/s at 5.1 m TDH;
- one (1) channel air blower rated at 42.5 $m^3$/min;

- two (2) ferric chloride pumps, each rated at 240 L/h;

**Tertiary Treatment**

**Secondary Effluent Pump Station**

- four (4) secondary effluent pumps discharging the combined secondary effluent from Plants 1 to 3 to the influent channel of the rotating biological contactors (RBC), one pump rated at 69,000 $m^3$/d, two pumps rated at 55,000 $m^3$/d and one pump rated at 40,000 $m^3$/d;

**Rotating Biological Contactors (RBCs)**

- four (4) 39.45 m x 8.03 m x 1.6 m SWD tanks, with eight (8) contactors per tank, each 3,600 mm media diameter, 7,600 mm shaft length, providing a surface area of 13,750 $m^2$;
- three (3) blowers, each rated at 1.43 $m^3$/s;

**Filtration**

- two (2) continuous backwash travelling bridge tertiary filters, each with a surface area of 263 $m^2$;
- two (2) filter backwashing pumps each rated at 11 L/s at 4.2 m TDH;
- two (2) continuous backwash travelling bridge tertiary filters, each with a surface area of 170 $m^2$;
- two (2) filter backwashing pumps each rated at 62.511 L/s at 4.2 m TDH;

**Phosphorus Removal**

- two (2) 45.9 $m^3$ chemical storage tanks in a concrete containment area;
- seven (7) chemical metering pumps servicing the Headworks facility and Plants 1, 2, 3, and 4, each rated at 78 L/h;

**Disinfection and Dechlorination**

- one (1) 3.7 m X 12 m X 2.5 m SWD chlorine contact tank;
- two(2) 30 $m^3$ sodium hypochlorite storage tanks and one 1.5 $m^3$ day tank;
- four (4) sodium hypochlorite pumps, each rated at 3.3 L/min;
- two (2) 5,900 L sodium bisulphite storage tanks;
- two (2) sodium bisulphite pumps each rated at 3.3 L/min;

**Effluent Outfall**

- one 1,520 mm Parshall flume;
- one 1,830 diameter effluent outfall pipe, approximately 123 m in length terminating at the south bank of the Speed River;

**Waste Activated Sludge Thickening Facilities**

- one (1) 1.2 m diameter mix tank with mixer;
- one (1) rotary drum thickener with 2.25 kW motor and rated at 50 $m^3$/h;
- one(1) WAS pump rated at 10 $m^3$/h;
- one (1) thickened waste activated sludge (TWAS) pump rated at 2 $m^3$/h;
- one (1) emulsion polymer make down unit with multi-zone mixing chamber;
- one (1) polymer pump rated at 0.19 L/h;
- one (1) static mixer;

**Sludge Digestion Facilities**

- four (4) 19.88 m diameter x 7.92 m SWD primary anaerobic digesters, each having an active capacity of 2,440 $m^3$ and equipped with four (4) draft tube style mixers;
- one (1) 19.88 m diameter x 7.92 m SWD secondary anaerobic digester having an active capacity of 2,350$m^3$;
- Control Building Number 1 with two (2) sludge recirculation pumps each rated at 25.2 L/s at 6.1 m TDH, two (2) sludge transfer pumps each rated at 18.9 L/s at 10.7 m TDH and two (2) sludge heat exchangers each rated at 275 kW;
- Control Building Number 2 with two (2) sludge recirculation pumps each rated at 19.4 L/s at 6.1 m TDH, two (2) sludge recirculation pumps each rated at 13.14 L/s at 9.5 m TDH, one (1) sludge transfer pump rated at 15.8 L/s at 11.6 m TDH and two (2) sludge heat exchangers each rated at 275 kW;

**Waste Gas Burner**

- one (1) waste gas burner;

**Co-generation Facility**

- two (2) 250 kW cogeneration digester gas or natural gas fired electrical engines;
- one (1) heat exchanger;

**Sludge Dewatering**

- 200 mm diameter piping, complete with a gate valve on either end of the filtrate pipe, from the on-site dewatering facility at the Guelph Wastewater Treatment Plant to include a tee from the existing discharge point at the dewatering facility) to the North Channel headworks discharge and to the headworks Archimedes screw pumps (screw pump 110 and 111);

    - two (2) belt filter presses, each rated at 9.5 L/s;
    - two (2) belt filter presses, each rated at 12 L/s;
    - two (2) belt filter feed sludge pumps, each rated at 9.5 L/s;
    - two (2) belt filter feed sludge pumps, each rated at 12 L/s;
    - filter belt washing and drainage system with four (4) washwater feed pumps and two (2) filtrate transfer pumps;

- polymer feed system with one (1) bulk bag dry polymer make down unit, two (2) 11.4 $m^3$ polymer mixing tanks with mixer, five (5) polymer metering pumps each rated at 0.57 L/s at 17.4 m TDH, four (4) in-line static mixers in the sludge line and four (4) polymer supply pumps, each rated at 7.6 L/min;
- one (1) screw conveyor system to transfer sludge cake from the filter presses to the sludge cake storage bin;

**Sludge Composting Facility**

- one (1) hammermill, one (1) 825 $m^3$ amendment silo, one (1) amendment silo baghouse;
- one (1) 100 $m^3$ dewatered sludge storage bin equipped with discharge screws, one (1) twin auger continuous flow type mixer;
- three (3) 1,500 $m^3$ enclosed compost reactor tanks with compost discharge sweep auger and in-feed rotary distributor, four (4) aeration blowers (one standby), each rated at 120 $m^3$/min and four (4) exhaust blowers (one standby), each rated at 131 $m^3$/min
- compost screening system with one (1) screen with 6 mm mesh size and rated at 60 $m^3$/h;
- three (3) reactor off-gas heat recovery units;

**Lystek Biosolids Treatment**

- one (1) capacity progressive cavity pump rated at 42 $m^3$/d;
- one (1) 6,430 L KOH chemical storage tank;
- two (2) chemical transfer pumps, each rated at 115 L/h at 1,034 kPa;
- two (2) 5,000 L processing tanks, each equipped with one (1) 37.5 kW disperser (mixer) and each with one (1) transfer pump rated at 25.2 L/s;
- one (1) propane-fired gas steam boiler equipped with a boiler feed water conditioning system and a flue vent, to supply steam to the processing tanks;
- one (1) 1,362 L process water holding tank, equipped with a 0.75 kW mixer;
- above-ground temporary storage tanks, to provide temporary storage of up to 1,000 $m^3$ of processed biosolids product;
- one (1) 2.44 m diameter x 2.97 m high 15,329 L double-walled polyethylene KOH chemical storage tank;
- one (1) 227 L/min capacity chemical pump;

**MISCELLANEOUS**

all other controls, electrical equipment, instrumentation, piping, pumps, valves and appurtenances essential for the proper operation of the aforementioned sewage works.

*For the purpose of this environmental compliance approval, the following definitions apply:*

"Approval" means this entire document and any schedules attached to it, and the application;

"Average Daily Flow" means the cumulative total sewage flow to the sewage works during a calendar year divided by the number of days during which sewage was flowing to the sewage works that year;

"BOD5" (also known as $TBOD_5$) means five day biochemical oxygen demand measured in an unfiltered sample and includes carbonaceous and nitrogenous oxygen demand;

"By-pass" means diversion of sewage around one or more unit processes within the Sewage Treatment Plant with the diverted sewage flows being returned to the Sewage Treatment Plant treatment train upstream of the Final Effluent sampling location, and discharging to the environment through Sewage Treatment Plant outfall;

"CBOD5" means five day carbonaceous (nitrification inhibited) biochemical oxygen demand measured in an unfiltered sample;

"Daily Concentration" means the concentration of a contaminant in the effluent discharged over any single day, as measured by a composite or grab sample, whichever is required;

"Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;

"*E. Coli* " refers to the thermally tolerant forms of Escherichia that can survive at 44.5 degrees Celsius;

"Emergency Situation" means a structural, mechanical or electrical failure that causes a temporary reduction in the capacity of the Sewage Treatment Plant or an unforeseen flow condition that may result in:

a) danger to the health or safety of any person; or,
b) injury or damage to any property, or serious risk of injury or damage to any property.
c) treatment process biomass washout.

"Equivalent equipment" means a substituted equipment or like-for-like equipment that meets the required quality and performance standards of a named equipment;

"EPA" means the *Environmental Protection Act* , R.S.O. 1990, c.E.19, as amended;

"Event" means an action or occurrence, at a given location within the Sewage Treatment Plant that causes a Plant Bypass or Plant Overflow. An Event ends when there is no recurrence of a Bypass or Overflow in the 12-hour period following the last Bypass or Overflow. Two Events are separated by at least 12 hours during which there has been no recurrence of a Bypass or Overflow;

"Final Effluent" means sewage discharge via the Sewage Treatment Plant outfall after undergoing the full train of unit processes as listed in the Approval;

"Geometric Mean Density" is the nth root of the product of multiplication of the results of n number of samples over the period specified;

"Limited Operational Flexibility" (LOF) means any modifications that the Owner is permitted to make to the Works under this Approval;

"Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

"Monthly Average Concentration" means the arithmetic mean of all Daily Concentrations of a contaminant in the effluent sampled or measured, or both, during a calendar month;

"Monthly Average Daily Flow" means the cumulative total sewage flow to the sewage works during a calendar month divided by the number of days during which sewage was flowing to the sewage works that month;

"Monthly Average Loading" means the value obtained by multiplying the Monthly Average Concentration of a contaminant by the Monthly Average Daily Flow over the same calendar month:

"Notice of Modifications" means the form entitled “Notice of Modifications to Sewage Works”;

"Owner" means The Corporation of the City of Guelph and its successors and assignees;

"OWRA" means the *Ontario Water Resources Act* , R.S.O. 1990, c. O.40, as amended

"Peak Flow Rate" means the maximum rate of sewage flow for which the plant or process unit was designed;

"Plant Overflow" means a discharge to the environment from the Sewage Treatment Plant at a location other than the plant outfall or into the plant outfall downstream of the Final Effluent sampling location;

"Previous Works" means portions of the sewage works previously constructed and approved under an Approval;

"Rated Capacity" means the Average Daily Flow for which the Works are approved to handle;

"Regional Water Compliance Manager" means the Regional Water Compliance Manager of the South-Western Region of the Ministry;

"Sewage Treatment Plant" means the entire sewage treatment and effluent discharge facility;

"Substantial Completion" has the same meaning as "substantial performance" in the *Construction Lien Act* ;

"Water Supervisor" means the Water Supervisor for the Guelph Office of the Ministry;

"Works" means the sewage works described in the Owner's application and this Approval, including the

Proposed Works, Previous Works and the modifications made under Limited Operational Flexibility.

*You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:*

**TERMS AND CONDITIONS**

1. GENERAL PROVISIONS

(1) The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Approval , the application for approval of the works and the submitted supporting documents and plans and specifications as listed in this Approval.

(3) Where there is a conflict between a provision of any submitted document referred to in this Approval and the Conditions of this Approval , the Conditions in this Approval shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

(4) Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

(5) The requirements of this Approval are severable. If any requirement of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this Approval shall not be affected thereby.

2. EXPIRY OF APPROVAL

This Approval will cease to apply to those parts of the Works which have not been constructed within five (5) years of the date of this Approval.

3. CHANGE OF OWNER

(1) The Owner shall notify the Water Supervisor and the Director, in writing, of any of the following changes within **30 days** of the change occurring:

(a) change of Owner;
(b) change of address of the Owner;
(c) change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act* , R.S.O. 1990, c.B17 shall be included

in the notification to the Water Supervisor;

(d) change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the *Corporations Informations Act* , R.S.O. 1990, c. C39 shall be included in the notification to the Water Supervisor;

(2) In the event of any change in ownership of the Works, other than a change to a successor municipality, the Owner shall notify in writing the succeeding owner of the existence of this Approval, and a copy of such notice shall be forwarded to the Water Supervisor and the Director.

4. UPON THE SUBSTANTIAL COMPLETION OF THE PROPOSED WORKS

(1) Upon the Substantial Completion of the Proposed Works, the Owner shall prepare a statement, certified by a Professional Engineer, that the works are constructed in accordance with this Approval, and upon request, shall make the written statement available for inspection by Ministry personnel.

(2) Within six (6) months of the Substantial Completion of the Proposed Works, a set of as-built drawings showing the works "as constructed" shall be prepared. These drawings shall be kept up to date through revisions undertaken from time to time and a copy shall be retained at the Works for the operational life of the Works.

5. BYPASSES

(1) Any Bypass or Plant Overflow is prohibited, except:

(a) in an Emergency Situation;
(b) where the approved design and operation of the Works provides for Bypasses / Plant Overflows to be triggered under certain flow conditions and those conditions have been met;
(c) where the Bypass / Plant Overflow is a direct and unavoidable result of a planned maintenance procedure, the Owner notified the Director **15 days** prior to the Bypass/Plant Overflow and the Director has given written consent of the Bypass/Plant Overflow; and
(d) where the Bypass / Plant Overflow is planned for research or training purposes, the discharger notified the Director **15 days** prior to the Bypass / Plant Overflow and the Director has given written consent of the Bypass / Plant Overflow.

(2) The Owner shall forthwith notify the Spills Action Centre (SAC) and the Medical Officer of Health of all Bypass and Plant Overflow Events. This notice shall include, at a minimum, the following information:

(a) the date, time, and duration of the Event;
(b) the location of the Event;
(c) the measured or estimated volume of the Event;
(d) the reason for the Event; and
(e) the level of treatment the Bypass(es) and/or Plant Overflow(s) received and disinfection status of same.

(3) The Owner shall submit Bypass and Plant Overflow Event Reports to the Water Supervisor on a quarterly basis, no later than each of the following dates for each calendar year: February 14, May 15, August 14, and November 15. Event Reports shall be in an electronic format specified by the Ministry. In each Event Report the Owner shall include, at a minimum, the following information on any Events that occurred during the preceding quarter:

(a) the date of the Event(s);
(b) the measured or estimated volume of the Event(s);
(c) the duration of the Event(s);
(d) the location of the Event(s);
(e) the reason for the Event(s); and
(f) the level of treatment the Bypass(es) and/or Plant Overflow(s) received and disinfection status of same.

(4) The Owner shall use best efforts to collect a representative sample consisting of a minimum of two (2) grab samples of the By-pass / Plant Overflow and have it analyzed for parameters outlined in Condition 7 using the protocols specified in Condition 9 (with BOD5 instead of CBOD5, preferably), one at the beginning of the Event and the second approximately near the end of the Event, to best reflect the effluent quality of such By-pass or Plant Overflow.

(5) The Owner shall maintain a logbook of all Plant Bypasses and Plant Overflows, which shall contain, at a minimum, the types of information set out in subsection 2(a) to 2(e) in respect of each Bypass and Plant Overflow.

6. EFFLUENT OBJECTIVES

(1) The Owner shall use best efforts to design, construct and operate the Works with the objective that the concentrations of the materials named below as effluent parameters are not exceeded in the effluent from the Works.

**Table 1 - Effluent Objectives**

| **Effluent Parameter** | **Concentration Objective** (milligrams per litre unless otherwise indicated) |
|---|---|
| CBOD5 | 19.8 (Apr 1 to Oct 31) |
| CBOD5 | 6.7 (Nov 1 to Mar 31) |
| Total Suspended Solids | 7.0 |
| Total Phosphorus | 0.34 (Apr 1 to Oct 31)<br>0.63 (Nov 1 to Mar 31) |
| Total Ammonia Nitrogen | 3.0 (Nov 1 to Mar 31) |
| Total Residual Chlorine | non-detectable |
| *E. Coli* | 150 organisms/100 mL<br>Monthly Geometric Mean Density |

(2) The Owner shall use best efforts to:

(a) maintain the pH of the effluent from the Works within the range of 6.5 - 9.0, inclusive, at all times;
(b) operate the works within the Rated Capacity of the Works;
(c) ensure that the effluent from the Works is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film or sheen or foam or discolouration on the receiving waters;

(3) The Owner shall include in all reports submitted in accordance with Condition 10 a summary of the efforts made and results achieved under this Condition.

7. EFFLUENT LIMITS

(1) The Owner shall design and construct the Works and operate and maintain the Works such that the concentrations and waste loadings of the materials named below as effluent parameters are not exceeded in the effluent from the Works.

**Table 2 - Effluent Limits**

| **Effluent Parameter** | **Average Concentration** (milligrams per litre unless otherwise indicated) | **Average Waste Loading** (kilograms per day unless otherwise indicated) |
|---|---|---|
| Column 1 | Column 2 | Column 3 |
| BOD5 | 22 (Apr 1 to Oct 31) | 1,408 (Apr 1 to Oct 31)0 |
| CBOD5 | 7.4 (Nov 1 to Mar 31) | 473.6 (Nov 1 to Mar 31) |
| Total Suspended Solids | 10 | 640 |
| Total Phosphorus | 0.38 (Apr 1 to Oct 31)<br>0.7 (Nov 1 to Mar 31) | 24.5 (Apr 1 to Oct 31)<br>44.8 (Nov 1 to Mar 31) |
| Total Ammonia Nitrogen | 3.4 (Nov 1 to Mar 31) | 217.6 (Nov 1 to Mar 31) |
| Total Residual Chlorine | 0.02 | - |
| pH of the effluent maintained between 6.0 to 9.5, inclusive, at all times | | |

(2) For the purposes of determining compliance with and enforcing subsection (1):

(a) The Monthly Average Concentration of a parameter named in Column 1 of Table 2 shall not exceed the corresponding maximum concentration set out in Column 2 of Table 2.
(b) The Monthly Average Loading of a parameter named in Column 1 of Table 2 shall not exceed the corresponding maximum waste loading set out in Column 3 of Table 2.
(c) The pH of the effluent shall be maintained within the limits outlined in Table 2, at all times.

(3) Notwithstanding subsection (1), the Owner shall operate and maintain the Works such that the effluent is continuously disinfected so that the monthly Geometric Mean Density of *E. Coli* does not exceed 200 organisms per 100 millilitres of effluent discharged from the Works.

(4) The effluent requirements set out in this condition shall apply upon issuance of this Approval.

8. OPERATION AND MAINTENANCE

(1) The Owner shall exercise due diligence in ensuring that, at all times, the Works and the related equipment and appurtenances used to achieve compliance with this Approval are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate operator staffing and training, including training in all procedures and other requirements of this Approval and the Act and regulations, adequate laboratory facilities, process controls and alarms and the use of process chemicals and other substances used in the Works.

(2) The Owner shall maintain an operations manual that includes, but not necessarily limited to, the following information:

(a) operating procedures for routine operation of the Works;
(b) inspection programs, including frequency of inspection, for the Works and the methods or tests employed to detect when maintenance is necessary;
(c) repair and maintenance programs, including the frequency of repair and maintenance for the Works;
(d) procedures for the inspection and calibration of monitoring equipment;
(e) a spill prevention control and countermeasures plan, consisting of contingency plans and procedures for dealing with equipment breakdowns, potential spills and any other abnormal situations, including notification of the Water Supervisor; and
(f) procedures for receiving, responding and recording public complaints, including recording any follow-up actions taken.

(3) The Owner shall maintain the operations manual current and retain a copy at the location of the Works for the operational life of the Works. Upon request, the Owner shall make the manual available to Ministry staff.

(4) The Owner shall provide for the overall operation of the Works with an operator who holds a licence that is applicable to that type of facility and that is of the same class as or higher than the class of the facility in accordance with Ontario Regulation 129/04.

9. MONITORING AND RECORDING

The Owner shall, upon commencement of operation of the Works, carry out the following monitoring program:

(1) All samples and measurements taken for the purposes of this Approval are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.

(2) For the purposes of this condition, the following definitions apply:

(a) Weekly means once each week.

(3) Samples shall be collected at the following sampling points, at the frequency specified, by means of the specified sample type and analyzed for each parameter listed and all results recorded:

| Table 3 - Influent Monitoring | | |
|---|---|---|
| **Parameters** | **Sample Type** | **Frequency** |
| BOD5 | Composite | Weekly |
| Total Suspended Solids | Composite | Weekly |
| Total Phosphorus | Composite | Weekly |
| Total Kjeldahl Nitrogen | Composite | Weekly |

| Table 4 - Effluent Monitoring | | |
|---|---|---|
| **Parameters** | **Sample Type** | **Frequency** |
| BOD5 | Composite | Weekly |
| CBOD5 | Composite | Weekly |
| Total Suspended Solids | Composite | Weekly |
| Total Phosphorus | Composite | Weekly |
| Total Ammonia Nitrogen | Composite | Weekly |
| Total Residual Chlorine or Bisulphite Residual | Grab | Weekly |
| *E. Coli* | Grab | Weekly |
| pH | Grab | Weekly |
| Temperature | Grab | Weekly |

(4) The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

(a) the Ministry's Procedure F-10-1, “Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended from time to time by more recently published editions;

(b) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (January 1999), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions;

(c) the publication "Standard Methods for the Examination of Water and Wastewater" (21st edition), as amended from time to time by more recently published editions.

(5) If the Owner monitors Bisulphite Residual as a surrogate to Total Chlorine Residual, then detected levels of Bisulphite Residual in the sample shall be deemed to confirm absence or equivalent to 0.0 mg/L concentration level of Total Residual Chlorine.

(6) The temperature and pH of the effluent from the Works shall be determined in the field at the time of

sampling for Total Ammonia Nitrogen. The concentration of un-ionized ammonia shall be calculated using the total ammonia concentration, pH and temperature using the methodology stipulated in "Ontario's Provincial Water Quality Objectives" dated July 1994, as amended, for ammonia (un-ionized).

(7) The Owner shall install and maintain continuous flow measuring device(s), to measure the flowrate of the influent to and effluent from the Works with an accuracy to within plus or minus 15 per cent (+/- 15%) of the actual flowrate for the entire design range of the flow measuring device, and record the flowrate at a daily frequency.

10. REPORTING

(1) One week prior to the start up of the operation of the Proposed Works, the Owner shall notify the Water Supervisor (in writing) of the pending start up date.

(2) Ten (10) days prior to the date of a planned By-pass being conducted pursuant to Condition 5 and as soon as possible for an unplanned By-pass, the Owner shall notify the Water Supervisor (in writing) of the pending start date, in addition to an assessment of the potential adverse effects on the environment and the duration of the By-pass.

(3) The Owner shall report to the Water Supervisor or designate, any exceedence of any parameter specified in Condition 7 orally, as soon as reasonably possible, and in writing within seven (7) days of the exceedence.

(4) In addition to the obligations under Part X of the *Environmental Protection Act* , the Owner shall, within 10 working days of the occurrence of any reportable spill as defined in Ontario Regulation 675/98, bypass or loss of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment, submit a full written report of the occurrence to the Water Supervisor describing the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.

(5) The Owner shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to Ministry staff.

(6) The Owner shall prepare, and submit to the Water Supervisor, a performance report, on an annual basis, within ninety (90) days following the end of the period being reported upon. The first such report shall cover the first annual period following the commencement of operation of the Works and subsequent reports shall be submitted to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:

(a) a summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 7, including an overview of the success and adequacy of the Works;
(b) a description of any operating problems encountered and corrective actions taken;
(c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works;

(d) a summary of any effluent quality assurance or control measures undertaken in the reporting period;
(e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment;
(f) a description of efforts made and results achieved in meeting the Effluent Objectives of Condition 6.
(g) a tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;
(h) a summary of any complaints received during the reporting period and any steps taken to address the complaints;
(i) a summary of all By-pass, spill or abnormal discharge events;
(j) a copy of all Notice of Modifications submitted to the Water Supervisor as a result of Schedule 'A', Section 1, with a status report on the implementation of each modification;
(k) a report summarizing all modifications completed as a result of Schedule 'A', Section 3; and
(l) any other information the Water Supervisor requires from time to time.

(7) The Owner shall, within thirty (30) calendar days of issuance of this Approval, submit a Municipal and Local Services Board Sewage Works Profile Information Form, and shall resubmit the updated document every time a notification is provided to the Water Supervisor in compliance with requirements of change of ownership under this Approval.

11. LIMITED OPERATIONAL FLEXIBILITY

(1) The Owner may make modifications to the Works in accordance with the Terms and Conditions of this Approval and subject to the Ministry's "Limited Operational Flexibility Criteria for Modifications to Sewage Works", included under Schedule 'A' of this Approval, as amended.

(2) Sewage works proposed under Limited Operational Flexibility shall adhere to the design guidelines contained within the Ministry's publication "Design Guidelines for Sewage Works 2008", as amended.

(3) The Owner shall ensure at all times, that the Works, related equipment and appurtenances which are installed or used to achieve compliance are operated in accordance with all Terms and Conditions of this Approval.

(4) For greater certainty, the following are not permitted as part of Limited Operational Flexibility:

(a) Modifications to the Works that result in an increase of the approved Rated Capacity of the Works;

(b) Modifications to the Works that may adversely affect the approved effluent quality criteria or the location of the discharge/outfall;

(c) Modifications to the treatment process technology of the Works, or modifications that involve construction of new reactors (tanks) or alter the treatment train process design;

(d) Modifications to the Works approved under s.9 of the EPA, and

(e) Modifications to the Works pursuant to an order issued by the Ministry.

(5) Implementation of Limited Operational Flexibility is not intended to be used for piecemeal measures that result in major alterations or expansions.

(6) If the implementation of Limited Operational Flexibility requires changes to be made to the Emergency Response, Spill Reporting and Contingency Plan, the Owner shall, as deemed necessary in consultation with the Water Supervisor, provide a revised copy of this plan to the local fire services authority prior to implementing Limited Operational Flexibility.

(7) For greater certainty, any modification made under the Limited Operational Flexibility may only be carried out after other legal obligations have been complied with, including those arising from the *Environmental Protection Act*, *Niagara Escarpment Planning and Development Act*, *Oak Ridges Moraine Conservation Act*, *Lake Simcoe Protection Act* and *Greenbelt Act*.

(8) Prior to implementing Limited Operational Flexibility, the Owner shall complete a Notice of Modifications describing any proposed modifications to the Works and submit it to the Water Supervisor.

## SCHEDULE 'A'

### Limited Operational Flexibility Criteria for Modifications to Municipal Sewage Works

1. The modifications to sewage works approved under an Environmental Compliance Approval (Approval) that are permitted under the Limited Operational Flexibility (LOF), are outlined below and are subject to the LOF conditions in the Approval, and require the submission of the Notice of Modifications. If there is a conflict between the sewage works listed below and the Terms and Conditions in the Approval, the Terms and Conditions in the Approval shall take precedence.

   1.1 Sewage Pumping Stations

   a. Alter pumping capacity by adding or replacing equipment where new equipment is located within an existing sewage treatment plant site or an existing sewage pumping station site, provided that the modifications do not result in an increase of the sewage treatment plant Rated Capacity and the existing flow process and/or treatment train are maintained, as applicable.

   b. Forcemain relining and replacement with similar pipe size where the nominal diameter is not greater than 1,200mm

   1.2 Sewage Treatment Process

   a. Installing additional chemical dosage equipment including replacing with alternative chemicals for pH adjustment or coagulants (non-toxic polymers) provided that there are no modifications of treatment processes or other modifications that may alter the intent of operations and may have negative impacts on the effluent quantity and quality.

   b. Expanding the buffer zone between a sanitary sewage lagoon facility or land treatment area and adjacent uses provided that the buffer zone is entirely on the proponent's land.

   c. Optimizing existing sanitary sewage lagoons with the purpose to increase efficiency of treatment operations provided that existing sewage treatment plant rated capacity is not exceeded and where no land acquisition is required.

   d. Optimizing existing sewage treatment plant equipment with the purpose to increase the efficiency of the existing treatment operations, provided that there are no modifications to the works that result in an increase of the approved Rated Capacity, and may have adverse effects to the effluent quality or location of the discharge.

   e. Replacement, refurbishment of previously approved equipment in whole or in part with Equivalent Equipment, like-for-like of different make and model, provided that the firm capacity, reliability, performance standard, level of quality and redundancy of the group of equipment is kept the same or exceeded. For clarity purposes, the following equipment can be considered under this provision: pumps, screens, grit separators, blowers, aeration equipment, sludge thickeners, dewatering

equipment, UV systems, chlorine contact equipment, bio-disks, and sludge digester systems.

1.3 Sewage Treatment Plant Outfall

a. Replacement of discharge pipe with similar pipe size or diffusers provided that the outfall location is not changed.

1.4 Sanitary Sewers

a. Pipe relining and replacement with similar pipe size within the Sewage Treatment Plant site, where the nominal diameter is not greater than 1,200mm.

1.5 Pilot Systems

a. Installation of pilot systems for new or existing technologies provided that:

i. any effluent from the pilot system is discharged to the inlet of the sewage treatment plant or hauled off-site for proper disposal,
ii. any effluent from the pilot system discharged to the inlet of the sewage treatment plant or sewage conveyance system does not significantly alter the composition/concentration of the influent sewage to be treated in the downstream process; and that it does not add any inhibiting substances to the downstream process, and
iii. the pilot system's duration does not exceed a maximum of two years; and a report with results is submitted to the Director and Water Supervisor three months after completion of the pilot project.

2. Sewage works that are exempt from section 53 of the OWRA by O. Reg. 525/98 continue to be exempt and are not required to follow the notification process under this Limited Operational Flexibility.

3. Normal or emergency operational modifications, such as repairs, reconstructions, or other improvements that are part of maintenance activities, including cleaning, renovations to existing approved sewage works equipment, provided that the modification is made with Equivalent Equipment, are considered pre-approved.

4. The modifications noted in section (3) above are <u>not</u> required to follow the notification protocols under Limited Operational Flexibility, provided that the number of pieces and description of the equipment as described in the Approval does not change.

Schedule 'B' forms part of this Approval and contains a list of supporting documentation / information received, reviewed and relied upon in the issuance of this Approval.

## SCHEDULE 'B'

1. Environmental Compliance Approval Application signed by Kiran Suresh, Project Manager, The Corporation of the City of Guelph and submitted by Michael Gundry, P. Eng., Principal, Stantec Consulting Inc., Consulting Engineers, together with final plans, specifications and supporting documentation prepared by Stantec Consulting Inc., Consulting Engineers.

2. Environmental Compliance Approval Application signed and submitted by Kiran Suresh, Project Manager, The Corporation of the City of Guelph via covering letter dated March 15, 2013 and supporting documentation and report entitled "Guelph WWTP Side-Stream Deammonification Treatment for Low Energy Ammonia Removal, Schematic Design Report" dated February 22, 2013 prepared by CH2M HILL Canada Limited, Consulting Engineers.

Ontario
Ministry of
the Environment

# Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA AND SEND A COPY TO THE WATER SUPERVISOR (FOR MUNICIPAL) OR DISTRICT MANAGER (FOR NON-MUNICIPAL SYSTEMS)

## Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility

*(Insert the ECA's owner, number, issuance date and notice number, which should start with "01" and consecutive numbers thereafter)*

| ECA Number | Issuance Date (mm/dd/yy) | Notice number (if applicable) |
|---|---|---|
| | | |

| ECA Owner | Municipality |
|---|---|
| | |

## Part 2: Description of the modifications as part of the Limited Operational Flexibility

*(Attach a detailed description of the sewage works)*

Description shall include:
1. A detail description of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.)
2. Confirmation that the anticipated environmental effects are negligible.
3. List of updated versions of, or amendments to, all relevant technical documents that are affected by the modifications as applicable, i.e. submission of documentation is not required, but the listing of updated documents is (design brief, drawings, emergency plan, etc.)

## Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:
1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Conforms with the Limited Operational Flexibility as per the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate.

| Name (Print) | PEO License Number |
|---|---|
| | |

| Signature | Date (mm/dd/yy) |
|---|---|
| | |

| Name of Employer |
|---|
| |

## Part 4 – Declaration by Owner

I hereby declare that:
1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. These modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act*.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate.

| Name of Owner Representative (Print) | Owner representative's title (Print) |
|---|---|
| | |

| Owner Representative's Signature | Date (mm/dd/yy) |
|---|---|
| | |

*The reasons for the imposition of these terms and conditions are as follows:*

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. The condition also advises the Owners their responsibility to notify any person they authorized to carry out work pursuant to this Approval the existence of this Approval.

2. Condition 2 is included to ensure that the Works are constructed in a timely manner so that standards applicable at the time of Approval of the Works are still applicable at the time of construction, to ensure the ongoing protection of the environment.

3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to the approved works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the Works in compliance with it.

4. Condition 4 is included to ensure that the Works are constructed in accordance with the approval and that record drawings of the Works "as constructed" are maintained for future references.

5. Condition 5 is included to indicate that by-passes of untreated sewage to the receiving watercourse is prohibited, save in certain limited circumstances where the failure to Bypass could result in greater injury to the public interest than the Bypass itself where a Bypass will not violate the approved effluent requirements, or where the Bypass can be limited or otherwise mitigated by handling it in accordance with an approved contingency plan. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Bypass events.

6. Condition 6 is imposed to establish non-enforceable effluent quality objectives which the Owner is obligated to use best efforts to strive towards on an ongoing basis. These objectives are to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs and before the compliance limits of Condition 7 are exceeded.

7. Condition 7 is imposed to ensure that the effluent discharged from the Works to the Speed River meets the Ministry's effluent quality requirements thus minimizing environmental impact on the receiver and to protect water quality, fish and other aquatic life in the receiving water body.

8. Condition 8 is included to require that the Works be properly operated, maintained, funded, staffed and equipped such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented. As well, the inclusion of a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the owner and made available to the Ministry. Such a manual is an integral part of the operation of the Works. Its compilation and use should assist the Owner in staff training, in proper plant operation and in

identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the work.

9. Condition 9 is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives and effluent limits specified in the Approval and that the Works does not cause any impairment to Speed River.

10. Condition 10 is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this Approval, so that the Ministry can work with the Owner in resolving any problems in a timely manner.

11. Condition 11 is included to ensure that the Works are operated in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider. These conditions are also included to ensure that a Professional Engineer has reviewed the proposed modifications and attests that the modifications are in line with that of Limited Operational Flexibility, and provide assurance that the proposed modifications comply with the Ministry's requirements stipulated in the terms and conditions of this Approval, MOE policies, guidelines, and industry engineering standards and best management practices.

**Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 0816-9AQP3C issued on December 17, 2013.**

*In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:*

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

*Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.*

*The Notice should also include:*

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

*And the Notice should be signed and dated by the appellant.*

*This Notice must be served upon:*

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment and
Climate Change
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-4506 or www.ert.gov.on.ca**

*The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.*

DATED AT TORONTO this 21st day of November, 2014

Edgardo Tovilla
Director
appointed for the purposes of Part II.1 of the
*Environmental Protection Act*

HV/
c: DWMD Supervisor, MOECC Guelph District Office.
Grant Ferguson, The Corporation of the City of Guelph.

Ontario

# ENVIRONMENTAL COMPLIANCE APPROVAL
# For a Municipal Sewage Collection System

## ECA Number: 017-W601
## Issue Number: 1

Pursuant to the *Environmental Protection Act*, R.S.O 1990, c. E. 19 (EPA*),* and the regulations made thereunder and subject to the limitations thereof, this environmental compliance approval is issued under section 20.3 of Part II.1 of the EPA to:

## Guelph, The Corporation of the City of

**1 Carden St**
**Guelph, ON N1H 3A1**

For the following Sewage Works:

## City of Guelph Sewage Collection System

This Environmental Compliance Approval (ECA) includes the following:

| Schedule | Description |
|---|---|
| Schedule A | System Information |
| Schedule B | Municipal Sewage Collection System Description |
| Schedule C | List of Notices of Amendment to this ECA: Additional Approved Works |
| Schedule D | General |
| Schedule E | Operating Conditions |
| Schedule F | Residue Management |

All prior ECAs, or portions thereof, issued by the Director for Sewage Works described in section 1 of Schedule B are revoked and replaced by this Approval.

DATED at TORONTO this 25th day of August, 2022

Signature

Aziz Ahmed, P.Eng.
Director, Part II.1, *Environmental Protection Act*

## Schedule A: System Information

| | |
|---|---|
| System Owner | **Guelph, The Corporation of the City of** |
| ECA Number | **017-W601** |
| System Name | **City of Guelph Sewage Collection System** |
| ECA Issue Date | **August 25th, 2022** |

## 1.0 ECA Information and Mandatory Review Date

| | |
|---|---|
| ECA Issue Date | August 25th, 2022 |
| Application for ECA Review Due Date | April 15, 2026 |

1.1 Pursuant to section 20.12 of the EPA, the Owner shall submit an application for review of the Approval no later than the Application for ECA Review Date indicated above.

## 2.0 Related Documents

2.1 STPs, Satellite Treatment Facilities, and Pumping Stations connected to the Authorized System that are not part of the Authorized System:

| System/Facility Name | Wastewater System Number | Location | ECA Number | Issue Date |
|---|---|---|---|---|
| Guelph Wastewater Treatment Plant | 120003094 | 530 Wellington Street W, Guelph, Ontario | 8835-9QJKSD | Nov 21, 2014 |
| Northern Heights Sewage Pumping Station | NA | 68 Ingram Dr, Guelph, Ontario | 8602-76HPDC | Sep 13, 2007 |
| Kortright East Sewage Pumping Station | NA | 1005 Victoria Rd, Guelph, Ontario | 0510-&MKTNA | Dec 24, 2008 |
| Terraview Cres. Sewage Pumping Station | NA | 51 Terraview Crescent, Guelph, Ontario | 2760-4MNHDB | July 31, 2000 |
| Barton Estates Sewage Pumping Station | NA | 49 Robin Rd, Guelph, | 3-1019-93-006 | Oct 7, 1993 |

| | | | | |
|---|---|---|---|---|
| | | Ontario | | |
| NiMa Trails Pumping Station | NA | 15 Longfellow Ave., Guelph, Ontario | 3147-ATDKS4 | Dec 13, 2017 |

### 2.2 Other Documents

| Document Title | Version |
|---|---|
| Design Criteria for Sanitary Sewers, Storm Sewers, and Forcemains for Alterations Authorized under Environmental Compliance Approval | v.1.1 (Jul 28, 2022) |

## 3.0 Asset Management Plan

| Document Title | Version |
|---|---|
| 2021 Core Asset Management Plan | v.1 (April 29th, 2021) |

## 4.0 Pollution Prevention and Control Plan (if applicable)

| Document Title | Version |
|---|---|
| N/A | |

## 5.0 Operating Authority

| System | Operating Authority |
|---|---|
| The Corporation of the City of Guelph Wastewater Collection | City of Guelph Wastewater Services |

## Schedule B: Municipal Sewage Collection System Description

| | |
|---|---|
| System Owner | **Guelph, The Corporation of the City of** |
| ECA Number | **017-W601** |
| System Name | **City of Guelph Sewage Collection System** |
| ECA Issue Date | **August 25th, 2022** |

### 1.0 System Description

1.1 The following is a summary description of the Sewage Works comprising the Municipal Sewage Collection System:

**Overview**

The Guelph Wastewater Collection System consists of works for the collection and transmission of sewage, consisting of 530 kilometers of sewers (trunk, separate), 5 sewage pumping stations, wet-weather interceptor tanks, inverted siphons, and forcemains, with discharge into the City of Guelph Water Resource Recovery Centre and then the Speed River.

**Sewage Collection System**

1.2 The Authorized System comprises:

1.2.1 The Sewage Works described and depicted in each document or file identified in column 1 of Table B1.

**Table B1: Infrastructure Map**

| Column 1<br>Document or File Name | Column 2<br>Date |
|---|---|
| GIS 21 -030 (04) CLI-ECA Map – GRCA Subwatersheds | January 19, 2022 |
| GIS 21 -030 (05) CLI-ECA Map – WHPAs and Vulnerability Scores | January 19, 2022 |
| GIS 21 -030 (06) CLI-ECA Map – Wastewater Linear Infrastructure | June 7, 2022 |
| CLI-ECA Sanitary Infrastructure_2022.01.19 | January 19, 2022 |

1.2.2 Sewers, forcemains, pumping stations and other Sewage Works that have been added, modified, replaced, or extended through authorization provided in a Schedule C Notice respecting this Approval, where Completion occurs on or after the date identified in column 2 of Table B1 for each document or file identified in column 1.

1.2.3 Sewers, forcemains, pumping stations and other Sewage Works that have been added, modified, replaced, or extended through authorization provided in Schedule D of this Approval, where Completion occurs on or after the date identified in column 2 of Table B1 for each document or file identified in column 1.

1.2.4 Any Sewage Works described in conditions 1.3, through 1.7 below.

**Sewage Pumping Stations**

1.3 The following are Sewage pumping stations in the Authorized System:

**Northern Heights Sewage Pumping Station**

| | |
|---|---|
| Asset ID and Name | A / WTLIFTNORTH Northern Heights Sewage Pumping Station |
| Site Location | 68 Ingram Dr, Guelph, Ontario |
| Latitude and Longitude | 43.58113551475499, -80.26898606435938 |
| Coordinates (optional) | NAD 83, Zone 17 N 4825352.9, E 558987.3 |
| Description | A 9.95 m by 7.15 m sewage pumping station structure containing underground wet well, valve room, generator room, screening room and odour control room. |
| Pumping Station Capacity | 33 L/s |
| Equipment | [2] pumps (1 duty, 1 standby), with 2851 $m^3$/d and 38.4 m total head, [0] grinders, [1] screens, [1] wet well of 73.53 $m^3$ capacity. The station is connected to a 150 mm diameter forcemain, discharging to maintenance hole (MH) 3277 on Pondview Cres. Additional storage of [10.87] $m^3$ (bypass MH). |
| Emergency Storage | Sum of wet well storage and bypass MH (73.53 $m^3$+10.87 $m^3$ = 84.4 $m^3$). |
| Equipment: Associated controls and Appurtenances | Bypass chamber, overflow flow meter, MCC panels, electrical, instrumentation control, on-site pump failure alarm and SCADA system connection for off-site monitoring of pumpstation activity in Guelph; complete with electrical 0.5 ton capacity hoist, hook-up mechanism for portable emergency pumps, pump by-pass and interconnection piping, valves, lighting, heating and ventilation, ancillary equipment, local and telemetric switching controls and accessories as required. |
| Sewage Pumping Station – Collection System Overflow | Overflow discharge location SWM Pond 93 (43°34'51.99"N 80°16'8.07"W) and final discharge into an existing municipal drainage swale (43°34'53.00"N 80°16'12.17"W) which ultimately outlets into the Speed River. Response time: <1h. Emergency storage volume: Sum of wet well storage and bypass MH (73.53 $m^3$+10.87 $m^3$ = 84.4 $m^3$). |
| Receiving Stations (if applicable) | N/A |
| Odour Control Units | Odour control room in the main level complete with an odour control system rated at 400 CFM and is designed for 6 air changes per hour. |

| | |
|---|---|
| Standby Power | 125 kW air cooled diesel generator, [1] 1,100L capacity diesel fuel tank with spill containment devices. |
| Notes | Reference ECA(s): C of A 8602-76HPDC<br>C of A for Air 1355-75DRY9 |

## Kortright East Sewage Pumping Station

| | |
|---|---|
| Asset ID and Name | A / WTLIFTKORT Kortright East Sewage Pumping Station |
| Site Location | 1005 Victoria Rd, Guelph, Ontario |
| Latitude and Longitude | 43.531850002323125, -80.19644950175217 |
| Coordinates (optional) | NAD 83N 4820150 E 564926 |
| Description | 10.6 m by 8.9 m sewage pumping station structure containing an underground wet well, valve room, generator room, office, washroom and odour control room. |
| Pumping Station Capacity | 130.6 L/s |
| Equipment | [3] pumps (2 duty, 1 standby), with 11,284 $m^3$/d and 26.8 m total head, [1] grinders, [0] screens, [1] wet well of 148 $m^3$ capacity. The station is connected to a 350 mm diameter forcemain, discharging to MH 6715 on Victoria Road S. |
| Emergency Storage | Emergency storage bypass chamber (16.69 in $m^3$). |
| Equipment: Associated controls and appurtenances | Bypass chamber, overflow flow meter, MCC panels, electrical instrumentation control, on-site pump failure alarm and SCADA system connection for off-site monitoring of pumping station activity in Guelph; all complete with electric operated 1.0 ton capacity hoist and a pneumatic hoist for grinder removal, hook-up mechanism for portable emergency pumps, pump bypass and interconnection piping, valves, lighting, heating and ventilation, ancillary equipment, local and telemetric switching controls and accessories as required, discharging to the proposed forcemain. |
| Collection System Overflow | Overflow discharge location SWM Pond 109 (43°31'46.91"N 80°11'45.74"W) and final discharge to natural wetlands at 43°31'45.81"N, 80°11'46.56"W. Response time: approx. 1 h. Emergency storage volume: Sum of wet well storage and bypass chamber (148 $m^3$+16.69 $m^3$ = 164.69 $m^3$). |
| On-site Receiving Stations (if applicable) | N/A |
| Odour Control Units | A 4.2 m by 4.2 m odour control room in the main level complete with an odour control system rated at 600 CFM and is designed for 6 air changes per hour. |
| Standby Power | 200 kW air cooled diesel generator, [1] 1,100L capacity diesel fuel tank with spill containment devices. |
| Notes | C of A Air 8118-78JKYK<br>Reference ECA(s): 0510-7MKTNA |

## Terraview Crescent Sewage Pumping Station

| | |
|---|---|
| Asset ID and Name | A / WTLIFTTERRAV Terraview Cres. Sewage Pumping Station |
| Site Location | 51 Terraview Crescent, Guelph, Ontario |
| Latitude and Longitude | 43.50900919260306, -80.21340899531572 |
| Coordinates (optional) | 23T-92009; 23T-98505; 23T-95507 |
| Description | Terraview Crescent Sewage Pumping Station serving 231 houses in Southcreek Subdivision. |
| Pumping Station Capacity | 13L/s |
| Equipment | [2] pumps (1 duty, 1 standby), with 158.8 $m^3$/d and 9.9 m total head, [0] grinders, [0] screens, [1] 3.0 m wet well of 15.8 $m^3$ capacity, discharging to MH 5926 on Terraview Crescent. Emergency storage tank/pipe volume (29.6 $m^3$). |
| Emergency Storage | Emergency storage tank/pipe volume (29.6 $m^3$). |
| Equipment: Associated controls and appurtenances | Associated piping, valves, meters, electrical and control systems, by-pass facility and approximately 45 $m^3$ emergency storage volume in the upstream oversized sewers all in accordance with design brief and final plans and specifications prepared by Gamsby and Mannerow Limited Consulting Engineers. |
| Collection System Overflow | Response time: Designed for (4) hours. Emergency storage volume: Sum of wet well storage and oversized sewers = 45 $m^3$. |
| On-site Receiving Stations (if applicable) | N/A |
| Odour Control Units | N/A |
| Standby Power | 30 kW diesel generator, and [1] 680 L fuel storage tank. |
| Notes | C of A for Air 5018-4P5S3<br>Reference ECA(s): 2760-4MNHDB |

## Barton Estates Sewage Pumping Station

| | |
|---|---|
| Asset ID and Name | A / WTLIFTBARTON Barton Estates Sewage Pumping Station |
| Site Location | 49 Robin Rd, Guelph, Ontario |
| Latitude and Longitude | 43.52301446582844, -80.20372354408099 |
| Coordinates (optional) | |
| Description | A sewage pumping station, forcemain and a control building located approx. 160 m east of Fieldstone Road and approx. 21 m south of Robin Road to serve the Barton Estates Subdivision (23T-9lOlO), in the City of Guelph. |
| Pumping Station Capacity | 6.3 L/s |
| Equipment | [2] pumps (1 duty, 1 standby), with 527 $m^3$/d and 7.1 m total head, [0] grinders, [1] screens, [1] 3 m diameter wet well of 5.625 $m^3$ capacity. The station is connected to [370 m] of 100 mm diameter forcemain, discharging to MH 1914 on Robin |

| | |
|---|---|
| | Road. |
| Emergency Storage | 25.5 $m^3$ including wet well between high level and maximum surcharge (elevation 333.000 as identified on drawings), and 179.5 m of 300 mm sanitary adjacent to the station that has an obvert below 333.000 m. |
| Equipment: Associated controls and appurtenances | Piping, heating and ventilation, electrical and control systems, all in accordance with the plans and specifications prepared by Gamsby and Mannerow consulting Engineers. |
| Collection System Overflow | N/A |
| On-site Receiving Stations (if applicable) | N/A |
| Odour Control Units | N/A |
| Standby Power | 25 kW diesel generator, and 225 l fuel storage tank with spill containment. |
| Notes | C of A for Air-8-2210-93-006<br>Reference ECA(s): 3-1019-93-006 |

## NiMa Trails Sewage Pumping Station

| | |
|---|---|
| Asset ID and Name | NiMa Trails Pumping Station |
| Site Location | Lot 2, Concession 6, Guelph, Ontario |
| Latitude and Longitude | 43°34'43.53"N 80°14'53.39"W |
| Coordinates (optional) | |
| Description | Pumping station designed for an average daily flow of 5.1 L/s serving approx. 14.72 ha area. |
| Pumping Station Capacity | Peak flow of 21.9 l/s |
| Equipment | [3] pumps (2 duty, 1 standby), with 1892 $m^3$/d and 19.5 m total head, 3.6 m diameter precast concrete inlet chamber with [1] 2.2 kW inlet sewage grinder, [0] screens, [1] 3.6 m diameter reinforced concrete wet well of 63.57 $m^3$ capacity. The station is connected to a 242 m long, 150 mm diameter force main, discharging to MH 8905 on Shakespeare Drive. Emergency storage: tank/pipe volume 108.67 $m^3$ (wet well-63.57 $m^3$ and Inlet Chamber 45.1 $m^3$). |
| Emergency Storage | Emergency storage: tank/pipe volume 108.67 m3 (wet well-63.57 $m^3$ and Inlet Chamber 45.1 $m^3$). |
| Equipment: Associated controls and appurtenances | Below grade valve chamber containing a discharge header, flow meter on the force main, check valves, isolation valves, air valves, and emergency bypass piping. |
| Collection System Overflow | Overflow pipe with a check valve, at elevation 346.75 m that discharges from the inlet chamber to the stormwater management pond # 1 (43°34'44.28"N 80°14'52.41"W) that ultimately discharges to a wetland at 43°34'47.56"N 80°14'57.20"W. Response time: 1h. Emergency storage volume: Sum of wet well storage and inlet chamber (63.57 $m^3$ + inlet chamber 45.1 $m^3$ = 108.67 $m^3$) plus stormwater pond. |

| | |
|---|---|
| On-site Receiving Stations (if applicable) | N/A |
| Odour Control Units | Odour control equipment. |
| Standby Power | 60 kW natural gas generator with sound-attenuation. |
| Notes | Reference ECA(s): 3147-ATDKS4 |

**[N/A]**

| | |
|---|---|
| Asset ID and Name | N/A |
| Site Location | |
| Latitude and Longitude | |
| Coordinates (optional) | |
| Description | |
| Pumping Station Capacity | |
| Equipment | |
| Emergency Storage | |
| Equipment: Associated controls and Appurtenances | |
| Sewage Pumping Station – Collection System Overflow | |
| Receiving Stations (if applicable) | |
| Odor Control Units | |
| Standby Power | |
| Notes | |

### Real-Time Control

1.4 The following are identified Real-Time Control Systems in the Authorized System:

**Barton Estates Sewage Pumping Station**

| | Description |
|---|---|
| Process Equipment/System Elements | [2] pumps, [0] gates, [0] valves, [0] weirs, [0] moveable dams |
| Flow Measurement Locations | N/A |

| | |
|---|---|
| Level Measurement Locations | one (1) ultrasonic level measuring device located wet well |
| Other Instrumentation and Controls | one (1) backup control float system, one (1) building flood alarm, one (1) security system intrusion, one (1) emergency generator running, fault, low fuel alarms |

**Kortright Sewage Pumping Station**

| | Description |
|---|---|
| Process Equipment/System Elements | [3] pumps, [1] grinder, [1] odour control unit,[0] gates, [0] valves, [1] weirs, [0] moveable dams |
| Flow Measurement Locations | one (1) flow measuring device located FIT2001, one (1) flow measuring device located at FIT3001 |
| Level Measurement Locations | one (1) ultrasonic level measuring device located at LIT1001 |
| Other Instrumentation and Controls | one (1) discharge pressure measuring device located at PIT2001, one (1) wet well high-level float, one (1) valve room flood alarm, one (1) security system intrusion, one (1) UPS failure alarm, one (1) emergency generator running, fault alarms, one (1) ATS failure alarm, one (1) diesel fuel level measuring device, one (1) station power monitor |

**Northern Heights Sewage Pumping Station**

| | Description |
|---|---|
| Process Equipment/System Elements | [2] pumps, [0] grinder, [1] odour control unit, [0] gates, [0] valves, [1] weirs, [0] moveable dams |
| Flow Measurement Locations | one (1) flow measuring device located FIT2001, one (1) flow measuring device located at FIT3001 |
| Level Measurement Locations | one (1) ultrasonic level measuring device located at LIT1001 |
| Other Instrumentation and Controls | one (1) discharge pressure measuring device located at PIT2001, one (1) backup control float system, one (1) security system intrusion alarm, one (1) UPS failure alarm, one (1) emergency generator running, fault alarms, one (1) diesel fuel level measuring device, one (1) ATS fault and transfer alarms, one (1) station power monitor |

**Terraview Cres. Sewage Pumping Station**

| | Description |
|---|---|
| Process Equipment/System Elements | [2] pumps, [0] grinder, [0] odour control unit, [0] gates, [0] valves, [0] weirs, [0] moveable dams |
| Flow Measurement Locations | one (1) flow measuring device located FIT2001 |
| Level Measurement Locations | one (1) ultrasonic level measuring device located at LIT1001 |
| Other Instrumentation and Controls | one (1) backup control float system, one (1) security system intrusion alarm, one (1) UPS failure alarm, one (1) emergency |

| | |
|---|---|
| | generator running, fault alarms, one (1) building low temperature alarm |

**Nima Trails Pumping Station**

| | Description |
|---|---|
| Process Equipment/System Elements | [3] pumps, [1] grinder, [1] odour control unit, [0] gates, [0] valves, [0] weirs, [0] moveable dams |
| Flow Measurement Locations | one (1) flow measuring device located at SDH-FI01, one (1) overflow measuring device located at INW-FI02 |
| Level Measurement Locations | one (1) ultrasonic level measuring device located at WEW-LI01 |
| Other Instrumentation and Controls | one (1) backup level control hydrostatic system, one (1) security system intrusion alarm, one (1) UPS failure alarm, one (1) emergency generator running, fault alarms, one (1) ATS failure alarm, two (2) building temperature alarms, one (1) heat detector, one (1) station power monitor |

## Combined Sewage Structures

1.5 The following are regulators and combined Sewage storage structures in the Authorized System:

| Table B2: Identified Combined Sewer Overflow Regulators | | | |
|---|---|---|---|
| Column 1<br>Asset ID/Name | Column 2<br>Site Location<br>(Latitude & Longitude) | Column 3<br>Regulator Capacity<br>($m^3/s$) | Column 4<br>Overflow Location<br>(Latitude & Longitude) |
| N/A | | | |

| Table B3: Identified Combined Sewage Storage Tanks and Storage Structures | | | |
|---|---|---|---|
| Column 1<br>Asset ID/Name | Column 2<br>Site Location<br>(Latitude & Longitude) | Column 3<br>Regulator Capacity<br>($m^3/s$) | Column 4<br>Overflow Location<br>(Latitude & Longitude) |
| N/A | | | |

## Collection System Overflow Points

1.6 The following are Collection System Overflow points in the Authorized System:

| Table B4: Identified Combined Sewer Overflow Points including Pumping Stations |
|---|

| Column 1<br>Asset ID / Name | Column 2<br>Regulator or Combined Sewer Storage Asset ID | Column 3<br>Overflow Location<br>(Latitude & Longitude) | Column 4<br>Point of Entry to Receiver<br>(Latitude and Longitude) |
|---|---|---|---|
| N/A | | | |

| **Table B5: Identified Sanitary Sewer Overflow Points including Pumping Stations** | | | |
|---|---|---|---|
| Column 1<br>Asset ID | Column 2<br>Asset Name | Column 3<br>Overflow Location<br>(Latitude & Longitude) | Column 4<br>Point of Entry to Receiver<br>(Latitude and Longitude) |
| WW Gravity Main 9471 | Northern Heights SPS Overflow | 43°34'51.99"N 80°16'8.07"W | 43°34'52.31"N 80°16'11.90"W |
| WW Gravity Main 8779 | Kortright SPS Overflow | 43°31'45.52"N 80°11'44.27"W | 43°31'45.95"N 80°11'46.54"W |
| WW Gravity Main 9647 | NiMa Trails SPS Overflow | 43°34'44.35"N 80°14'52.55"W | 43°34'47.61"N 80°14'57.23"W |
| WW Gravity Main 3494 | Edinburgh and Manor Park Crescent Siphon | 43°31'58.16"N 80°15'10.19"W | 43°31'58.44"N 80°15'13.80"W |

**Other Works:**

1.7 The following works are part of Authorized System:

| **Table B6: Other Works** | | | |
|---|---|---|---|
| Column 1<br>Asset ID / Name | Column 2<br>Site Location (Latitude & Longitude) | Column 3<br>Component | Column 4<br>Description |
| Septage Receiving Facility | 43.52137024590755, -80.26684030733418 | Septage Receiving Facility | Septage receiving station with cam-lock connection, rock trap, in-line grinder, magnetic flowmeter and auto sampler; processed septage discharge pipe connected to the existing 1,200 mm diameter west trunk sewer at a location approximately 700 m upstream of the plant headworks. |

## Schedule C: List of Notices of Amendment to this ECA: Additional Approved Sewage Works

| | |
|---|---|
| System Owner | **Guelph, The Corporation of the City of** |
| ECA Number | **017-W601** |
| System Name | **City of Guelph Sewage Collection System** |
| ECA Issue Date | **August 25th, 2022** |

### 1.0 General

1.1 Table C1 provides a list of all notices of amendment to this Approval that have been issued pursuant to clause 20.3(1) of the EPA that impose terms and conditions in respect of the Authorized System after consideration of an application by the Director (Schedule C Notices).

**Table C1: Schedule C Notices**

| Column 1<br>Issue # | Column 2<br>Issue Date | Column 3<br>Description | Column 4<br>Status | Column 5<br>DN# |
|---|---|---|---|---|
| N/A | N/A | N/A | N/A | N/A |

## Schedule D: General

| | |
|---|---|
| System Owner | **Guelph, The Corporation of the City of** |
| ECA Number | **017-W601** |
| System Name | **City of Guelph Sewage Collection System** |
| ECA Issue Date | **August 25th, 2022** |

### 1.0 Definitions

1.1 For the purpose of this Approval, the following definitions apply:

**"Adverse Effect(s)"** has the same meaning as defined in section 1 of the EPA.

**"Alteration(s)**" includes the following, in respect of the Authorized System, but does not include repairs to the system:

a) An extension of the system,

b) A replacement or retirement of part of the system, or

c) A modification of, addition to, or enlargement of the system.

**"Approval"** means this Environmental Compliance Approval including any Schedules attached to it.

**"Appurtenance(s)"** has the same meaning as defined in O. Reg. 525/98 (Approval Exemptions) made under the OWRA.

**"Authorized System"** means the Sewage Works comprising the Municipal Sewage Collection System authorized under this Approval".

**"Average Year"** means the long term average of flow based on:

a) Simulation of at least twenty years of rainfall data;

b) A year in which the rainfall pattern (e.g., intensity, volume, and frequency) is consistent with the long-term mean of the area;

c) A year in which the runoff pattern resulting from the rainfall (e.g., rate, volume, and frequency) is consistent with the long-term mean of the area; or

d) Any combination of a), b) and c).

**“Collection System Overflow(s)”** means a discharge (SSO or CSO) to the environment at designed location(s) from the Authorized System.

**“Combined Sewer(s)”** means pipes that collect and transmit both sanitary Sewage and other Sewage from residential, commercial, institutional and industrial buildings, and facilities and Stormwater through a single-pipe system, but does not include Nominally Separate Sewers.

**“Completion”** means substantial performance as described in s.2 (1) of the *Construction Act*, R.S.O. 1990, c. C.30.

**“Compound of Concern”** means a Contaminant that is discharged from the Facility in an amount that is not negligible.

**“Contaminant”** has the same meaning as defined in section 1 of the EPA.

**“CSO”** means a combined sewer overflow which is a discharge to the environment at designated location(s) from a Combined Sewer or Partially Separated Sewer as per Table B4 that usually occurs as a result of precipitation when the capacity of the Sewer is exceeded. An intervening time of twelve hours or greater separating a CSO from the last prior CSO at the same location is considered to separate one overflow Event from another.

**"CWA"** means the *Clean Water Act*, R.S.O. 2006, c.22.

**“Design Criteria”** means the design criteria set out in the Ministry’s publication “Design Criteria for Sanitary Sewers, Storm Sewers and Forcemains for Alterations Authorized under Environmental Compliance Approval”, (as amended from time to time).

**“Design Guidelines for Sewage Works”** means the Ministry document titled “Design Guidelines for Sewage Works”, 2008 (as amended from time to time).

**"Director"** means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of EPA (Environmental Compliance Approvals).

**“Director Notification Form”** means the most recent version of the Ministry form titled Director Notification – Alterations to a Municipal Sewage Collection System, as obtained directly from the Ministry or from the Ministry’s website.

**"District Manager"** means the district manager or a designated representative of the Local Ministry Office.

**“Dry Weather Flow(s)”** means Sewage flow resulting from both sanitary Sewage, and infiltration and inflows from foundation drains or other drains occurring during periods with an absence of rainfall or snowmelt.

**"EAA"** means the *Environmental Assessment Act*, R.S.O. 1990, c. E.18.

**"EPA"** means the *Environmental Protection Act*, R.S.O. 1990, c.E.19.

**"Emergency Situation"** means a structural, mechanical, electrical failure, or operational health and safety incident, that causes a temporary reduction in the capacity, function, or performance of any part of the Authorized System or an unforeseen flow condition that may result in:

a) Danger to the health or safety of any person;

b) Injury or damage to any property, or serious risk of injury or damage to any property;

c) Adverse Effect to the Natural Environment; or

d) Spill.

**“Equipment”** means equipment or processes described in this Approval and any other equipment or process that supports the operation or maintenance of the Authorized System.

**“ESC”** means erosion and sediment control.

**"Event(s)"** means an action or occurrence, at any given location within the Authorized System that causes a Collection System Overflow. An Event ends when there is no recurrence of a CSO or SSO in the collection system at the same location in the 12-hour period following the last Collection System Overflow.

**“Facility”** means the entire operation located on the property where the Sewage Works or Equipment is located.

**“Form A1”** means the most recent version of the Ministry form titled Record of Future Alteration Authorized for Equipment Discharging a Contaminant of Concern to the Atmosphere from a Municipal Sewage Collection System, as obtained directly from the Ministry or from the Ministry’s website.

**“Form CS1”** means the most recent version of the Ministry form titled Record of Future Alteration Authorized for Combined Sewers/Partially Separated Sewers/Combined Sewage Storage Tanks and Storage Structures as obtained directly from the Ministry or from the Ministry’s website.

**“Form SS1”** means the most recent version of the Ministry form titled Record of Future Alteration Authorized for Separate Sewers/Nominally Separate Sewers/Forcemains, as obtained directly from the Ministry or from the Ministry’s website.

**“Form SS2”** means the most recent version of the Ministry form titled Record of Future Alteration Authorized for Components of the Municipal Sewage Collection System, as obtained directly from the Ministry or from the Ministry’s website.

**“Hauled Sewage”** has the same meaning as defined in section 1 of Regulation 347 (General – Waste Management) made under the EPA.

**"Licensed Engineering Practitioner”** means a person who holds a licence, limited licence, or temporary licence under the *Ontario Professional Engineers Act* R.S.O. 1990, c. P.28.

**“Local Ministry Office”** means the local office of the Ministry responsible for the geographic area where the Authorized System is located.

**"Minister"** means the Minister of the Ministry, or such other member of the Executive Council as may be assigned the administration of the EPA and OWRA under the *Executive Council Act*, R.S.O. 1990, c. E.25.

**"Ministry"** means the Ministry of the Minister and includes all employees or other persons acting on its behalf.

**“Municipal Sewage Collection System”** means all Sewage Works, located in the geographical area of a municipality that collect and transmit Sewage and are owned, or may be owned pursuant to an agreement with a municipality entered into under the *Planning Act* or *Development Charges Act*, 1997, by:

a) A municipality, a municipal service board established under the *Municipal Act*, 2001 or a city board established under the *City of Toronto Act*, 2006; or

b) A corporation established under sections 9, 10, and 11 of the *Municipal Act*, 2001 in accordance with section 203 of that Act or under sections 7 and 8 of the *City of Toronto Act*, 2006 in accordance with sections 148 and 154 of that Act.

**“Natural Environment”** has the same meaning as defined in section 1 of the EPA.

**"Nominally Separate Sewer(s)"** mean Separate Sewers that also have connections from roof leaders and foundation drains, and are not considered to be Combined Sewers.

**“Operating Authority”** means, in respect of the Authorized System, the person, entity, or assignee that is given responsibility by the Owner for the operation, management, maintenance or Alteration of the Authorized System or a portion of the Authorized System.

**"Owner"** for the purposes of this Approval means The Corporation of the City of Guelph, and includes its successors and assigns.

**"OWRA"** means the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40.

**“O&M Manual”** means the operation and maintenance manual prepared and maintained by the Owner under condition 3.2 in Schedule E of this Approval.

**"Partially Separated Sewer(s)"** means Combined Sewers that have been retrofitted to transmit sanitary Sewage but in which roof leaders or foundation drains still contribute Stormwater inflow to the Partially Separated Sewer.

**“Peak Hourly Flow”** means the the largest volume of flow to be received during a one-hour period expressed as a volume per unit time. This is also referred to as maximum hourly flow or maximum hour flow.

**“Point of Entry”** has same meaning as in the Wastewater Systems Effluent Regulations (SOR/2012-139) under the *Fisheries Act*, R.S.C 1985, c. F-14.

**“Pollution Prevention and Control Plan” or “PPCP”** means a plan developed for Combined Sewers in the Authorized System to meet the goals of Procedure F-5-5.

**"Prescribed Person”** means a person prescribed in O. Reg. 208/19 (Environmental Compliance Approval in Respect of Sewage Works) for the purpose of ss. 20.6 (1) of the EPA, and where the alteration, extension, enlargement, or replacement is carried out under an agreement with the Owner.

**"Procedure F-5-1"** means the Ministry document titled “F-5-1 Determination of Treatment Requirements for Municipal and Private Sewage Treatment Works” (as amended from time to time).

**"Procedure F-5-5"** means the Ministry document titled “F-5-5 Determination of Treatment Requirements for Municipal and Private Combined and Partially Separated Sewer System” (as amended from time to time).

**"Publication NPC-207"** means the Ministry draft technical publication "Impulse Vibration in Residential Buildings", November 1983,

supplementing the Model Municipal Noise Control By-Law, Final Report, August 1978, (as amended from time to time).

**"Publication NPC-300"** means the Ministry publication NPC-300, "Environmental Noise Guideline: Stationary and Transportation Sources – Approval and Planning" August 2013, (as amended from time to time).

**"Pumping Station Capacity"** means the design Peak Hourly Flow of Sewage which the Sewage pumping station is designed to handle.

**"Real-time Control System"** means the dynamic operation of the collection system, including Real-Time Physical Control Structures, by responding to continuous field monitoring to maintain and achieve performance and operational objectives, during dry and wet weather conditions.

**"Real-time Physical Control Structure"** means a structure (e.g., pumps, gates, and weirs) that reacts in real-time based on direction from the Real-Time Control System.

**"Regulator Capacity"** means the flowrate ($m^3/s$) at which Collection System Overflow begins.

**"SAC"** means the Ministry's Spills Action Centre.

**"SCADA"** means a supervisory control and data acquisition system used for process monitoring, control, automation, recording, and/or reporting within the Sewage system.

**"Schedule C Notice(s)"** means a notice(s) of amendment to this Approval issued pursuant to clause 20.3(1) of the EPA that imposes terms and conditions in respect of the Authorized System after consideration of an application by the Director.

**"Separate Sewer(s)"** means pipes that collect and transmit sanitary Sewage and other Sewage from residential, commercial, institutional, and industrial buildings.

**"Sewage"** has the same meaning as defined in section 1 of the OWRA.

**"Sewage Works"** has the same meaning as defined in section 1 of the OWRA.

**"Sewer"** has the same meaning as defined in section 1 of O. Reg. 525/98 under the OWRA.

**"Significant Drinking Water Threat"** has the same meaning as defined in section 2 of the CWA.

**“Significant Snowmelt Event(s)”** means the melting of snow at a rate which adversely affects the performance and function of the Authorized System and/or the STP(s) identified in Schedule A of this Approval.

**“Significant Storm Event(s)”** means a minimum of 25 mm of rain in any 24 hours period.

**“Source Protection Authority”** has the same meaning as defined in section 2 of the CWA.

**"Source Protection Plan"** means a drinking water source protection plan prepared under the CWA.

**“Spill(s)”** has the same meaning as defined in subsection 91(1) of the EPA.

**“SSO”** means a sanitary sewer overflow which is a discharge of Sewage from a Separate Sewer or Nominally Separate Sewer to the environment from designated location(s) in the Authorized System as per Table B5.

**“Standard Operating Policy for Sewage Works”** means the standard operating policy developed by the Ministry to assist in the implementation of Source Protection Plan policies related to Sewage Works and providing minimum design and operational standards and considerations to mitigate risks to sources of drinking water, as amended from time to time.

**“Storm Sewer”** means Sewers that collect and transmit, but not exfiltrate or lose by design, Stormwater resulting from precipitation and snowmelt.

**“Stormwater”** means rainwater runoff, water runoff from roofs, snowmelt, and surface runoff.

**“Stormwater Management Facility(ies)”** means a Facility for the treatment, retention, infiltration, or control of Stormwater.

**“STP”** means sewage treatment plant.

**“STP Bypass(es)”** means diversion of Sewage around one or more treatment processes, excluding preliminary treatment system, within the STP with the diverted Sewage flows being returned to the STP treatment train upstream of the final effluent sampling point(s) and discharged via the approved effluent disposal facilities.

**“STP Overflow(s)”** means a discharge to the environment from the STP at designed location(s) other than the approved effluent disposal facilities or via the effluent disposal facilities downstream of the final effluent sampling point.

**“Uncommitted Reserve Hydraulic Capacity”** means uncommitted reserve capacity as described in the Ministry document titled “D-5-1 Calculating and Reporting Uncommitted Reserve Capacity at Sewage and Water Treatment Plants” (as amended from time to time).

**"Undertaking"** has the same meaning as in the EAA.

**“Vulnerable Area(s)”** has the same meaning as in the CWA.

**“Wet Weather Flow(s)”** means the flow resulting from the combination of sanitary Sewage and extraneous flows resulting from the inflow and infiltration of groundwater, rainfall or snowmelt, and snow or ice melt that enters the Authorized System.

## 2.0 General Conditions

2.1 The works comprising the Authorized System shall be constructed, installed, used, operated, maintained, replaced, or retired in accordance with the conditions of this Approval, which includes the following Schedules:

Schedule A – System Information

Schedule B – Municipal Sewage Collection System Description

Schedule C – List of Notices of Amendment to this ECA

Schedule D – General

Schedule E – Operating Conditions

Schedule F – Residue Management

2.2 The issuance of this Approval does not negate the requirements of other regulatory bodies, which includes but is not limited to, the Ministry of Northern Development, Mines, Natural Resources and Forestry and the local Conservation Authority.

2.3 Where there is a conflict between a provision of any document referred to in this Approval and the conditions of this Approval, the conditions in this Approval shall take precedence. Where there is a conflict between the information in a Schedule C Notice and another section of this Approval, the document bearing the most recent date shall prevail.

2.4 The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Authorized System is provided with a print or electronic copy of this Approval and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

2.5 The conditions of this Approval are severable. If any condition of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such

condition to other circumstances and the remainder of this Approval shall not be affected thereby.

## 3.0 Alterations to the Municipal Sewage Collection System

3.1 Any Schedule C Notice shall provide authority to alter the Authorized System in accordance with the conditions of this Approval.

3.2 All Schedule C Notices issued by the Director for the Municipal Sewage Collection System shall form part of this Approval.

3.3 The Owner and a Prescribed Person shall ensure that the documentation required through conditions in this Approval and the documentation required in the Design Criteria are prepared for any Alteration of the Authorized System.

3.4 The Owner shall notify the Director within thirty (30) calendar days of the placing into service or Completion of any Alteration of the Authorized System which had been authorized:

3.4.1 Under Schedule D to this Approval where the Alteration results in a change to Sewage Works or Equipment specifically described in Schedule B of this Approval;

3.4.2 Through a Schedule C Notice respecting Sewage Works other than Sewers or forcemains; or

3.4.3 Through another approval that was issued under the EPA prior to the issue date of this Approval.

3.5 The notification requirements set out in condition 3.4 do not apply to any Alteration in respect of the Authorized System which:

3.5.1 Is exempt under section 53(6) of the OWRA or by O. Reg. 525/98;

3.5.2 Constitutes maintenance or repair of the Authorized System; or

3.5.3 Is a Sewer or forcemain authorized by condition 4.1 of Schedule D of this Approval.

3.6 The Owner shall notify the Director within ninety (90) calendar days of:

3.6.1 The discovery of existing Sewage Works not described or depicted in Schedule B, or

3.6.2 Additional or revised information becoming available for any Sewage Works or Equipment described in Schedule B of this Approval.

3.7 The notifications required in condition 3.4 and 3.6 shall be submitted to the Director using the Director Notification Form.

3.8 The Owner shall ensure that an ESC plan is prepared, and temporary ESC measures are installed in advance of and maintained during any construction activity on the Authorized System, subject to the following conditions:

3.8.1 Inspections of ESC measures are to be conducted at a frequency specified per the ESC plan, for dry weather periods (active and inactive construction phases), after Significant Storm Events and Significant Snowmelt Events, and after any extreme weather events.

3.8.2 Any deficiencies shall be addressed, and any required maintenance actions(s) shall be undertaken as soon as practicable once they have been identified.

3.8.3 Inspections and maintenance of the temporary ESC measures shall continue until they are no longer required.

3.8.4 The ESC plan, ESC measures and its installation, inspections and maintenance shall have regard to at least one of the following:

a) CSA W202 Erosion and Sediment Control Inspection and Monitoring Standard, as amended from time to time;

b) Erosion and Sediment Control Guideline for Urban Construction (2019), as amended from time to time, prepared by the Toronto Region Conservation Authority; or

c) CSA W208 Erosion and Sediment Control Installation and Maintenance, as amended from time to time.

3.9 The Owner shall ensure that records of inspections required by this Approval during any construction activity, including those required under condition 3.8:

3.9.1 Include the name of the inspector, date of inspection, visual observations, and the remedial measures, if any, undertaken to maintain the temporary ESC measures.

3.9.2 Be retained with records relating to the Alteration that the construction relates to, such as the form required in conditions 4.3.1, 5.4.1, 6.9.1, or 7.6.1 of Schedule D, or the Schedule C Notice.

3.9.3 Be retrievable and made available to the Ministry upon request.

3.10 The document(s) or file(s) referenced in Table B1 of Schedule B of this Approval shall:

3.10.1 Be retained by the Owner;

3.10.2 Include at a minimum:

a) Identification of the type of Sewers in the Municipal Sewage Collection System (e.g., Separate Sewer; Combined Sewer; Partially Separated Sewer; Nominally Separate Sewer) including:

i Location of Sewers relative to street names or easements;

ii Sewer and/or forcemain diameters;

iii Identification of pumping stations and storage structures, including asset IDs;

iv Identification of SSO and/or CSO locations, including asset IDs;

v Identification of small-bore systems, if any; and

vi Identification of any source protection Vulnerable Areas.

3.10.3 Be updated to include:

a) Alterations authorized under Schedule D of this Approval or through a Schedule C Notice within twelve (12) months of the Alteration being placed into service.

b) Updates to information contained in the document(s) or files(s) not associated with an Alteration within twelve (12) months of becoming aware of the updated information.

3.11 An Alteration is not authorized under Schedule D of this ECA for projects that impact Indigenous treaty rights or asserted rights where:

3.11.1 The project is on Crown land or would alter access to Crown land;

3.11.2 The project is in an open or forested area where hunting, trapping or plant gathering occur;

3.11.3 The project involves the clearing of forested land unless the clearing has been authorized by relevant municipal, provincial, or federal authorities, where applicable;

3.11.4 The project alters access to a water body;

3.11.5 The proponent is aware of any concerns from Indigenous communities about the proposed project and these concerns have not been resolved; or

3.11.6 Conditions respecting Indigenous consultation in relation to the project were placed in another permit or approval and have not been met.

3.12 No less than 60 days prior to construction associated with an Alteration the Director may notify the Owner in writing that a project is not authorized through Schedule D of this ECA where:

3.12.1 Concerns regarding treaty rights or asserted rights have been raised by one or more Indigenous communities that may be impacted by the Alteration; or

3.12.2 The Director believes that it is in the public interest due to site specific, system specific, or project specific considerations.

3.13 Where an Alteration is not authorized under condition 3.11 or 3.12 above:

3.13.1 An application respecting the Alteration shall be submitted to the Ministry; and,

3.13.2 The Alteration shall not proceed unless:

a) Approval for the Alteration is granted by the Ministry (i.e., a Schedule C Notice); or,

b) The Director provides written notice that the Alteration may proceed in accordance with conditions in Schedule D of this ECA.

## 4.0 Authorizations of Future Alterations for Separate Sewers, Nominally Separate Sewers and Forcemains - Additions, Modifications, Replacements and Extensions

4.1 The Owner or a Prescribed Person may alter the Authorized System by adding, modifying, replacing, or extending a Separate Sewer, Nominally Separate Sewer or forcemain within the Authorized System subject to the following conditions and condition 4.2 below:

4.1.1 The design of the addition, modification, replacement, or extension:

a) Has been prepared by a Licensed Engineering Practitioner;

b) Has been designed only to collect and transmit Sewage and has not been designed to treat Sewage;

c) Satisfies the Design Criteria or any municipal criteria that have been established that exceed the minimum requirements set out in the Design Criteria;

d) Is consistent with or otherwise addresses the design objectives contained within the Design Guidelines for Sewage Works; and

e) Includes design considerations to protect sources of drinking water, including those set out in the Standard Operating Policy for Sewage Works, and any applicable local Source Protection Plan policies.

4.1.2 The addition, modification, replacement, or extension shall be designed so that it will:

a) Not cause overflows or backups nor increase surcharging at any maintenance holes or privately owned infrastructure (e.g., service connections to basements) connected to the Authorized System or any Municipal Sewage Collection System connected to it;

b) Provide smooth flow transition to existing gravity Sewers; and

c) Not increase the generation of sulfides and other odourous compounds in the Municipal Sewage Collection System.

4.1.3 The maximum discharge/generation of Sewage by users who will be served by the addition, modification, replacement, or extension will not result in:

a) An exceedance of the Authorized System hydraulic capacity, STP Uncommitted Reserve Hydraulic Capacity, or the downstream Pumping Station Capacity as specified in this Approval;

b) Adverse Effects;

c) Any increase in Collection System Overflows that is not offset by measures; or

d) Any increase in the frequency or volume of STP Bypasses or STP Overflows that is not offset by measures.

4.1.4 The addition, modification, replacement, or extension is wholly located within the municipal boundary over which the Owner has jurisdiction or there is a written agreement in place with the adjacent municipality respecting the Alteration and resulting Sewage Works.

4.1.5 The Owner consents in writing to the addition, modification, replacement, or extension.

4.1.6 A Licensed Engineering Practitioner has verified in writing that the addition, modification, replacement, or extension meets the requirements of conditions 4.1.1 a) to d).

4.1.7 The Owner has verified in writing that the addition, modification, replacement, or extension has complied with inspection and testing requirements in the Design Criteria.

4.1.8 The Owner has verified in writing that the addition, modification, replacement, or extension meets the requirements of conditions 4.1.1 e) and 4.1.2 to 4.1.6.

4.2 The Owner or a Prescribed Person is not authorized to undertake an Alteration described above in condition 4.1 where the Alteration relates to the addition, modification, replacement or extension of a Separate Sewer, Nominally Separate Sewer, or forcemain that:

4.2.1 Passes under or through a body of surface water unless trenchless construction methods are used, or the local Conservation Authority has authorized an alternative construction method.

4.2.2 Has a nominal diameter greater than 750 mm for a Separate Sewer or Nominally Separate Sewer.

4.2.3 Has a nominal diameter greater than 350 mm for a forcemain.

4.2.4 Is a Combined Sewer or Partially Separated Sewer.

4.2.5 Connects to another Municipal Sewage Collection System, unless:

a) Prior to construction, the Owner of the Authorized System obtains written consent from the Owner or Owner’s delegate of the Municipal Sewage Collection System being connected to; and

b) The Owner of the Authorized System retains a copy of the written consent from the Owner or Owner’s delegate of the

Municipal Sewage Collection System being connected to as part of the record that is recorded and retained under condition 4.3.

4.2.6 Creates a new discharge point to the Natural Environment.

4.2.7 Is part of an Undertaking in respect of which:

a) A request under s.16(6) of the EAA has been made, namely a request that the Minister make an order under s.16;

b) The Minister has made an order under s.16; or

c) The Director under that EAA has given notice under s.16.1 (2) that the Minister is considering making an order under s.16.

4.3 The consents and verifications required in conditions 4.1 and 4.2, if applicable, shall be:

4.3.1 Recorded on Form SS1 prior to the Separate Sewer, Nominally Separate Sewer or forcemain addition, modification, replacement, or extension being placed into service; and

4.3.2 Retained for a period of at least ten (10) years by the Owner.

4.4 For greater certainty, the verification requirements set out in condition 4.3 do not apply to any Alteration in respect of the Authorized System which:

4.4.1 Is exempt under section 53(6) of the OWRA or by O. Reg. 525/98; or

4.4.2 Constitutes maintenance or repair of the Authorized System.

## 5.0 Authorizations of Future Alterations for Combined Sewers, Partially Separated Sewers and Combined Sewage Storage Tanks and Storage Structures

5.1 Subject to conditions 5.2 and 5.3, the Owner or a Prescribed Person may alter the Combined Sewers, Partially Separated Sewers and combined Sewage storage tanks and storage structures in the Authorized System by:

5.1.1 Modifying or replacing Combined Sewers, Partially Separated Sewers, overflow Regulators and/or outfalls if the purpose of the project is to restore the Sewage Works to good condition.

5.1.2 Replacing Combined Sewers with Separate Sewers for Stormwater and sanitary Sewage.

5.1.3 Modifying or replacing Combined Sewers, Partially Separated Sewers, overflow regulators, outfalls, or combined Sewage storage tanks, provided that:

a) The Alteration is designed in such a manner that will contribute to the ultimate attainment of the capture and treatment for an Average Year of all the Dry Weather Flow plus a minimum of 90% of the volume resulting from Wet Weather Flow that is above Dry Weather Flow;

b) The volume control criterion described in 5.1.3 a) is applied:

i For a consecutive seven (7) month period commencing within fifteen (15) calendar days of April 1; and

ii To the flows collected by the Authorized System immediately above each Collection System Overflow location unless it can be shown through modelling that the criterion is being achieved on a system-wide basis.

c) The Alteration is designed in a manner that will not increase CSO volumes above existing levels at each outfall except where the increase is due to the elimination of upstream CSO outfalls as part of the Alteration; and

d) During the remainder of the year following the seven (7) month period described in condition 5.1.3 b) above, at least the same storage and treatment capacity are maintained for treating Wet Weather Flow.

5.1.4 Adding oversized pipes provided they are designed to alleviate local / neighbourhood basement flooding and the Alteration satisfies condition 5.1.3 a), b), c), and d).

5.2 Any Alteration to the Authorized System authorized under condition 5.1 is subject to the following conditions:

5.2.1 The design of the Alteration shall:

a) Be prepared by a Licensed Engineering Practitioner;

b) Be designed only to collect and transmit Sewage and shall not be designed to treat Sewage;

c) Satisfy the Design Criteria or any municipal criteria that have been established that exceed the minimum requirements set out in the Design Criteria;

d) Be consistent with or otherwise address the design objectives contained within the Design Guidelines for Sewage Works; and

e) Include design considerations to protect sources of drinking water, including those set out in the Standard Operating Policy for Sewage Works and any applicable local Source Protection Plan policies.

5.2.2 The design of the Alteration shall be:

a) Undertaken in accordance with a Pollution Prevention and Control Plan; or

b) If no Pollution Prevention and Control Plan is available, undertaken in accordance with an interim detailed plan for the local sewershed that:

i Describes the location, frequency, and volume of the CSOs, as well as the concentrations and mass pollutant loadings resulting from CSOs from the study area.

ii Includes the following minimum information:

1. Location and physical description of CSO outfalls in the Authorized System, Collection System Overflows at pumping stations in Emergency Situations, STP Bypass and STP overflows locations;
2. Location and identification of receiving water bodies, including sensitive receivers, for all Combined Sewer outfalls;
3. Authorized System flow and STP treatment component capacities, present and future expected peak flow rates during dry weather and wet weather;
4. Capacity of all regulators; and
5. Location of cross connections between Sewage and Stormwater infrastructure.

iii Is intended to reduce the overall CSO volume, frequency, duration, or by-pass of treatment in the Authorized and/or municipal STP; and

iv If there is a temporary Storm Sewer connection to a combined system as part of a Combined Sewer separation project, the construction plan includes a timeline to disconnect the Storm Sewer to a separated storm outlet.

5.2.3 The Alteration shall not result in:

a) An exceedance of hydraulic capacity of the Authorized System, STP Uncommitted Reserve Hydraulic Capacity, or the Pumping Station Capacity as specified in this Approval;

b) Adverse Effects;

c) Any increase in Collection System Overflows that is not offset by measures elsewhere in the Authorized System; or

d) Any increase in the frequency and/or volume of STP Bypasses or STP Overflows that is not offset by measures.

5.2.4 Where replacement of pipes to achieve Combined Sewer separation has been authorized under conditions 5.1.2 or 5.1.3, the following conditions apply:

a) Stormwater quantity, quality and water balance control shall be provided such that Combined Sewer separation shall not result in an overall increase in pollutants discharged to the Natural Environment;

b) Any new Storm Sewers that result from the Combined Sewer separation can be constructed but not operated until the proposed Stormwater Management Facilities designed to satisfy condition 5.2.4 a) are in operation; and

c) Where any temporary structures have been installed to facilitate Combined Sewer separation, the Owner shall ensure that immediately upon Completion of the Combined Sewer separation, the temporary structure connection shall be disconnected and decommissioned.

5.2.5 The Alteration shall:

a) Not cause overflows or backups nor increase surcharging at any maintenance holes or privately owned infrastructure (e.g., service connections to basements) connected to the Authorized System or any Municipal Sewage Collection System connected to it;

b) Provide smooth flow transition to existing gravity sewers; and

c) Not increase the generation of sulfides and other odourous compounds in the Authorized System.

5.2.6 The Alteration is wholly located within the municipal boundary over which the Owner has jurisdiction or there is a written agreement in place with the adjacent municipality respecting the Alteration and resulting Sewage Works.

5.2.7 The Owner consents in writing to the Alteration authorized under condition 5.1.

5.2.8 A Licensed Engineering Practitioner has verified in writing that the Alteration authorized under condition 5.1 meets the design requirements of conditions 5.2.1 a) to d) and to 5.2.2.

5.2.9 The Owner has verified in writing that the Alteration authorized under condition 5.1 has complied with inspection and testing requirements in the Design Criteria.

5.2.10 The Owner has verified in writing that the Alteration authorized under condition 5.1 meets the requirements of conditions 5.2.1 e) and 5.2.3 to 5.2.8.

5.3 The authorization in condition 5.1 does not apply:

5.3.1 To the modification or replacement of a Combined Sewer or Partially Separated Sewer that has a nominal diameter greater than 750 mm.

5.3.2 To the modification or replacement of a Combined Sewer or Partially Separated Sewer that connects to another Municipal Sewage Collection System, unless:

a) Prior to construction, the Owner of the Authorized System seeking the connection obtains written consent from the Owner or Owner's delegate of the Municipal Sewage Collection System being connected to; and

b) The Owner of the Authorized System retains a copy of the written consent from the Owner or Owner's delegate of the Municipal Sewage Collection System being connected to as part of the record that is recorded and retained under condition 5.4.

5.3.3 Where the Alteration would create a new discharge point to the Natural Environment.

5.3.4 Where the Alteration would result in the addition of a new combined Sewage storage tank in the Authorized System.

5.4 The consents and verifications required in conditions 5.2.7 to 5.2.10, and 5.3.2 if applicable, shall be:

5.4.1 Recorded on Form CS1, prior to the Combined Sewer or Partially Separated Sewer modification or replacement being placed into service; and

5.4.2 Retained for a period of at least ten (10) years by the Owner.

5.5 For greater certainty, the verification requirements set out in condition 5.4 do not apply to any Alteration in respect of the Authorized System which:

5.5.1 Is exempt under section 53(6) of the OWRA or by O. Reg. 525/98; or,

5.5.2 Constitutes maintenance or repair of the Authorized System.

## 6.0 Authorizations of Future Alterations to Components of the Municipal Sewage Collection System

6.1 The Owner or a Prescribed Person may make the following Alterations to the Authorized System subject to conditions 6.4 through 6.7:

6.1.1 Adding, modifying, or replacing the following components of Sewage pumping stations, Separate Sewers, or Nominally Separate Sewers:

a) In-line and/or off-line storage to manage peak flow / inflow and infiltration that does not require pumping;

b) Off-line storage to manage peak flow / inflow and infiltration that only requires electricity to empty the structure;

c) Any associated Equipment for cleaning; and

d) All Appurtenances associated with in-line or off-line storage facilities, including odour, and corrosion control.

6.1.2 Modifying existing Sewage pumping stations and odour control units / Facilities, including adding, replacing, or modifying the following components:

a) Pumps, including replacement parts, in an existing pumping system;

b) Grinders and screens;

c) Aeration and/or mixing Equipment;

d) Chemicals and associated Equipment and tanks (including secondary containment);

e) Odour and corrosion control structures;

f) Instrumentation and controls;

g) Discharge and process piping;

h) Valves;

i) Wet-wells; and

j) Fat, oil, and grease separators (FOGs).

6.1.3 Adding new Sewage pumping stations, where they:

a) Are designed to transmit a Peak Hourly Flow of no greater than 30 L/s;

b) Include emergency stand-by power, Spill containment, and emergency alarms (SCADA, if applicable);

c) Include emergency storage designed to provide at minimum two (2) hours of response time at peak design flow;

d) Include odour and corrosion control, as applicable;

e) Would serve a new residential development (or new phased residential development), which may include existing residential development that has no Combined or Partially Separated Sewers;

f) Are designed to only collect sanitary Sewage and not Stormwater; and

g) Do not include an emergency sanitary overflow or piping to a municipal Stormwater management system or a natural receiver to prevent the discharge to the Natural Environment.

6.1.4 Adding, modifying, or replacing Equipment associated with Real-time Control Systems, where:

a) The Equipment is designed and implemented as part of the Owner's CSO reduction strategy or to optimize use of Sewage Works comprising the Authorized System;

b) The Real-Time Control System is designed and integrated with fail-safe procedures such that they are automatically activated when the requirements of the current mode of operation cannot be met;

c) Risk management procedures are in place or will be in place prior to use of the Real-time Control System; and

d) Station alarms to control center are in place or will be in place prior to use of the Real-time Control System.

6.1.5 Adding, modifying, replacing, or removing chemical storage tanks (including fuel storage tanks) with Spill containment and associated Equipment.

6.1.6 Adding, modifying, replacing, or removing Motor Control Centre (MCC) and/or associated electrical.

6.2 The Owner or a Prescribed Person may alter the Authorized System by adding, modifying, replacing, or removing the following components subject to conditions 6.4 through 6.7:

6.2.1 Valves and their associated controls installed for maintenance purposes;

6.2.2 Instrumentation for monitoring and controls, including SCADA systems, and hardware associated with these monitoring devices;

6.2.3 Spill containment works for chemicals used within the Authorized System;

6.2.4 Chemical metering pumps and chemical handling pumps;

6.2.5 Measuring and monitoring devices that are not required by regulation, by a condition in this Approval, or by a condition otherwise imposed by the Ministry;

6.2.6 Process piping within a Sewage pumping station, storage tank, or other structures; and

6.2.7 Valve chambers or maintenance holes.

6.3 The Owner or a Prescribed Person may alter the Authorized System by adding, modifying, or replacing the following components subject to conditions 6.4 through 6.7:

6.3.1 Measuring and monitoring devices that are required by regulation, by a condition in this Approval, or by a condition otherwise imposed by the Ministry.

6.4 The design of the Alteration shall:

6.4.1 Be prepared by a Licensed Engineering Practitioner, where the Alteration falls within the practice of professional engineering as defined in the *Professional Engineers Act*, R.S.O. 1990;

6.4.2 Be consistent with or otherwise address the design objectives contained within the Design Guidelines for Sewage Works; and

6.4.3 Include design considerations to protect sources of drinking water, such as those included in the Standard Operating Policy for Sewage Works, and any applicable local Source Protection Plan policies.

6.5 The Alteration shall:

6.5.1 Not cause overflows or backups nor increase surcharging at any maintenance holes or privately owned infrastructure (e.g., service connections to basements) connected to the Authorized System or any Municipal Sewage Collection System connected to it;

6.5.2 Provide smooth flow transition to existing gravity Sewers;

6.5.3 Not increase the generation of sulfides and other odourous compounds in the Authorized System; and

6.5.4 Be wholly located within the municipal boundary over which the Owner has jurisdiction or there is a written agreement in place with the adjacent municipality respecting the Alteration and resulting Sewage Works.

6.6 Any Alteration of the Authorized System made under conditions 6.1, 6.2, or 6.3 shall not result in:

6.6.1 Exceedance of hydraulic capacity (including Uncommitted Reserve Hydraulic Capacity, as applicable) of the downstream:

a) Municipal Sewage Collection System; or

b) Receiving STPs.

6.6.2 Exceedance of any downstream Pumping Station Capacity as specified in Schedule B of this Approval.

6.6.3 An increase in the capacity of an existing Pumping Station Capacity of greater than 30%.

6.6.4 Any increase in Collection System Overflows that is not offset by measures taken elsewhere in the Authorized System.

6.6.5 Any increase in the frequency and/or volume of STP Bypasses or STP Overflows that is not offset by measures.

6.6.6 Deterioration of the normal operation of municipal STPs and/or the Authorized System.

6.6.7 A negative impact on the ability to undertake monitoring necessary for the operation of the Authorized System.

6.6.8 Adverse Effects.

6.7 The Alteration is subject to the following conditions:

6.7.1 The Owner consents in writing to the Alteration.

6.7.2 The person responsible for the design has verified in writing that the Alteration meets the requirements of conditions 6.4.1 and 6.4.2, as applicable.

6.7.3 The Owner has verified in writing that the Alteration meets the requirements of conditions 6.4.3, 6.7.1, and 6.7.2.

6.8 The Owner shall verify in writing that any Alteration of the Authorized System in accordance with conditions 6.1 or 6.2 has met the requirements of the conditions listed in conditions 6.5 and 6.6.

6.9 The consents, verifications and documentation required in conditions 6.7 and 6.8 shall be:

6.9.1 Recorded on Form SS2 prior to undertaking the Alteration; and

6.9.2 Retained for a period of at least ten (10) years by the Owner.

6.10 For greater certainty, the verification requirements set out in condition 6.9 do not apply to any Alteration in respect of the Authorized System which:

6.10.1 Is exempt under section 53(6) of the OWRA or by O. Reg. 525/98; or

6.10.2 Constitutes maintenance or repair of the Authorized System, including changes to software for an existing SCADA system resulting from Alterations authorized in condition 6.2.

6.11 The Owner shall update, within twelve (12) months of the Alteration of the Sewage Works being placed into service, any drawings maintained for the Municipal Sewage Collection System to reflect the Alterations of the Sewage Works, where applicable.

## 7.0 Authorizations of Future Alterations to Equipment with Emissions to the Air

7.1 The Owner and a Prescribed Person may alter the Authorized System by adding, modifying, or replacing the following Equipment in the Municipal Sewage Collection System:

7.1.1 Venting for odour control using solid scavenging or carbon adsorption units;

7.1.2 Venting for odour control by replacing existing biolfiltration or wet air scrubbing systems, including any components, with Equipment of the same or better performance characteristics; and

7.1.3 Emergency generators that fire No. 2 fuel oil (diesel fuel) with a sulphur content of 0.5 per cent or less measured by weight, natural gas, propane, gasoline, or biofuel, and that are used for emergency duty only with periodic testing.

7.2 Any Alteration of the Municipal Sewage Collection System made under condition 7.1 that may discharge or alter the rate or manner of a discharge of a Compound of Concern to the atmosphere is subject to the following conditions:

7.2.1 The Owner shall, at all times, take all reasonable measures to minimize odorous emissions and odour impacts from all potential sources at the Facility.

7.2.2 The Owner shall ensure that the noise emissions from the Facility comply with the limits set out in Publication NPC-300.

7.2.3 The Owner shall ensure that the vibration emissions from the Facility comply with the limits set out in Publication NPC-207.

7.3 The Owner shall not add, modify, or replace Equipment in the Municipal Sewage Collection System as set out in condition 7.1 unless the Equipment performs an activity that is directly related to municipal Sewage collection and transmission.

7.4 The emergency generators identified in condition 7.1.3 shall not be used for non-emergency purposes (excluding generator testing) including the generation of electricity for sale or for peak shaving purposes.

7.5 The Owner shall verify in writing that any addition, modification, or replacement of Equipment in accordance with condition 7.1 has met the requirements of the conditions listed in conditions 7.2, 7.3, and 7.4.

7.6 The verifications and documentation required in condition 7.5 shall be:

7.6.1 Recorded on Form A1 prior to the additional, modified or replacement Equipment being placed into service; and

7.6.2 Retained for a period of at least ten (10) years by the Owner.

7.7 For greater certainty, the verification and documentation requirements set out in condition 7.5 and 7.6 do not apply to any addition, modification, or replacement in respect of the Authorized System which:

7.7.1 Is exempt from the requirements of the EPA, or for Equipment that is exempt from s.9 of the EPA under O. Reg. 524/98; or

7.7.2 Constitutes maintenance or repair of the Authorized System.

## 8.0 Previously Approved Sewage Works

8.1 If approval for an Alteration to the Authorized System was issued under the EPA and is revoked by this Approval, the Owner may make the Alteration in accordance with:

8.1.1 The terms of this Approval; or

8.1.2 The terms and conditions of the revoked approval that were applicable as of the date this approval was issued, provided that the Alteration is commenced within five (5) years of the date that the revoked approval was issued.

## 9.0 Transition

9.1 An Alteration of the Authorized System is exempt from the requirements in clause (c) of condition 4.1.1 and clause (c) of condition 5.2.1 where:

9.1.1 Effort to undertake the Alteration, such as tendering or commencement of construction of the Sewage Works associated with the Alteration, begins on or before September 21, 2023.

9.1.2 The design of the Alteration conforms to the Design Guidelines for Sewage Works;

9.1.3 The design of the Alteration was completed on or before the issue date of this Approval or a Class Environmental Assessment was

completed for the Alteration and changes to the design result in significant cost increase or significant project delays; and

9.1.4 The Alteration would be otherwise authorized under this Approval.

## Schedule E: Operating Conditions

| | |
|---|---|
| System Owner | **Guelph, The Corporation of the City of** |
| ECA Number | **017-W601** |
| System Name | **City of Guelph Sewage Collection System** |
| ECA Issue Date | **August 25th, 2022** |

### 1.0 General Operations

1.1 The Owner shall ensure that, at all times, the Sewage Works comprising the Authorized System and the related Equipment and Appurtenances used to achieve compliance with this Approval are properly operated and maintained.

1.2 Prescribed Persons and Operating Authorities shall ensure that, at all times, the Sewage Works under their care and control and the related Equipment and Appurtenances used to achieve compliance with this Approval are properly operated and maintained.

1.3 In conditions 1.1 and 1.2 “properly operated and maintained” includes effective performance, adequate funding, adequate operator staffing and training, including training in applicable procedures and other requirements of this Approval and the EPA, OWRA, CWA, and regulations, adequate laboratory services, process controls and alarms and the use of process chemicals and other substances used in the Authorized System.

### 2.0 Duties of Owners and Operating Authorities

2.1 The Owner, Prescribed Persons and any Operating Authority shall ensure the following:

2.1.1 At all times that the Sewage Works within the Authorized System are in service the Sewage Works are:

a) Operated in accordance with the requirements under the EPA and OWRA, and

b) Maintained in a state of good repair.

2.1.2 The Authorized System is operated by persons having the training or expertise for their operating functions that is required by O. Reg. 129/04 (Licensing of Sewage Works Operators) under the OWRA and this Approval.

2.1.3 All sampling, testing, monitoring, and reporting requirements under the EPA and this Approval that relate to the Authorized System are complied with.

2.1.4 Any person who is operating the Sewage Works within the Authorized System is supervised by an operator-in-charge as described in O. Reg. 129/04 under the OWRA.

2.2 For clarity, the requirements outlined in the above conditions 2.1.1 through 2.1.4 for Prescribed Persons and any Operating Authority only apply to Sewage Works within the Authorized System where they are responsible for the operation.

2.3 The Owner, Prescribed Persons and Operating Authority shall take all reasonable steps to minimize and ameliorate any Adverse Effect on the Natural Environment or impairment of the quality of water of any waters resulting from the operation of the Authorized System, including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

## 3.0 Operations and Maintenance

3.1 Inspection

3.1.1 The Owner shall ensure that all Sewage Works within the Authorized System are inspected at the frequency and in accordance with procedures set out in their O&M Manual.

3.1.2 The Owner shall ensure that:

a) Any pumping stations, combined Sewage storage tanks, and any Collection System Overflow within the Authorized System as of the date of issuance of this Approval are inspected at least once per calendar year starting the year after the O&M Manual is required to be prepared and implemented as per condition 3.2.1 in Schedule E of this Approval, and more frequently if required by the O&M Manual; and

b) Any pumping stations, combined Sewage storage tanks, and any Collection System Overflow established or replaced within the Authorized System after the date of issuance of this Approval are inspected within one year of being placed into service and thereafter once per calendar year and more frequently if required by the O&M Manual.

3.1.3 The inspection of the combined Sewage storage tanks required in condition 3.1.2 shall include physical inspection at the Point of

Entry, including looking for signs of unplanned discharges from Wet Weather Flow and Dry Weather Flow.

3.1.4 The Owner shall clean and maintain Sewage Works within the Authorized System to ensure the Sewage Works perform as designed.

3.1.5 The Owner shall maintain records of the results of the inspections required in condition 3.1.1, 3.1.2, and 3.1.3, monitoring (if applicable) and any cleaning and maintenance operations undertaken, and shall make available the records for inspection by the Ministry upon request. The records shall include the following:

a) Asset ID and name of the Sewage Works;

b) Date and results of each inspection, maintenance, or cleaning; and

c) Name of person who conducted the inspection, maintenance, or the name of the inspecting official, where applicable.

3.2 Operations & Maintenance (O&M) Manual

3.2.1 The Owner shall prepare and implement an operations and maintenance manual for Sewage Works within the Authorized System on or before March 21, 2024, that includes or references, but is not necessarily limited to, the following information:

a) Procedures for the routine operation of the Sewage Works;

b) Inspection programs, including the frequency of inspection, and the methods or tests employed to detect when maintenance is necessary;

c) Maintenance and repair programs, including:

i The frequency of maintenance and repair for the Sewage Works.

ii Clean out requirements for any storage or overflow tanks, if applicable.

d) Operational and maintenance requirements to protect sources of drinking water, such as those included in the Standard Operating Policy for Sewage Works, and any applicable local Source Protection Plan policies;

e) Procedures for routine physical inspection and checks of controlling systems (e.g., SCADA) to ensure the mechanical integrity of Equipment and its accuracy on the controlling system.

f) Procedures for preventing odours and odour impacts;

g) Procedures for calibration of monitoring Equipment (e.g., flow, level, pressure);

h) Emergency Response, Spill Reporting and Contingency Plans and Procedures for dealing with Equipment breakdowns, potential Spills and any other abnormal situations, including notification to the SAC, the Medical Officer of Health, and the District Manager, as applicable;

i) Procedures for receiving, responding and recording public complaints, including recording any follow-up actions taken; and

j) As-built drawings or record drawings of the Sewage Works for Sewage Works constructed after 2010 and where available, for sewage works constructed before 2010.

3.2.2 The Owner shall review and update the O&M Manual and ensure that operating staff have access, as per O. Reg 129/04 (Licensing of Sewage Works Operators) under the OWRA. Upon request, the Owner shall make the O&M Manual available to Ministry staff.

3.2.3 The Owner shall revise the O&M Manual to include procedures necessary for the operation and maintenance of any Sewage Works within the Authorized System that are established, altered, extended, replaced, or enlarged after the date of issuance of this approval prior to placing into service those Sewage Works.

3.2.4 For greater certainty, the O&M Manual may be a single document or a collection of documents that, when considered together, apply to all parts of the Authorized System.

3.3 Collection System Overflows

3.3.1 Any CSO at a point listed in Table B4 of Schedule B is considered a Class 1 approved discharge type Spill under O.Reg.675/98:

a) Where the CSO is as a result of wet weather events when the designed capacity of the Authorized System is exceeded;

b) Where the CSO is a direct and unavoidable result of a planned repair and/or maintenance procedure, the Owner has notified the Local Ministry Office fifteen at least (15) calendar days prior to the CSO and the Local Ministry Office has provided written consent of the CSO; or

c) Where the CSO is planned for research or training purposes, the Owner has notified the Local Ministry Office fifteen at least (15) calendar days prior to the CSO and the Local Ministry Office has provided written consent of the CSO.

3.3.2 Any SSO at a point listed in Table B5 of Schedule B is considered a Class 1 approved discharge type Spill under O.Reg. 675/98:

a) Where the SSO is a direct and unavoidable result of a planned repair or maintenance procedure and the Owner has notified the Local Ministry Office at least fifteen (15) calendar days prior to the SSO and the Director for the purposes of s.4 of O. Reg. 675/98 under the EPA has provided written consent of the SSO; or

b) Where the SSO is planned for research or training purposes, the Owner has notified the Local Ministry Office at least fifteen (15) calendar days prior to the SSO and the Director for the purposes of s.4 of O. Reg. 675/98 under the EPA has provided written consent of the SSO.

3.3.3 On or before May 21, 2025, the Owner shall establish signage to notify the public, at the nearest publicly accessible point(s) downstream of any CSO outfall location identified in Schedule B, Table B4, and any SSO when the overflow is piped to a specified outlet point. If the nearest publicly accessible point is more than 100m away, then signage shall be established at the CSO or SSO outfall location. The signage shall include the following minimum information:

a) Type of Collection System Overflow;

b) Identification of potential hazards and limitations of water use, as applicable;

c) ECA number and/or asset ID; and

d) The Owner’s contact information.

3.4 Monitoring

3.4.1 For a Collection System Overflow that occurs at a designated location, the following conditions apply:

a) For CSO storage tanks/facilities listed in Table B3, the Owner shall:

i On or before November 21, 2022 or within six (6) months of the date of the publication of the Ministry's monitoring guidance, whichever is later, collect a composite sample of the combined Sewage from the CSO tank whenever the tank(s) is(are) in operation. If there is more than one tank, the tank nearest to the discharge point shall be sampled. The composite sample shall consist, at a minimum, of one sample at the beginning of the Event, and one sample at approximately every 8-hours until the end of the Event. The composite sample shall be analyzed, at a minimum, for Biochemical Oxygen Demand (BOD) (or Chemical Oxygen Demand (COD) if agreed upon by the District Manager), total suspended solids, total phosphorus and total Kjeldahl nitrogen. If the CSO continues for more than one day, multiple composite samples are allowed.

ii If 3.4.1 a) i) cannot be achieved, then surrogate sampling may be used to determine the contamination concentrations of the discharge CSO tank overflow, at a minimum, for BOD (or COD), total suspended solids, total phosphorus and total Kjeldahl nitrogen. The methodology in determining, applying, and analyzing surrogate sampling shall be proposed by the Owner and subject to the written approval of the District Manager.

b) For CSO regulator structures listed in Table B2, and for any CSO or SSO locations listed under Table B4 or Table B5, the Owner shall:

i On or before November 21, 2022, or within six (6) months of the date of publication of the Ministry's monitoring guidance, whichever is later, take at least one (1) grab sample, for BOD (or COD, if agreed upon by the District Manager), total suspended solids, total phosphorus, total Kjeldahl nitrogen, and E. Coli, or

ii On or before November 21, 2022 or within six (6) months of the date of publication of the Ministry's monitoring guidance, whichever is later, use surrogate sampling to determine the Contaminant concentrations of the

discharged Collection System Overflow, at a minimum, for BOD (or COD), total suspended solids, total phosphorus, total Kjeldahl nitrogen, and E. Coli. The methodology in determining, applying, and analyzing surrogate sampling shall be proposed by the Owner and subject to the written approval of the District Manager.

c) The Owner shall use the Event discharged volume and the concentrations as determined in condition 3.4.1 to calculate the loading to the Natural Environment for each parameter.

3.4.2 For any Spill of Sewage that does not meet 3.4.1 a) or b):

a) Where practicable, take at least one (1) grab sample, for BOD (or COD, if agreed upon by the District Manager), total suspended solids, total phosphorus, total Kjeldahl nitrogen, and E. Coli

b) The Owner shall use the discharged volume, where possible, and the concentrations as determined in condition 3.4.2 a) to calculate the loading to the Natural Environment for each parameter.

3.4.3 If COD sampling was completed, the equivalent BOD values are required to be included with the data reported to the Ministry.

3.4.4 The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following documents and all analysis shall be conducted by a laboratory accredited to the ISO/IEC:17025 standard or as directed by the District Manager:

a) Procedure F-10-1, “Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only)”, as amended from time to time.

b) The Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater Version 2.0" (January 2016), as amended from time to time.

c) The publication "Standard Methods for the Examination of Water and Wastewater", as amended from time to time.

## 4.0 Reporting

4.1 The Owner shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to Ministry staff.

4.2 Collection System Overflows

4.2.1 If the Collection System Overflow meets the criteria listed in condition 3.3.1 or 3.3.2:

a) The Owner shall report the Event as a Class 1 approved discharge type Spill as soon as practicable to the Ministry either by a verbal to SAC or in an electronic format if the Ministry makes a system available;

b) The Owner shall report the Event to the local Medical Officer of Health in a manner agreed upon with the local Medical Officer of Health;

c) The manner of notification to the Ministry shall be in two (2) stages and include, at a minimum, the following information:

i The Asset ID, infrastructure description as detailed in Table B5 in Schedule B, the outfall location, and the Point of Entry (as applicable), and the reason(s) for the Event.

ii First stage of reporting:

a. The date and time (start) of the Event.

iii Second stage of reporting (as soon as practicable and may be reported at same time as first stage):

a. The date, duration, and time (start and end) of the Event;

b. The estimated or measured volume of the Event, accurate to at least +/- 20% of the volume;

i. If the volume of the Event is not readily available at the time of the second stage of reporting, the estimated volume can be provided to the Ministry within seven (7) calendar days of the second stage of reporting;

c. If any, summary of complaints, observed adverse impacts, any additional sampling obtained, disinfection, and any corrective measures taken;

d) Upon request of the local office, the Owner shall within fifteen (15) calendar days of the occurrence of any Collection

System Overflow, the Owner shall submit a full written report of the occurrence to the District Manager describing the cause and discovery of the Collection System Overflow, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation, or an alternate report as agreed to in writing by the District Manager.

4.3 Spills

4.3.1 If the Collection System Overflow does not meet the criteria listed in condition 3.3.1 or 3.3.2, or is otherwise considered a Spill of Sewage:

a) The Owner shall report the Spill to SAC pursuant to O.Reg.675/98 and Part X of the EPA;

b) The Owner shall report the Event to the local Medical Officer of Health in a manner agreed upon with the local Medical Officer of Health;

c) In addition to the obligations under Part X of the Environmental Protection Act, the Owner shall, within fifteen (15) calendar days of the occurrence of any reportable Spill, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill or loss, actual/estimated volume of the Spill, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.

4.4 If the Owner is unable to determine the volume of a Collection System Overflow for the purpose of reporting, the Owner shall develop procedures that enable estimated or measured volumes to be included in the required reporting for any Collection System Overflow occurring on or after May 21, 2023.

4.5 The Owner shall follow the direction of the Ministry and the local Medical Officer of Health regarding any Collection System Overflows.

4.6 The Owner shall prepare an annual performance report for the Authorized System that:

4.6.1 Is submitted to the Director on or before March 31st of each year and covers the period from January 1st to December 31st of the preceding calendar year.

a) For clarity, the first report shall cover the period of January 1st, 2023 to December 31st, 2023 and be submitted to the Director on or before March 31st, 2024.

b) For the transitional period of January 1, 2022 to December 31, 2022, annual reporting requirements from previous ECAs pertaining to Spills only, where these occurred in the reporting period, and that have been revoked through issuance of this ECA shall apply.

i For the transitional period, condition 4.7.2 does not apply.

4.6.2 Is also submitted to the District Manager where a Collection System Overflow or Spill of Sewage has occurred in the reporting period.

4.6.3 If applicable, includes a summary of all required monitoring data along with an interpretation of the data and any conclusion drawn from the data evaluation about the need for future modifications to the Authorized System or system operations.

4.6.4 Includes a summary of any operating problems encountered and corrective actions taken.

4.6.5 Includes a summary of all calibration, maintenance, and repairs carried out on any major structure, Equipment, apparatus, mechanism, or thing forming part of the Municipal Sewage Collection System.

4.6.6 Includes a summary of any complaints related to the Sewage Works received during the reporting period and any steps taken to address the complaints.

4.6.7 Includes a summary of all Alterations to the Authorized System within the reporting period that are authorized by this Approval including a list of Alterations that pose a Significant Drinking Water Threat.

4.6.8 Includes a summary of all Collection System Overflow(s) and Spill(s) of Sewage, including:

a) Dates;

b) Volumes and durations;

c) If applicable, loadings for total suspended solids, BOD, total phosphorus, and total Kjeldahl nitrogen, and sampling results for E.coli;

d) Disinfection, if any; and

e) Any adverse impact(s) and any corrective actions, if applicable.

4.6.9 Includes a summary of efforts made to reduce Collection System Overflows, Spills, STP Overflows, and/or STP Bypasses, including the following items, as applicable:

a) A description of projects undertaken and completed in the Authorized System that result in overall overflow reduction or elimination including expenditures and proposed projects to eliminate overflows with estimated budget forecast for the year following that for which the report is submitted.

b) Details of the establishment and maintenance of a PPCP, including a summary of project progresses compared to the PPCP's timelines.

c) An assessment of the effectiveness of each action taken.

d) An assessment of the ability to meet Procedure F-5-1 or Procedure F-5-5 objectives (as applicable) and if able to meet the objectives, an overview of next steps and estimated timelines to meet the objectives.

e) Public reporting approach including proactive efforts.

4.7 The report described in condition 4.6 shall be:

4.7.1 Made available, on request and without charge, to members of the public who are served by the Authorized System; and

4.7.2 Made available, by June 1st of the same reporting year, to members of the public without charge by publishing the report on the Internet, if the Owner maintains a website on the Internet.

## 5.0 Record Keeping

5.1 The Owner shall retain for a minimum of ten (10) years from the date of their creation:

5.1.1 All records, reports and information required by this Approval and related to or resulting Alterations to the Authorized System, and

5.1.2 All records, report and information related to the operation, maintenance and monitoring activities required by this Approval.

5.2 The Owner shall update, within twelve (12) months of any Alteration to the Authorized System being placed into service, any drawings maintained for the Municipal Sewage Collection System to reflect the Alteration of the Sewage Works, where applicable.

## 6.0 Review of this Approval

6.1 No later than the date specified in Condition 1 of Schedule A of this Approval, the Owner shall submit to the Director an application to have the Approval reviewed. The application shall, at minimum:

6.1.1 Include an updated description of the Sewage Works within the Authorized System, including any Alterations to the Sewage Works that were made since the Approval was last issued; and

6.1.2 Be submitted in the manner specified by Director and include any other information requested by the Director.

## 7.0 Source Water Protection

7.1 The Owner shall ensure that any Alteration in the Authorized System is designed, constructed, and operated in such a way as to be protective of sources of drinking water in Vulnerable Areas as identified in the Source Protection Plan, if available.

7.2 The Owner shall prepare a “Significant Drinking Water Threat Assessment Report for Proposed Alterations” for the Authorized System on or before May 21, 2023 that includes, but is not necessarily limited to:

7.2.1 An outline of the circumstances under which the proposed Alterations could pose a Significant Drinking Water Threat based on the Director’s Technical Rules established under the CWA.

7.2.2 An outline of how the Owner assesses the proposed Alterations to identify drinking water threats under the CWA.

7.2.3 For any proposed Alteration a list of components, Equipment, or Sewage Works that are being altered and have been identified as a Significant Drinking Water Threat.

7.2.4 A summary of design considerations and other measures that have been put into place to mitigate risks resulting from construction or operation of the components, Equipment or Sewage Works identified in condition 7.2.3, such as those included in the Standard Operating Policy for Sewage Works.

7.3 The Owner shall make any necessary updates to the report required in condition 7.2 at least once every twelve (12) months.

7.4 Any components, Equipment or Sewage Works added to the report required in condition 7.2 shall be included in the report for the operational life of the Sewage Works.

7.5 Upon request, the Owner shall make a copy of the report required in condition 7.2 available to the Ministry or Source Protection Authority staff.

## 8.0 Additional Studies

### Assessment of Wet Weather Flows Compared to Dry Weather Flows

8.1 This condition and the following requirements apply where:

a) The Authorized System has no Combined Sewers or Partially Separated Sewers; and

b) There has been one or more of: an STP Overflow, STP Bypass, or Collection System Overflow within the ten (10) year period starting January 1, 2012 and ending December 31, 2021.

The following requirements do not apply if:

a) The Collection System Overflow is a result of emergency overflows at pumping stations during power outage or Equipment failure; and

b) There has been no STP Overflow or STP Bypass.

8.1.1 The Owner shall conduct an assessment of Wet Weather Flows compared to the Dry Weather Flows in the Authorized System and/or to the STP(s) described in Schedule A, as per the following conditions:

a) The assessment shall evaluate available data from the ten (10) year period starting January 1, 2012 and ending December 31, 2021.

b) The assessment shall be completed and submitted to the Director by November 21, 2023.

c) In the event that Wet Weather Flows in the ten (10) year period described above have created STP Bypasses or STP Overflows at the STP(s) specified in Schedule A or Collection System Overflows in an Average Year, then the study shall include:

i Actions and timelines to meeting the Procedure F-5-1 objectives;

ii Review of causes of STP Overflow, STP Bypass and/or Collection System Overflow Events, including inflow and infiltration, sewer use, and characteristics of rainfall events, as applicable;

iii Inspection of the Sewers and bypass structures; and

iv Identification of any near and/or long-term corrective actions with anticipated timelines.

**Assessment of Conformance to Procedure F-5-1 and F-5-5**

8.2 This condition and the following requirements apply where:

a) The Authorized System includes Combined Sewers or Partially Separated Sewers, and

b) The Authorized System experienced a Collection System Overflow, an STP Bypass, or STP Overflow within the ten (10) year period starting January 1, 2012 and ending December 31, 2021.

8.2.1 The Owner shall conduct an assessment to demonstrate conformance of the Authorized System to Procedure F-5-1 or Procedure F-5-5, as applicable, in accordance with the following conditions:

a) The assessment shall:

i Be prepared by a Licensed Engineering Practitioner and be submitted to the Director by November 21, 2023;

ii Be performed for each of the years 2012 through to 2021;

iii Include the number of Collection System Overflows as a result of storms that are not Significant Storm Events for each year;

iv Include the estimated length of Combined Sewers and Separate Sewers within the collection system;

v Include the date of the most recent PPCP;

vi Include the status of each action items specified in the PPCP, as applicable;

vii Include a summary of additional action items not specified in a PPCP which have been taken to prevent

Collection System Overflows in the ten (10) year period starting January 1, 2012 and ending December 31, 2021; and

viii Identify timelines for achieving conformance to Procedure F-5-1 or Procedure F-5-5 objectives, as applicable.

8.2.2 The Owner shall submit a new or updated PPCP to the Director, no later than May 21, 2027, if:

a) No PPCP exists for the Authorized System, or

b) The PPCP for the Authorized System is older than ten (10) years as of August 25th, 2022.

8.2.3 The PPCP shall include, at minimum:

a) Characterization of the Combined Sewer System (CSS) – Monitoring, modeling and other appropriate means shall be used to characterize the CSS and the response of the CSS to precipitation events. The characterization shall be based on the ten (10) year period starting January 1, 2012 and ending December 31, 2021 and include the determination of the location, frequency and volume of the CSOs, concentrations and mass pollutants resulting from CSOs, and identification and severity of suspected CSS deficiencies. Records shall be kept for CCS including the following:

i Location and physical description of CSO and SSO outfalls in the collection systems, emergency overflows at pumping stations, and bypass locations at STPs;

ii Location and identification of receiving water bodies, including sensitive receivers, for all Combined Sewer outfalls;

iii Combined Sewer system flow and STP treatment capacities, present and future (20-year timeframe) expected peak flow rates during dry weather and wet weather;

iv Capacity of all regulators;

v Location of cross connections between sanitary Sewage and Stormwater infrastructure; and

vi Location and identification of infrastructure in the CSS where monitoring Equipment is installed.

b) Operational procedures shall be developed including the following:

i Combined Sewer maintenance program; and

ii Regulator inspection and maintenance programs.

c) An examination of non-structural and structural CSO control alternatives that may include:

i Source control;

ii Inflow/Infiltration reduction;

iii Operation and maintenance improvements;

iv Control structure improvements;

v Collection system improvements;

vi Storage technologies;

vii Treatment technologies; and

viii Sewer separation.

d) An implementation plan with a schedule of all practical measures to eliminate dry weather overflows and minimize wet weather overflows, as well as an overflow percent reduction target.

i The implementation plan shall show how the minimum CSO prevention and control requirements and other criteria in Procedure F-5-5 are being achieved.

8.2.4 The Owner shall ensure that an updated PPCP for the Authorized System is prepared within ten (10) years of the date that the previous PPCP was finalized.

**Sewer Model**

8.3 The Owner shall prepare a new/updated Sewer model, within three (3) years of August 25th, 2022, if any of the following pertain to the Authorized System:

8.3.1 It includes Combined Sewers;

8.3.2 It services a population greater than 10,000; or

8.3.3 The Sewer model for the Authorized System was last updated prior to 2012 and 8.3.1 or 8.3.2 apply.

## Schedule F: Residue Management

| | |
|---|---|
| System Owner | **Guelph, The Corporation of the City of** |
| ECA Number | **017-W601** |
| System Name | **City of Guelph Sewage Collection System** |
| ECA Issue Date | **August 25th, 2022** |

### 1.0 Residue Management System

1.1 Not Applicable:

# Appendix H

# Sludge Accountability Calculations

**Sludge Accountability Calculations**

Reported Sludge

| Data: | | 2024 | |
|---|---|---|---|
| Flow | | 55,011 | m3/d |
| Final Effluent TSS | | 2.3 | mg/L |
| Raw Sludge Flow | | 474 | m3/d |
| Raw Sludge Concentration | | 3.05 | % |
| Intentional Wasting | m3/d * % | 14460.1 | kg/d |
| Unintentional Wasting | m3/d * mg/L | 126.5 | kg/d |
| Total Reported Sludge = | Intentional wasting + Unintentional wasting - Side stream loading * | **14,069** | kg/d |

Projected Sludge

| Data: | | | |
|---|---|---|---|
| Flow | | 55,011 | m3/d |
| Raw TSS | | 240 | mg/L |
| Primary Effluent TSS | | 107 | mg/L |
| Raw cBOD5 | | 161 | mg/L |
| Primary Effluent cBOD5 | | 101 | mg/L |
| Primary Removal Efficiency | | 55% | |
| Final Effluent cBOD5 | | 2.1 | mg/L |
| SPR for CAS ** | | 1 | kg/TSS/kg BOD5 remo |
| *Primary Sludge* | | | |
| Flow m3/d * (raw TSS-PE TSS) mg/L = | | 7,316 | kg/d |
| *Biological Sludge Production* | | | |
| Flow m3/d*(PE cBOD5 - FE cBOD5)*0.7 = | | 5,413 | kg/d |
| *Chemical Sludge Production* | | | |
| Ferric Chloride dose | | 3.5 | L/min = 5.04 |
| Ferric Chloride Density | | 1,415 | kg/m3 |
| Ferric chloride strength | | 40 | % |
| Percent ferric | | 13.8 | % |
| Ferric Chloride SPR*** | | 2.87 | |
| Dose m3/d * Density(kg/m3) * Strength(%) * Metal(%) *SPR = | | 1130 | |
| Total Projected Sludge = | Primary Sludge+ Biological Sludge + Chemical Sludge | **13,859** | kg/d |

| | | | |
|---|---|---|---|
| * Side stream(dewatering filtrate) | = | 517 | kg/d |

** Sludge Production Ratio for Conventional Activated Sludge

*** Ferric Chloride Sludge Production Ratio

| **Reported Sludge** | kg/d |
|---|---|
| Intentional Wasting | 14460.1 |
| Unintentional Wasting | 126.5 |
| Sidestream | 517 |
| **Total** | 14,069 |
| **Sludge Accountability** | **-1.5 %** |

Note: plus/minus 15% is best practice

| **Side Stream Calculation** | | |
|---|---|---|
| Filtrate Flow | 2061 | m3/d |
| TSS of filtrate | 251 | mg/L |
| | **517** | kg/d |

# Appendix I

# Notice of Modification to Sewage Works

Accessible version of this document available by contacting the City of Guelph at 519-837-5627 or TTY 519-826-9771

Type text here

Ontario
Ministry of
the Environment

# Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA AND SEND A COPY TO THE WATER SUPERVISOR (FOR MUNICIPAL) OR DISTRICT MANAGER (FOR NON-MUNICIPAL SYSTEMS)

## Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility

*(Insert the ECA's owner, number, issuance date and notice number, which should start with "01" and consecutive numbers thereafter)*

| ECA Number | Issuance Date (mm/dd/yy) | Notice number (if applicable) |
|---|---|---|
| 8835-9QJKSD | November 21, 2014 | |

| ECA Owner | Municipality |
|---|---|
| The Corporation of the City of Guelph | Guelph, Ontario |

## Part 2: Description of the modifications as part of the Limited Operational Flexibility

*(Attach a detailed description of the sewage works)*

See attached.

Description shall include:
1. A detail description of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.)
2. Confirmation that the anticipated environmental effects are negligible.
3. List of updated versions of, or amendments to, all relevant technical documents that are affected by the modifications as applicable, i.e. submission of documentation is not required, but the listing of updated documents is (design brief, drawings, emergency plan, etc.)

## Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:
1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Conforms with the Limited Operational Flexibility as per the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate.

| Name (Print) | PEO License Number |
|---|---|
| William Warren Saint | 90233263 |
| Signature | Date (mm/dd/yy) |
| | 05/27/2021 |
| Name of Employer | |
| CH2M HILL Canada Limited (A Jacobs Company) | |

## Part 4 – Declaration by Owner

I hereby declare that:
1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. These modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act.*

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate.

| Name of Owner Representative (Print) | Owner representative's title (Print) |
|---|---|
| Tim Robertson | Division Manger |
| Owner Representative's Signature | Date (mm/dd/yy) |
| | July 30 2021 |

# Notice of Modification to Sewage Works

City of Guelph, Guelph WWTP (ECA No. 8835-9QJKSD)

## Part 2 – Description of the modifications as part of the Limited Operational Flexibility

The Guelph Wastewater Treatment Plant (WWTP) is located at 530 Wellington Street West in the City of Guelph. The WWTP provides tertiary treatment, which services the City of Guelph and the neighbouring community of Rockwood. The WWTP produces high quality tertiary treatment and effluent is through an outfall to the Speed River after disinfection. The WWTP's current rated capacity is 64,000 $m^3$/day.

This project specifically addresses the aeration blowers at each of the four treatment plants. The scope of this project is to replace the existing centrifugal blowers at each plant and replace them with new High-Speed Turbo Blowers (HSTB) and associated instrumentation and controls. As part of this upgrade, Plant 2 will receive dedicated blowers and no longer be required to have air supplied by either Plant 1 and/or Plant 3. Additional scope of this project includes upgrading the electrical power supply associated with the new HSTBs (New transformer, switchgear and associated MCCs), installing a Dissolved Oxygen (DO) and Ammonia (NH3) sensor in each of the three (3) passes of each aeration tank as well as replacing, where required by condition or configuration, portions of the air delivery piping and valves.

The proposed modifications include:

- Plant 1: replace existing centrifugal blowers with three (3) new 112.5 kW (150HP) HSTBs
- Plant 2: install three (3) new 75 kW (100 HP) HSTBs in Plant 3 Blower Building to service Plant 2
- Plant 3: replace existing centrifugal blowers with three (3) new 112.5 kW (150HP) HSTBs
- Plant 4: replace existing centrifugal blowers with three (3) new 187.5 (250HP) HSTBs
- Each new blower is designed with an integral Local Control panel (LCP)
- Install new Master Control Panel (MCP) at each Plant to control the operation of the blowers at each plant in response to dissolved oxygen and/or ammonia ($NH_3$)
- Install new Harmonic Filter to condition and step down the power supply to 480V for each new blower
- Replace air distribution piping and valves as required due to condition or configuration
- Install new DO sensors in each pass of each train of each aeration tank
- Install new Ammonia sensors in each pass of each train of each aeration

During the construction, temporary rental blowers will be installed, where required, in order to avoid any extended shutdowns at the individual Plants. Construction will be sequenced in the order of: Plant 1, Plant 4, Plant 2 and Plant 3 with the aforementioned rental blowers used as required to maintain the treatment capacity of the WWTP. These modifications do not change the overall operation of the secondary treatment process. There are performance enhancements as part of this upgrade, including operational flexibility, redundancy and isolation capabilities for maintenance. The upgrades also allow for greater monitoring capabilities of air usage, DO levels, Ammonia targets and energy efficacy.

Pre-consultation correspondence took place between the MECP and Kristin Pressey (Compliance and Performance, Environmental Services) from the City of Guelph. The purpose of this correspondence was to delineate the upcoming project and confirm that the modifications were subject to the provisions of the ECA's Limited Operational Flexibility (LOF). Based on correspondence, the MECP agreed that the proposed modifications were allowable under the LOF, which has prompted this notice of modification.

With the implementation of the above proposed recommendations, that the ability for the Guelph WWTP to maintain its high level of treatment and consistent effluent quality will be enhanced. There should be no impact on the secondary effluent during the construction phase of this aeration upgrades project.

Supporting Documentation Attached:

- Pre-consultation e-mail correspondence with MECP
- Pre-Design Report

Supporting Documentation to be provided upon request:

- Issued for Tender and Record drawings for the Guelph WWTP Aeration Upgrades Project

Ontario
Ministry of
the Environment

## Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA AND SEND A COPY TO THE WATER SUPERVISOR (FOR MUNICIPAL) OR DISTRICT MANAGER (FOR NON-MUNICIPAL SYSTEMS)

### Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility

*(Insert the ECA's owner, number, issuance date and notice number, which should start with "01" and consecutive numbers thereafter)*

| ECA Number | Issuance Date (mm/dd/yy) | Notice number (if applicable) |
|---|---|---|
| 8835-9QJKSD | 11/21/14 | |

| ECA Owner | Municipality |
|---|---|
| The Corporation of the City of Guelph | Guelph |

### Part 2: Description of the modifications as part of the Limited Operational Flexibility

*(Attach a detailed description of the sewage works)*

Attached

Description shall include:
1. A detail description of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.)
2. Confirmation that the anticipated environmental effects are negligible.
3. List of updated versions of, or amendments to, all relevant technical documents that are affected by the modifications as applicable, i.e. submission of documentation is not required, but the listing of updated documents is (design brief, drawings, emergency plan, etc.)

### Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:
1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Conforms with the Limited Operational Flexibility as per the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate.

| Name (Print) | PEO License Number |
|---|---|
| Sally Baldwin | 100036781 |
| **Signature** | **Date (mm/dd/yy)** |
|  | 01/30/24 |
| **Name of Employer** | |
| Jacobs Consultancy Canada Inc. | |

### Part 4 – Declaration by Owner

I hereby declare that:
1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. These modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act.*

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate.

| Name of Owner Representative (Print) | Owner representative's title (Print) |
|---|---|
| Tim Robertson | Division Manager |
| **Owner Representative's Signature** | **Date (mm/dd/yy)** |
|  | January 31 2024 |

# Notice of Modification to Sewage Works

City of Guelph, Guelph WWTP (ECA No. 8835-9QJKSD)

## Part 2 – Description of the modifications as part of the Limited Operational Flexibility

The Guelph Water Resource Recovery Centre (WRRC) is located at 530 Wellington Street West in the City of Guelph. The WRRC provides tertiary treatment, which services the City of Guelph and the neighbouring community of Rockwood. The WRRC produces high quality tertiary treatment and effluent is through an outfall to the Speed River after disinfection. The WRRC's current rated capacity is 64,000 $m^3$/day.

The existing solids handling process includes five digesters; four (4) are primary anaerobic digesters and one (1) is a secondary anaerobic digester. Each primary digester has a useable capacity of 2,440 $m^3$ and equipped with four (4) draft tube style mixers. The secondary digester has a useable capacity of 2,350 $m^3$. Digester No.3 is capable of functioning as a secondary digester when the main secondary digester is out of services for maintenance or refurbishment.

This project specifically addresses Digester No. 4, which is the dedicated secondary digester at the Guelph WRRC. Digester No. 4 has been removed from service since 2021 for clean-out and repair and has remained offline since. The scope of this project is to refurbish the exterior brick, digester roof, sludge piping and PLC associated with Digester No. 4. Under this project, hydraulic mixing capability is being added to Digester 4 to prevent build-up in the secondary digester and provide a more homogenous digested sludge composition sent to the dewatering process.

The proposed modifications include:

- Like for like replacement of existing brick cladding system
- Replacement of Digester 4 Roof including wearing slab, insulation and waterproofing
    - Like for like replacement of gas system PRVs and flame arrestors, view port and access ports
- Digester interior piping to be replaced along with valves with like for like equipment
- Removal of redundant and unused/abandoned piping.

  Addition of a hydraulic mixing system consisting of one (1) chopper pump, three (3) high-velocity mixing nozzles and one (1) foam suppression nozzle. New stainless steel piping to suit.
- Exterior withdrawal piping to be retained and refurbished. All valves to be replaced like for like
- Replacement of all firestopping around electrical equipment
- Gasproof coating of the digester interior, overflow box and all piping within the digester
- Cabling and conduit to be replaced with new
- PLC to be removed from the basement and replaced on the main floor of the control room
- Addition of a Network Access Cabinet (NAC) in the control building

As a part of regular plant maintenance, to maintain digester capacity, the plant must remove one digester at a time from service to clean out grit and rag deposits in the bottom of the digester and repair equipment and piping. Digester No.4 is the next digester in need of repair, which is planned under this project. Since Digester No.4 was removed from service for the initial clean-out, Digester No.3 has been acting temporarily as the secondary digester. This ensures that at no point during the digester repair and clean-out program will the plant be left without secondary digestion capacity. Once Digester No. 4 cleanout and repairs have been completed, the Guelph WRRC will return to normal operation with four (4) Primary and one (1) Secondary Digester. At no point will the Guelph WRRC operate with two (2) Secondary Digesters at the same time. This project includes the addition of a hydraulic mixing system at Digester No.4. The addition of mixing minimizes the build-up of heavy deposits on the bottom of the tank allowing the Secondary Digester to maintain full service capacity. Mixing will also homogenize the digested sludge,

which will allow for greater consistency in the product delivered to the plant's dewatering process. The addition of mixing does not alter the main process function of Digester No. 4.

With the implementation of the above proposed recommendations, it is expected that the Guelph WRRC will maintain their biosolids handling standards. There should be no impact on the digested sludge during the construction phase of the digester refurbishment. The currently operational digesters are fully capable of handling the activated sludge from the secondary treatment stream. As such, no negative environmental effects are expected.

Supporting Documentation to be Updated:

- Issued for Tender, Construction and As-Built drawings for the Guelph WRRC Digester 4
- Guelph Process Control Narrative
- Guelph Facility Operations Manual
- Guelph Facility Standard Operating Procedures

# Appendix J

# Calibration Records for SPS Flow Meters

Accessible version of this document available by contacting the City of Guelph at 519-837-5627 or TTY 519-826-9771

# *Certificate of Instrument Performance*

**Instrument Name: HACH Flo-station with Flo-Dar**
**Serial Number: OODA08390711**
**Service Order #: S011409**
**Configuration: Circular Open Pipe**
**Company: City Of Guelph**
**Site Location: Kortnight SPS**
**Contact: Steve Forester**

The above instrument was calibrated on Nov 13, 2024, by Ankush Kumar and meets or exceeds Manufacturer's Specification. The level and velocity were not adjusted in the calibration process. Can-am Instruments recommends inspection and calibration of the above every one year.

If you have any questions about the above, please call **1-800-215-4469**, 8.00 am to 5.00 pm, Monday to Friday.

Can-Am Instruments

Ankush Kumar
Service Technician

# *Certificate of Instrument Performance*

**Instrument Name: 8'' EH MAG Meter**
**Serial Number: 9904E516000**
**Service Order #: S011409**
**Configuration: 8'' Circular Closed Pipe**
**Company: City Of Guelph**
**Site Location: Kortright SPS**
**Contact: Steve Forester**

The above instrument was calibrated on Nov 13,2024 by Ankush Kumar and meets or exceeds Manufacturer's Specification. The flow was verified using a greyline PDFM 5.1 S/N 70473. The percentage difference between the two meters was 0.563%. Can-am Instruments recommends inspection and calibration of the above every one year

If you have any questions about the above, please call **1-800-215-4469**, 8.00 am to 5.00 pm, Monday to Friday.

Can-Am Instruments

Ankush Kumar
Service Technician

# *Certificate of Instrument Performance*

**Instrument Name: 6'' EH MAG Meter**
**Serial Number: S116BE19000**
**Service Order #: S011409**
**Configuration: 6'' Circular Closed Pipe**
**Company: City Of Guelph**
**Site Location: NIMA SPS**
**Contact: Steve Forester**

The above instrument was calibrated on Nov 13,2024 by Ankush Kumar and meets or exceeds Manufacturer's Specification. The flow was verified using a greyline PDFM 5.1 S/N 70473. The percentage difference between the two meters was 0.181%. Can-am Instruments recommends inspection and calibration of the above every one year

If you have any questions about the above, please call **1-800-215-4469**, 8.00 am to 5.00 pm, Monday to Friday.

Can-Am Instruments

Ankush Kumar
Service Technician

# *Certificate of Instrument Performance*

**Instrument Name: 6'' EH MAG Meter**
**Serial Number: 99001C16000**
**Service Order #: S011409**
**Configuration: 6'' Circular Closed Pipe**
**Company: City Of Guelph**
**Site Location: Northern Heights SPS**
**Contact: Steve Forester**

The above instrument was calibrated on Nov 13,2024 by Ankush Kumar and meets or exceeds Manufacturer's Specification. The flow was verified using a greyline PDFM 5.1 S/N 70473. The percentage difference between the two meters was 0.5066%. Can-am Instruments recommends inspection and calibration of the above every one year.

If you have any questions about the above, please call **1-800-215-4469**, 8.00 am to 5.00 pm, Monday to Friday.

Can-Am Instruments

Ankush Kumar
Service Technician

# *Certificate of Instrument Performance*

**Instrument Name: 6'' EH MAG Meter**
**Serial Number: 99001C16000**
**Service Order #: S011409**
**Configuration: 6'' Circular Closed Pipe**
**Company: City Of Guelph**
**Site Location: Northern Heights SPS**
**Contact: Steve Forester**

The above instrument was calibrated on Nov 13,2024 by Ankush Kumar and meets or exceeds Manufacturer's Specification. The flow was verified using a greyline PDFM 5.1 S/N 70473. The percentage difference between the two meters was 0.5066%. Can-am Instruments recommends inspection and calibration of the above every one year

If you have any questions about the above, please call **1-800-215-4469**, 8.00 am to 5.00 pm, Monday to Friday.

Can-Am Instruments

Ankush Kumar
Service Technician

# *Certificate of Instrument Performance*

**Instrument Name: 4'' EH MAG Meter**
**Serial Number: V/36556/1/1**
**Service Order #: S011409**
**Configuration: 4'' Circular Closed Pipe**
**Company: City Of Guelph**
**Site Location: Terraview SPS**
**Contact: Steve Forester**

The above instrument was calibrated on Nov 13,2024 by Ankush Kumar and meets or exceeds Manufacturer's Specification. The flow was verified using a greyline PDFM 5.1 S/N 70473. The percentage difference between the two meters was 0.3105%. Can-am Instruments recommends inspection and calibration of the above every one year

If you have any questions about the above, please call **1-800-215-4469**, 8.00 am to 5.00 pm, Monday to Friday.

Can-Am Instruments

Ankush Kumar
Service Technician