Port Glasgow Trailer Park – On-Site Sewage System Review

DRAFT

February 07, 2020

Prepared for:

MUNICIPALITY OF West Elgin

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APPENDICES

1.0 INTRODUCTION

The Municipality of West Elgin (Municipality) retained R.V. Anderson Associates Limited (RVA) to undertake a study to review the sanitary servicing systems at the Port Glasgow Trailer Park (PGTP). The PGTP includes four separate sewage treatment and sub-surface disposal systems that sub-divide the park into four service areas.

The Municipality advised that there has been recent ponding / effluent on the surface of two of the septic beds in Service Areas 1 and 4. Municipal staff met on site with RVA on September 18, 2019 to review the on-site sewage disposal systems in these Service Areas, and to discuss the requirements of a study to be performed by RVA. The Municipality requested that RVA review the condition and capacities of the existing sewage disposal systems for Service Areas 1 and 4 and to provide recommendations for upgrades with estimated costs.

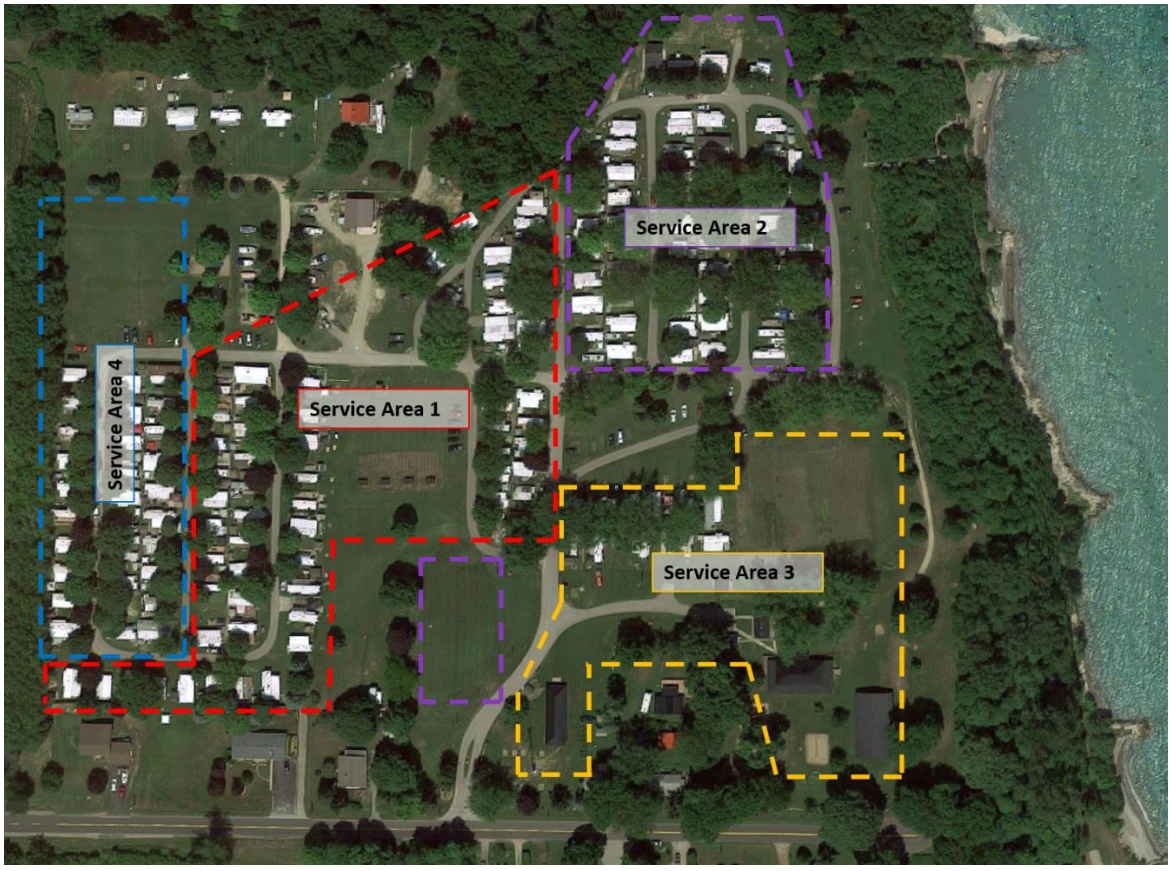

Figure 1.1 – Aerial View of Study Service Areas

A report was issued by Mysson Consultants Inc. in November 2018 providing a review of the existing sewage systems and summarizing recommendations for upgrades, which will be referenced in this Study.

2.0 EXISTING SEWAGE SYSTEM

2.1 Facility Overview

The PGTP includes four separate sewage treatment and sub-surface disposal systems that sub-divide the park into four service areas. A plan view of the park's sewage system from Mysson's report is presented in Figure 2.1. Each of the areas employs different treatment methodology to service the sanitary sewage. The treatment methodologies employed are:

- Service Area 1 – Septic tanks, open-bottom Waterloo Shed Biofilter units (Model 77) and underlying dispersal bed;
- Service Area 2 – Septic tanks, closed-bottom Waterloo Biofilter units (Model 150) and dispersal bed;
- Service Area 3 – Septic tanks, oil/grease separator, closed-bottom Waterloo Biofilter units (Model 90, configuration 1b) and dispersal bed; and
- Service Area 4 – Septic tanks and raised leaching bed.

Per the Ontario Building Code (OBC), leaching/dispersal beds are classified as a Class 4 System. The requirements for Class 4 Sewage Systems is found under Section 8.6 of Division B of the OBC. Section 8.2 of Division B contains the design standards for design flows, septic tanks, and clearances. These sections are referenced throughout this report.

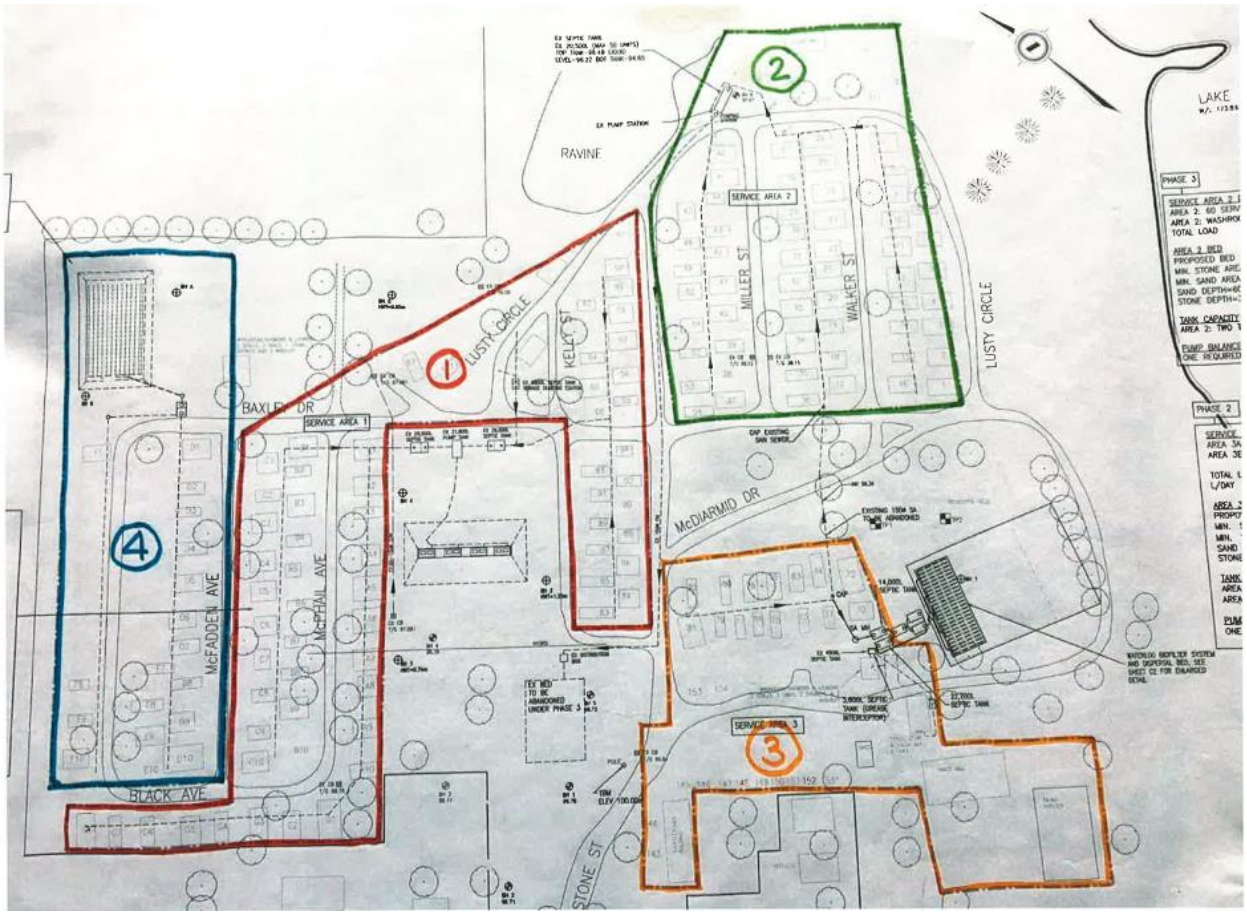

Figure 2.1 – Sewage System Layout (excerpt from Mysson Consultants Inc.)

2.2 Effluent Objectives

The operation of the sanitary sewage system for Port Glasgow Trailer Park is governed by the Environmental Compliance Approval (ECA) #2782-AJZQYG issued on March 24, 2017. A copy of the ECA is included in Appendix B. The treatment systems for Service Areas 1, 2, and 3 must meet the effluent objections identified in Table 2.1. Samples are to be taken on a monthly basis and compliance is determined based on annual average concentrations.

Table 2.1 – Proposed Design Effluent Criteria

Effluent Parameter	Objectives
$_{C}BOD_5$ (mg/L)	10.0
TSS (mg/L)	10.0

To achieve the effluent concentrations noted in Table 2.1 above, a Level IV treatment unit is required based on OBC Section 8.6.2.2 of Division B. This has been provided for Service Areas 1-3 in the form of the Waterloo Biofilters.There are no effluent objectives or sampling stipulated in the ECA for Service Area 4.

2.3 Service Area 4

2.3.1 General Overview

Service Area 4 was originally constructed in 1995 as a raised leaching bed with 12 rows of 100 mm diameter distribution pipes at 30 m in length to service 30 sites and 10 unserviced sites. All wastewater flows within the service area are directed to a septic tank with 18,200 L capacity that has two separate compartments. The purpose of the septic tank is to separate sludge (heavy solids) and scum (floatables) and to provide anaerobic treatment. Liquid from the first compartment travels to the second compartment. There is no indication of an effluent filter in the secondary compartment. A typical layout of a two-compartment septic tank is shown in Figure 2.2.

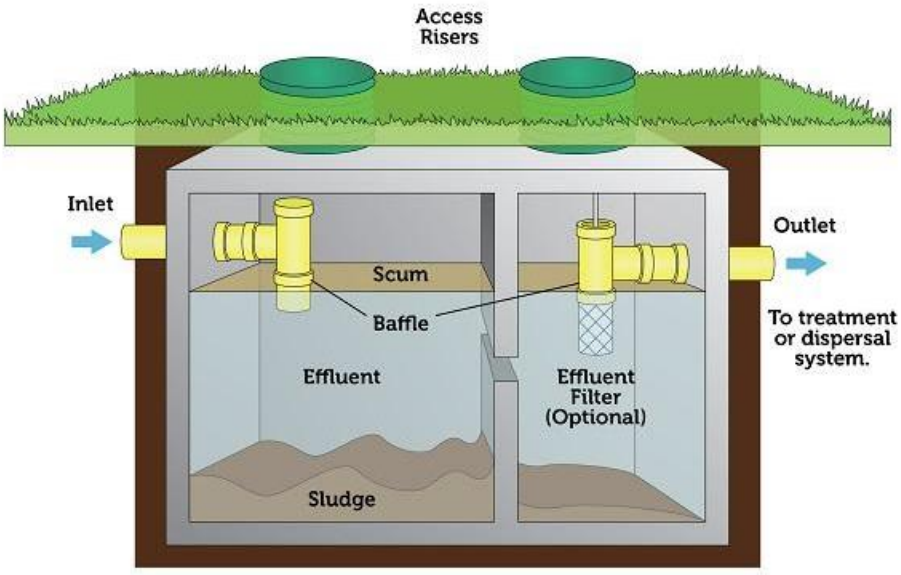

Figure 2.2 – Typical Two-Compartment Septic Tank (obtained from US EPA)

Effluent from the septic tank flows into a 1.2 m diameter pumping chamber which is equipped with two submersible effluent pumps. The effluent pumps direct flow through the distribution pipes and throughout the leaching bed fill. There is no information available on the bed fill material.

Since the original construction in 1995 there have been no upgrades to the infrastructure used to treat sewage from Service Area 4.

2.3.2 Design Sewage Flow Rates

A Recreational Vehicle Park is classified as a non-residential establishment as per Table 8.2.1.3.B. of the OBC. The total daily design sanitary sewage flow rates are:

- Per site without water or sewer hook-up 275 L
- Per site with water and sewer hook-up 425 L

Based on these design flow rates for the 30 serviced sites and 10 unserviced sites, the total daily design sanitary sewage flow for Service Area 4 is 15,000 L/day. The existing ECA states that this system is rated for 15,500 L/day.

2.3.3 Septic Tank Design and Sizing

There are several requirements in the OBC for partitions, piping, openings, access openings, and holding depth for septic tanks. These requirements could not be verified due to the lack of existing drawings/information and exploratory methods. An effluent filter is required by OBC for Class 4 Sewage Systems under Section 8.6.2.1. meeting the required stipulations.

For non-residential occupancy, septic tanks are required to be sized for three times the daily design sanitary sewage flow. The tank shall also be comprised of two compartments where the first compartment is at least 1.3 times the daily design sanitary sewage flow. For the Service Area 4 design flow of 15,000 L/day, a septic tank with a total capacity of 45,000 L is required with the first compartment sized to be at least 19,500 L.

Based on the OBC design requirements, the existing 18,200 L septic tank is significantly undersized. This results in poor settling and treatment efficiency which can result in high-concentration effluent being pumped through the leaching bed. The lack of appropriate storage volume also results in additional required maintenance for removing solids/scum from the chamber and cleaning the effluent filter (if installed).

2.3.4 Leaching Bed

As of January 2020, the leaching bed has been leaking effluent on the surface for over two years. The combination of under-sized septic tank, lack of maintenance, and high influent flows (poor connections) have likely resulted in solids being pumped into the distribution pipes within the leaching bed. Clogging is probable in the distribution pipes.

2.3.5 Maintenance

During the site visit performed by RVA, it was apparent that the septic tank and pumping station have not been maintained in recent years. The septic tank should be pumped out when sludge and scum occupy one-third of the working capacity of the tank. The effluent filter should be cleaned a minimum of twice per season. These are requirements stipulated in the ECA.

2.4 Service Area 1

2.4.1 General Overview

The current treatment system for Service Area 1 was constructed in 2010. The service area is sub-divided into three areas (A/B/C) based on wastewater tributary flows. Each area has a dedicated two-compartment septic tank which is fitted with an effluent filter. The sub-areas and septic tank sizing are summarized in Table 2.2.

Table 2.2 – Service Area 1

Sub-Area	Serviced Sites	Design Flow	Septic Tank Capacity
Area 1A	38	16,150 L/day	29,500 L
Area 1B	24	10,200 L/day	22,700 L
Area 1C	3 + Dumping Station	4,275 L/day	6,800 L

Effluent from all three septic tanks flows to a single precast pumping station with two submersible effluent pumps. The pumping station has a capacity of 31,800 L to balance the incoming flows from the three septic tanks. Wastewater is pumped through a 50 mm forcemain to a series of four open bottom Waterloo Biofilter units for tertiary treatment to meet the stipulated effluent objectives.

Figure 2.3 – Waterloo Biofilter Model 77 Cedar Sheds

The Waterloo Biofilters contain foam media which acts as a growth media for naturally occurring microorganisms that 'treat' wastewater. The effluent is sprayed over the foam media by three cone spray nozzles (per shed) and trickles to the underlying Type 'A' Dispersal Bed. The absorption bed consists of a 300 mm deep layer of 200 mm diameter washed stone covered in permeable geotextile overlying the unsaturated sand layer. The sand layer is 600 mm thick extending above the seasonal high groundwater table. The stone and sand areas are 629 m^2 and 800 m^2 respectively.

In recent years there has been ponding observed on the surface of the dispersal bed on the northwest side. In the past year, a repair was completed on this side as shown in Figure 2.4. Details on the extent of the repair or materials utilized are not known.

Figure 2.4 – Dispersal Bed Repair in 2019

2.4.2 Design Sewage Flow Rates

Service Area 1 is divided into three sub-areas as shown in Table 2.2, providing the design flows for each individual area. Based on the total daily design sanitary sewage flow rates in the OBC for the 65 serviced sites plus the dumping station, the total daily design sanitary sewage flow for Service Area 1 is 30,625 L/day. The existing ECA states that this system is rated for 30,625 L/day.

2.4.3 Septic Tank Design and Sizing

For non-residential occupancy, septic tanks are required to be sized for three times the daily design sanitary sewage flow. For the Service Area 1 design flow of 30,625 L/day the total capacity of all septic tanks is required to be 91,875 L. The capacity of the existing septic tanks is a total of 59,000 L which is undersized when compared to the OBC design requirements.

This could result in poor treatment efficiency that can cause high-concentration effluent being pumped into the Waterloo Biofilters and into the dispersal bed. The lack of appropriate storage volume also results in additional required maintenance for removing solids/scum from the chambers and cleaning the effluent filters.

2.4.4 Waterloo Biofilter Units

The four Waterloo Biofilter units are considered a level IV treatment unit to meet the effluent objectives stated in Table 2.1. All four units are Model 77 Cedar Sheds which are fixed-film biological trickling filters containing foam media. The effluent is sprayed by three cone spray nozzles (per shed) and trickles over the foam media. The foam acts as a fixed growth media for microorganisms which will form a biological film (aka slime layer) that adsorbs organic material in the wastewater as it trickles over the media. Air passively circulates throughout the foam media to provide an aerobic treatment environment. As the slime layer continues to consume organic material, the microorganisms will grow, and the layer becomes thicker. Microorganisms near the surface lose the ability to adhere to the media, and a portion of the slime layer falls off.

Similar open-bottom Cedar Sheds by Waterloo Biofilter were constructed in 2010 for Service Areas 2 and 3, and have subsequently been proposed to be replaced with underground closed-bottom Waterloo Biofilter systems. This work has been completed for Service Area 3. There is no indication that the Waterloo Biofilter units in Service Area 1 are not performing well; however, no effluent sampling results are available to review.

2.4.5 Dispersal Bed

The design criteria and sizing of the dispersal bed layers completed for the construction in 2010 is shown in Table 2.3. The stone layer is designed based on a maximum unit area loading of 50 L/m^2/day as required by OBC for sanitary flows exceeding 3,000 L/day. The sand layer is designed based on the multiple criteria: (1) value determined by the formula A=QT/850; and (2) maximum unit area loading of 40 L/m^2/day.

Table 2.3 – Dispersal Bed Sizing

Layer	Design Criteria	Design Area	Dimensions (LxW)	Area
Stone	$A = {}^{Q}/_{50}$	612.5 m^2	17 x 37 m	629 m^2
Sand	$A = {}^{QT}/_{850}$	720 m^2	40 x 40 m	800 m^2
	$A = {}^{Q}/_{40}$	766 m^2		

A = required area of contact in square meters
Q = total daily design sanitary sewage flow (30,625 L/day)
T = percolation time of the underlying soil (20 min/cm)

The percolation time of the underlying soil utilized for designing the dispersal bed was noted as 20 min/cm. There is no information available to determine where this value was derived. Based on the current OBC through updates in 2012, the sizing for the sand layer where the underlying soil has a percolation time of more than 15 min/cm is much more conservative (A = QT/400) than the criteria originally used. The criteria would result in a sand layer sizing of 1530 m^2, almost double the current area, and require the sand layer to extend a minimum of 15 m beyond the perimeter of the treatment unit in all directions.

2.5 Sanitary Connections

During the site visit RVA reviewed the sanitary sewer connections at several of the serviced sites. It was discovered that several sites had sewer lateral connections not extending above the ground surface and not sealed. An example of such connection is shown in Figure 2.5. These connections can allow for significant infiltration of surface water into the service connections and pose a health and safety hazard due to escaping sewer gases.

Figure 2.5 – Example Service Connection

3.0 DISCUSSION AND RECOMMENDATIONS

3.1 Key Issues

3.1.1 Septic Tank Sizing

For non-residential occupancy, septic tanks are required to be sized for three times the daily design sanitary sewage flow. For residential occupancy, septic tanks are required to be sized for two times the daily design sanitary sewage flow. It is evident that the existing septic tanks for all service areas have been sized (at most) for residential occupancy. As a result, the septic tanks are undersized when compared to the OBC design criteria.It has been confirmed with the Chief Building Official for the Municipality of West Elgin that the non-residential criteria are required for sizing septic tanks used in a trailer park.

3.1.2 Sanitary Sewage Flows

The Municipality believes there may be significant infiltration in the gravity sewers conveying sanitary sewage to the septic tanks. This is quite possible due to a very high groundwater table in some areas. Higher flow rates would contribute to the ponding/effluent breakout observed on the beds recently. Due to a lack of existing flow information, there is no way to estimate the extent of any infiltration. The following methods could be utilized to assist in determining the condition of existing gravity sewers and the presence of infiltration:

- CCTV Video Inspection – Completing a video inspection of existing sewers to review the current condition and presence of leaks. Due to the lack of available maintenance holes, the sanitary sewer would need to be excavated to launch a camera.
- Flow Monitoring – Monitoring of sewage pumped from septic tanks in comparison to the water supply flows to the park. Typical flow monitoring for systems of this size is accomplished by monitoring and recording pump runtimes and calculating the total pumped flow based on the pump's expected flow rate.

In addition to the potential inflows and infiltration (I&I) from groundwater is the infiltration of surface water due to the lateral connections. Sewer lateral connections should be a minimum size of 80 mm and terminate above the surrounding grade. A gas-tight fitting with threaded or quick change adaptor couplers that do not require special tools should be utilized.

3.1.3 Service Area 4 Sewage Treatment System

The septic tank for Service Area 4 is undersized and has no effluent filter. The leaching bed has failed, and the system is 20 years old with little maintenance performed since its inception. The treatment system is not currently meeting code or treating sewage to a level that is protecting the natural environment. A new treatment system is required.

3.1.4 Service Area 1 Dispersal Bed

Based on the available information for the percolation rate of the soil underlying the sand layer, there is evidence to suggest that the dispersal bed for Service Area 1 is undersized. This coupled with the potential for high sanitary sewage flows and poor treatment efficiency could be leading to the ponding issues that have been observed in recent years. A high groundwater table may also be causing the sand layer to be saturated, thus reducing the capacity of the bed. The building code requires the bottom of the stone layer to be a minimum 600 mm above the seasonal high groundwater level.

3.2 Recommended Action

3.2.1 Flow Monitoring and Sampling

Flow monitoring will significantly improve the amount of information and trouble-shooting capability for the sewage treatment systems for all service areas. This can be achieved by recording pump time at each of the pumping stations for an estimation of the totalized daily flow.

Sampling is required at Service Areas 1-3 as stipulated in the ECA and as required by the OBC. The ECA also requires an annual performance report to be completed containing summarized information on sampling, testing, flows to each disposal bed, maintenance, spills and complaints. It is recommended that these reports be completed to maintain compliance with the ECA.

RVA also recommends that flow monitoring is completed prior to exploring methods such as CCTV to determine any effect of infiltration within the sanitary collection sewers.

3.2.2 Service Area 4

The existing septic tank should be replaced with an appropriately sized, two-compartment septic tank equipped with an effluent filter. The existing leaching bed should be completely removed and replaced. The daily flows from this area exceed the limitation on filter beds, thus the leaching bed could be constructed as an absorption trench or Type A/B dispersal bed. Geotechnical information should be obtained for sizing and determination of what type of leaching bed would be ideal. Other service areas in the park utilize a Type A dispersal bed, which would likely be the proposed solution for Service Area 4. A Type A dispersal bed requires a Class IV treatment unit which would be designed to meet effluent TSS and $CBOD_5$ of 10 mg/L.

Due to the age of the infrastructure, the pumps will likely require replacement within the next five years. To allow for improved balancing of flows to a Class IV treatment unit, the existing pumping station should be replaced with additional storage capacity.

3.2.3 Service Area 1

To resolve the immediate ponding issue, the full structure of the dispersal bed should be removed from the area where ponding is observed. The underlying native should be scarified to improve the percolation rate and the dispersal bed materials replaced. While the underlying soil is exposed, shallow boreholes / samples of the underlying native clay should be taken to confirm the percolation rate is in excess of 15 min/cm.

It is recommended that monitoring wells be installed in close proximity to the dispersal bed to monitor the seasonal high groundwater level. This would help establish whether there is a

problem with saturation of the sand layer. Once more information is available, the dispersal bed may need to be extended or reconstructed in its entirety.

If the dispersal bed continues to exhibit ponding, a perforated pipe in stone bed could be installed along the edge of the dispersal bed to temporarily alleviate the issue. The pipe would flow back to the septic tank or pumping station.

To determine effectiveness of the open-bottom waterloo biofilters for Service Area 1, flow monitoring and effluent sampling is required as noted.

3.2.4 Maintenance

Table 3.1 is presented as a minimum required maintenance for the systems at Service Areas 1 & 4. It is recommended that an annual inspection is completed for the treatment systems for all service areas by a qualified representative of Waterloo Biofilter through a service contract.

Table 3.1 – Minimum Maintenance Requirements

System Component	Function	Service Required	Frequency
Septic Tank	Primary Wastewater Treatment	Pump Out	As Needed (when 1/3 full)
		Clean Effluent Filter	Bi-Annually
		Inspection	Annual
Pumping Station	Pumps Septic Tank Effluent	Test High Level Alarm Floats	Monthly
		Clean Inline Filter	Semi-Monthly
		Service Pumps	Refer to Pump Manual
		Inspection	Annual
Waterloo Biofilter	Treats Wastewater	Clean Spray Nozzles	As Needed
		Replace Charcoal Air Vents	As Needed
		Replace Foam Media	As Needed (20+ years)*
		Inspection by Qualified Representative	Annual
		Sample Acquisition	Monthly
Dispersal Bed	Disperses Effluent to Environment	Inspection	Annual

*Note that if the system is receiving chemicals and/or paint that are not intended to enter the system then the foam media will require replacement much sooner.

An Operation and Maintenance (O&M) manual should be available as required by the ECA including the required operating, inspection and maintenance procedures. This O&M should include manufacturer's specific operation, servicing and maintenance requirements on the Waterloo Biofilter units as required by the OBC. It should also include required maintenance on pumps, inline filters, septic tanks, and the dispersal beds. A comprehensive document will provide operations staff the resources necessary to effectively operate and maintain the system.

3.2.5 Other Recommendations

To allow proper functioning of the septic tanks, pumping stations, and treatment units, it is essential that unintended materials are not disposed to the wastewater collection system. Waterloo Biofilter provides a list of materials which should not enter the wastewater treatment system. These materials are shown in Table 3.2. Residents should be kept aware of these requirements to allow the system to function as intended.

Table 3.2 – Harmful Materials to Wastewater Treatment System

- Water softener Backwash
- Water Treatment Backwash
- Paint – All Kinds
- Solvents – Alcohols, Glycol, Hydrocarbons
- Grease – Commercial and Industrial
- Coffee Grinds
- Bones
- Cooking Fats and Oils
- Cigarette Butts
- Diapers
- 'Flushable' Wipes
- Paper Towels
- Facial Tissue
- Sanitary Pads and Tampons
- Condoms
- Disposable Gloves
- Toilet Bleach Pucks
- Antibacterial Products
- Antiseptic Products
- Peppermint, Palm, and Tea Tree Oils
- Pesticides, Herbicides
- Sump Pump Discharge
- Eaves Trough Runoff
- Foundation Drainage
- Cosmetic Products
- Industrial Cleansers
- Film Developing Chemicals
- Large Volumes of Olive Oil
- Excessive Hair Gels and Conditioners
- Anti-Dandruff and Medicated Shampoo
- Dead Pets
- Carpet & Upholstery Cleaners
- Expired or Unused Medication
- Disinfectants, Germicides
- Bandages, Cotton Swabs and Balls
- Baby Wipes
- Garbage Disposal Unit Discharge
- Detergent with Bleach

4.0 COST ESTIMATE

4.1 Immediate Requirements

Based on the recommended work to complete immediately, a construction cost estimate is provided in Table 4.1. It is recommended that the Municipality carry a capital budget of **$175,000** for the engineering and construction of the immediately required upgrades.

Table 4.1 – Construction Cost Estimate for Necessary Upgrades

Description	Estimated Cost
Service Area 4 – New septic tank and type 'A' dispersal bed, including geotechnical work for design of bed	$100,000
Service Area 1 – Dispersal bed repair and geotechnical work, temporary tile bed pipe	$15,000
All Areas – Upgrade lateral connections	$25,000
All Areas – Flow monitoring and sampling	$5,000
Construction Cost Sub-Total	**$145,000**

4.2 Future Considerations

The remainder of the recommended works noted in Section 3.2 should be planned to be completed over the next 5-10 years as funding is secured.

Table 4.2 – Construction Cost Estimate for Future Planned Upgrades

Description	Estimated Cost
Service Area 4 – Construction of new precast pumping station and Class IV tertiary treatment system	$185,000
Service Areas 4 & 1 – Sanitary sewer CCTV exploration	$15,000
Service Area 2 – Construction of tertiary treatment system proposed in 2017 (noted in Mysson Report and ECA)	$130,000
Service Area 1 – Extend dispersal bed (if required)	$50,000
All Areas – Upsizing of all septic tanks to meet OBC	$180,000

4.3 Cost Estimate Assumptions/Limitations

The construction cost estimate was prepared noting the following:

- 2020 Canadian Dollars;
- No geotechnical information available for applicable areas; and
- Exclusions:
  - Applicable taxes; HST
  - Applicable approval costs including Building Permits and Environmental Compliance Approval
  - Additional costs for construction approaches including accelerated construction, multiple construction contracts, equipment pre-selection, and contractor pre-selection.

APPENDIX A

REPORT ON SEWAGE WORKS
(MYSSON CONSULTANTS INC.)

Report on Sewage Works
Port Glasgow Trailer Park

The Corporation of the Municipality of West Elgin
22413 Hoskins Line, Box 490
Rodney, Ontario

Prepared by:

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November 2018

Mysson Consultants Inc.
BCIN 40897
16 Silver Lake Lane
PO Box 524
Port Carling, Ontario
P0B 1J0

Date: November 6, 2018

Municipality of West Elgin
22413 Hoskins Line
Box 490
Rodney, Ontario
N0L 2C0

Att: Ms.Genevieve Scharback CAO

Re; Intern Report, Port Glasgow Trailer Park Waste Water Systems Review

As requested a report has been prepared for the members of council. On November 22, 2018 at 9:30 am a representative for Mysson Residential Consultants Inc. will present the report.

There are four separate and unique waste water systems within the camp grounds. Therefore, the presentation will be divided up into four parts. A question and answer session will be conducted as each system presentation is completed.

Yours truly;
MYSSON CONSULTANTS INC.

David Wemyss
President BCN25245

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Service Area 1:

Service Area 1 consist of 65 serviced sites. The design flow is based on 425 liters per day as specified in the Ontario Building Code. The design flow for the area 1 is 30,625 liters per day (6,737 gallons).

The septic tank capacity is 59,000 liters (12,978 gallons).

The waste water treatment plant is manufactured by Waterloo Biofilter in Rockwood Ontario and is referred to as Waterloo Biofilter Sheds. The leaching, or dispersal area is determined by the flow calculation Q/40 or 766 square meters (8,245 square feet) approximately measuring 90 feet by 90 feet.

HOW DOES THE SYSTEM WORK?

The waste water is transported through new sanitary sewers to two 29,500 liter septic tanks. The septic tanks provide the anaerobic sewage treatment (no oxygen). The septic tanks are comprised of two treatment chambers. The solids are separated from the liquid in the primary chamber of the tank. Natural bacterial process breaks down the solids into liquid and smaller solid particulate through fermentation. Occasionally enzymes are added to enhance the fermentation. Only the liquid is allowed to migrate across to the secondary chamber. The liquid referred to as effluent passes through an effluent filter which screens out any solids that may have migrated across the tank to the secondary treatment chamber.

The effluent then enters a 31,800 liter (6,995 gallon) balancing (surge tank). There are two pumps with two inline filters in this chamber. The effluent is pumped to the Waterloo Biofilter Sheds for enhanced treatment over a 24 hour period.

The effluent is sprayed over the foam media. This is the first step in the aerobic treatment process. As the effluent moves through the media (second step) it picks up more oxygen and the breakdown of pathogens continues.

The treated effluent is then allowed to seep out the bottom of the Waterloo Biofilter Sheds and enter into prepared sand and stone layers. The sand is 60cm in depth and the stone is 30cm in depth providing an additional of 90cm or 3 feet of aerobic treatment before entering the scarified clay substrate.

Recommendations;

- There has been some ponding on the northwest side of the dispersal area
- The topsoil, sand and stone should be removed and the underlying clay substrate should be scarified and the excavated materials put back in place.
- Budget $2,000

Service Area 2:

Service Area 2 consist of 60 serviced sites and 10 unserviced sites. The design flow is based on 425 liters per day for serviced sites and 275 liters per day for unserviced sites as specified in the Ontario Building Code. The design flow for the Area 2 is 28,250 liters per day (6,214 gallons).

The septic tank capacity is 59,000 liters (12,978 gallons).

HOW DOES THE SYSTEM WORK?

The waste water is transported through sanitary sewers to an existing 20,500 liter septic tank which can handle 50 serviced lots. The system is under sized requiring two 29,500 liter septic tanks. The septic tanks provide the anaerobic sewage treatment (no oxygen). The septic tanks are comprised of two treatment chambers. The solids are separated from the liquid in the primary chamber of the tank. Natural bacterial process breaks down the solids into liquid and smaller solid particulate through fermentation. Occasionally enzymes are added to enhance the fermentation. Only the liquid effluent is allowed to migrate across to the secondary chamber.

The secondary chamber houses two effluent pumps which were installed last year along with a new control panel. The pumps transport the effluent to a leaching bed which was refurbished at the same time the pumps were installed. The existing 150mm (6 inch) thin walled force main was also replaced with a 50mm (2 inch) schedule 40 PVC line.

All that remains to be done to bring Area 2 into compliance with the Ontario Building Code is to install a Waterloo Biofilter, septic tanks and surge tank similar to the system installed in Service Area 3.

Recommendations;

- Install new Waterloo Biofilter Baskets and balancing tank
- Budget $130,000

Service Area 3:

Service Area 3 consist of 15 serviced sites, 40 unserviced sites, washroom, office, store and dance hall. The design flow is based on 425 liters per day, per serviced site, and 275 liters per day for unserviced sites as specified in the Ontario Building Code. The design flow for the area 3 is 17,375 liters per day (3,822 gallons).

The septic tank capacity is 36,700 liters (8,073gallons).

The waste water treatment plant is manufactured by Waterloo Biofilter in Rockwood Ontario and is referred to as Waterloo Biofilter Baskets. The leaching, or dispersal area is determined by the flow calculation Q/40 or 1,305 square meters (14,047 square feet) approximately measuring 118 feet by 118 feet.

HOW DOES THE SYSTEM WORK?

The waste water is transported through sanitary sewers to two septic tanks with a combined capacity of 36,700 liters. The septic tanks provide the anaerobic sewage treatment (no oxygen). The septic tanks are comprised of two treatment chambers. The solids are separated from the liquid in the primary chamber of the tank. Natural bacterial process breaks down the solids into liquid and smaller solid particulate through fermentation. Occasionally enzymes are added to enhance the fermentation. Only the liquid is allowed to migrate across to the secondary chamber. The liquid referred to as effluent passes through an effluent filter which screens out any solids that may have migrated across the tank to the secondary treatment chamber.

The effluent then enters a 22,000 liter (4,839 gallon) balancing (surge tank). The pumps fitted with 2 inline filters pump the liquid to the Waterloo Biofilter Baskets over a 24 hour period.

The effluent is sprayed over the foam media. This is the first step in the aerobic treatment process. As the effluent moves through the media (second step) it picks up more oxygen and the breakdown of pathogens continues.

Fifty percent of the treated effluent is then pumped to the leaching bed, (dispersal bed) and the other 50% is recirculated back to the septic tank, which dilutes the incoming sewage enhance treatment.

Recommendations;

- Perform regular maintenance

Service Area 4: Existing Northwesterly Leaching Bed

Service Area 4 consist of 30 serviced sites and 10 unserviced sites. The design flow is based on 425 liters per day for serviced sites and 275 liters per day for unserviced sites as specified in the Ontario Building Code. The design flow for the Area 4 is 15,000 liters per day (3,299 gallons).

The septic tank design capacity is 30,000 liters (6,599 gallons). The actual capacity of the existing septic tank is unknown.

HOW DOES THE SYSTEM WORK?

The waste water is transported through sanitary sewers to an existing septic. The septic tank provides the anaerobic sewage treatment (no oxygen). The septic tank has two treatment chambers. The solids are separated from the liquid in the primary chamber of the tank. Natural bacterial process breaks down the solids into liquid and smaller solid particulate through fermentation. Only the liquid effluent is allowed to migrate across to the secondary chamber.

The secondary chamber houses an effluent pump. The pump transports the effluent to the leaching bed. We have observed effluent on the surface for most of last the summer.

THIS SYSTEM IS NOT WORKING

Recommendations;

- The leaching bed should be excavated and all materials removed from site.
- A Type "A" Dispersal Bed should be constructed
- Budget $50,000

Summary

- Service Area 1 requires immediate attention. Some minor excavating and backfilling. A repair to the leaching area this year should be considered (budget of $2,000).
- Service Area 2 requires a tertiary treatment system similar to Service Area 3. Last year the leaching (dispersal) area was rebuilt and is in good condition. The force main was also replaced. A budget to install the system is $130,000. There is no need to upgrade the system at this time as other areas require attention. Efforts to secure funding for a future project should be given consideration.
- Service Area 3 was recently constructed and only requires continued maintenance.
- Service Area 4 has received no maintenance or upgrades since its inception. The leaching bed should be replaced this year. A budget figure of $50,000 has been provided. Consideration to provide a tertiary treatment system in the future is advised. (budget $160,000)

MAINTENANCE – WHY WE DO IT

The **original septic systems** were comprised of two compartment septic tank and a tile field. The maintenance consisted of pumping the tank every three to four years.

Septic tanks were seldom pumped for many reasons.

1. No one new where the tank was.
2. No sewage breakout on the surface so all things must be working.
3. The home was just purchased and the tank was pumped prior to transfer of ownership.
4. Out of sight - out of mind.
5. No knowledge at all about how the septic system is supposed to work.

The home owner would only know there was a problem when sewage leaked out of the ground or backed up into the house. Both scenarios resulted in the replacement of the complete system.

Why did the system fail?

1. Additional washrooms. (increased sewage)
2. Renovated kitchens which included the installation of dishwashers. (increased grey water)
3. Installation of garboraters. (increase in FOG -fats, oils and grease)
4. Juguzzi tub installations. (increase in grey water)
5. Multiple shower heads. (increase grey water)
6. Use of antibacterial soaps. (natural bacteria are killed stopping the breakdown of solids to liquid)
7. Septic tank deterioration. (there are two concrete baffles in a septic tank which deteriorate over time) The first baffle forces the sewage down into the tank and the second baffle prevents solids from entering the tile field.

The new **tertiary treatment systems** require maintenance of components.

1. The second baffle in the septic tank has been replaced by an effluent filter which requires cleaning throughout the year. This filter prevents solids from migrating into the tile fields.
2. The first baffle has been replaced with a PVC unit that may be replaced if required.
3. Pumps and aerators are used to provide oxygen into the sewage which reduces the strength of the sewage. The pumps and aerators have filters which require cleaning throughout the year.
4. The pumps and aerators require electricity to operate and amperage readings are taken to verify equipment performance and determine longevity.
5. Additional inline filters are installed to further clean the effluent prior to disposal in the tile field. These filters require cleaning.
6. The treatment media is where the sewage is further treated to meet today's standard as stated in the Ontario Building Code (OBC).
7. Analysis of the treated waste water is required throughout the year as per OBC.
8. A yearly report is required by the regulations as stated in OBC.

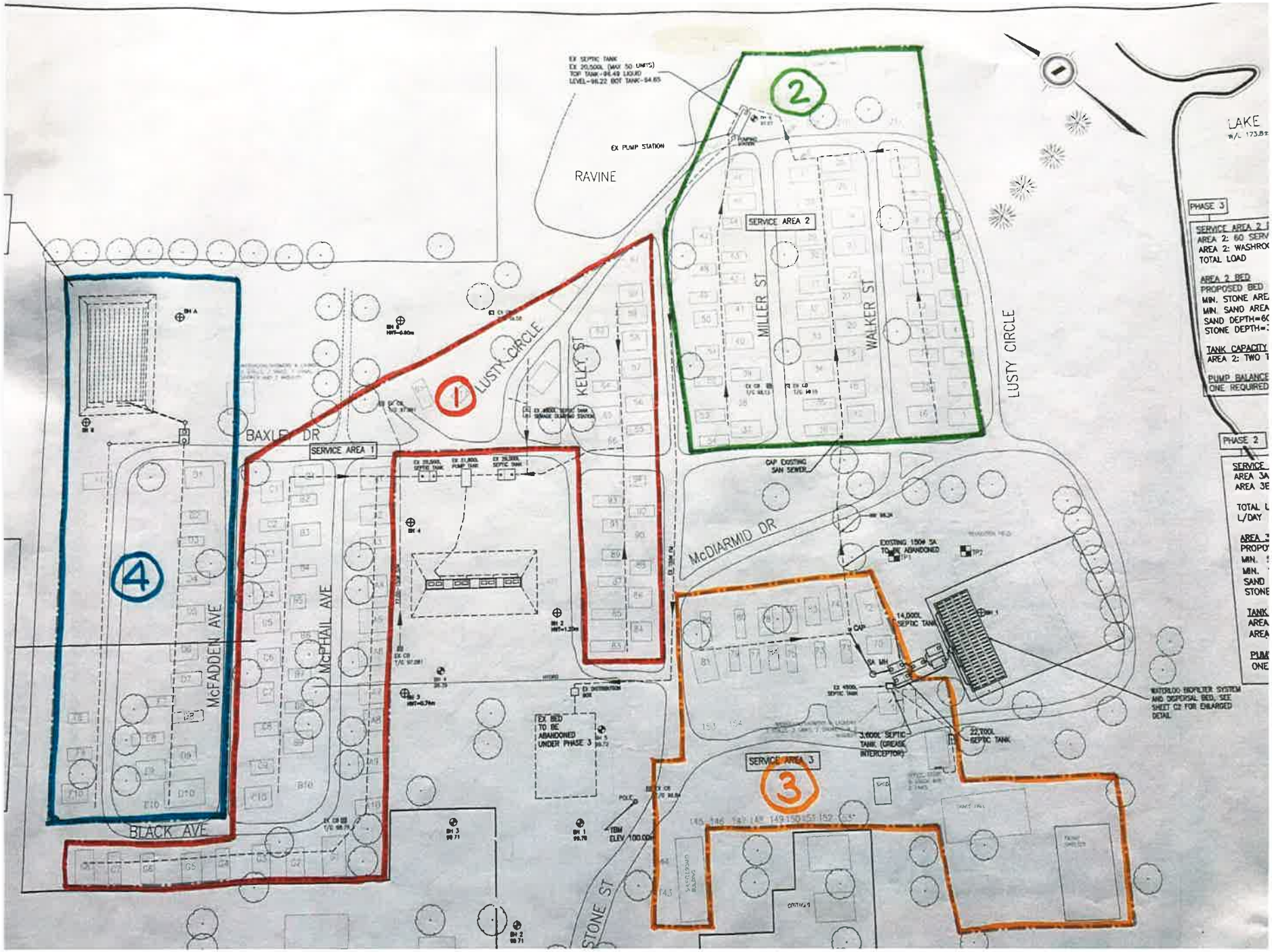
Maintenance is required due to legislation and also due to system failure if not maintained. Here are a couple of examples where maintenance was neglected.

BEFORE

AFTER

BEFORE

AFTER


EX SEPTIC TANK
EX 20,500L (MAX 50 UNITS)
TOP TANK=98.49 LIQUID
LEVEL=98.22 BOT TANK=94.65
EX PUMP STATION
RAVINE
SERVICE AREA 2
MILLER ST
WALKER ST
LUSTY CIRCLE
KELLY ST
BAXLEY DR
SERVICE AREA 1
McDIARMID DR
McFADDEN AVE
McPHAIL AVE
BLACK AVE
STONE ST
CAP EXISTING SAN SEWER
EXISTING 1500 SA TO BE ABANDONED
14,000L SEPTIC TANK
3,600L SEPTIC TANK (GREASE INTERCEPTOR)
22,700L SEPTIC TANK
WATERLOO BIOFILTER SYSTEM AND DISPOSAL BED, SEE SHEET C2 FOR ENLARGED DETAIL
EX BED TO BE ABANDONED UNDER PHASE 3
SERVICE AREA 3
1
2
3
4
LAKE
PHASE 3
PHASE 2

APPENDIX B

ENVIRONMENTAL COMPLIANCE APPROVALS

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 2782-AJZQYG
Issue Date: March 24, 2017

The Corporation of the Municipality of West Elgin
22413 Hoskins Line
General Delivery Rodney, Ontario
N0L 2C0

Site Location: Port Glasgow Trailer Park
8650 Furnival Rd Part 3 & 5, RP 11R-2054. At dead end of Furnival Rd. (where Furnival Road meets Lake Erie).
West Elgin Municipality, County of Elgin

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:

Proposed modifications to previously approved Works at Service Area 3 (Phase 2) and Service Area 2 (Phase 3) to install new Waterloo Biofilter treatment units with closed bottoms and new subsurface dispersal beds, located at Port Glasgow Trailer Park as follows:

PROPOSED WORKS MODIFICATIONS

Modified Works at Service Area '3' - Phase 2 Construction (Q = 17,375 L/d)

Previously approved Works at Service Area '3' with rated capacity for maximum daily sanitary sewage flow of 17,375 L/d, serving 15 serviced sites and 40 unserviced sites to be modified by replacing a previously approved above grade Waterloo Biofilter Treatment System (open bottom units) with a proposed underground Waterloo Biofilter Treatment (close bottom units) and installation of proposed Type A Dispersal Bed, as follows:

Oil/Grease Separator

- one (1) 3,600 L precast concrete oil and grease trap to serve the sink drain from the snack bar discharging to a 22,700 L septic tank ('Area 3B');

Septic Tanks

- one (1) two-compartment precast concrete septic tank, having holding capacity of 14,000 L, fitted with an effluent filter (Polylok PL-525), serving 'Area 3A' comprised of 15 serviced sites discharging to a pumping station as described below;;

- one (1) two-compartment precast concrete septic tank, having holding capacity of 22,700 L, fitted with an effluent filter (Polylok PL-525), serving 'Area 3B' comprised of 40 unserviced sites discharging to a pumping station as described below;

Pumping Station

- one (1) single-compartment precast concrete pumping station having total capacity as 20,400 L, having approximate dimensions as 2.6 m width x 5.0 m length x 2.5 m depth, housing two (2) submersible effluent pumps installed on an alternating timed duplex panel with all required floats for high/low shut-off and audible/visual alarm system, each pump having rated capacity as 266 Litres per minute at an estimated TDH of 5.5 m to transfer wastewater via a 50 mm diameter forcemain to a Waterloo Biofilter Treatment System (closed bottom) as described below;

Proposed Waterloo Biofilter Treatment System with Pumps

- two (2) proposed closed bottom Waterloo Biofilter units (Model 90, configuration 1b) replacing existing above grade open bottom Waterloo Biofilter system, both units installed under ground connected in parallel at the bases of both tanks (A & B), each tank is a concrete tank housing two (2) wire mesh baskets. Effluent from the pumping station is distributed evenly over the surface of the foam by helical spray nozzles. Waterloo Biofilter Tank B is equipped with an alternating duplex pumps system for disposal /recirculation (Little Giant WS50M-12-20 or equivalent), each pump rated at 257 L/min at 5.5 m TDH to dose treated effluent that collects at the bottom of the Waterloo treatment units to a proposed dispersal bed, as described below, at a rate not exceeding 17,375 L/d (pump for 7.5 min 'ON' & 18 cycles per day) and recirculating 50 % of the treated effluent back to the existing Septic Tanks as described above;

Proposed Type A Dispersal Bed

- a proposed above grade Type A Dispersal Bed constructed in imported sand fill which has less than 5% fines passing the #200 sieve (0.074 mm) and a percolation rate of 6 to 10 min/cm, consisting of five (5) cells, each cell with five (5) parallel runs of 75 mm dia distribution pipes installed 1.2 m apart centre to centre, each 10.8 m long with a total length of 270 m installed within a minimum of 200 mm thick stone layer area of 360 m^2 (30 m x 12 m), and overlying a minimum 300 mm thick unsaturated sand layer of 1,305.5 m^2 (35 m x 37.3 m), complete with a minimum of 300 mm thick unsaturated sand mantle (T= 6 to 10 min/cm) extending for a minimum 15 m beyond the outermost distribution

pipes in any direction which the effluent will move laterally in the soil away from the area bed; constructed such that the bottom of the stone layer is at least 600 mm above the high ground water table, rock or soil with a percolation time of 1 min or less or greater than 50 min.

Modified Works at Service Area '2' - Phase 3 Construction (Q = 28,250 L/d):

Previously approved Works at Service Area '2' with rated capacity for maximum daily sanitary sewage flow of 28,250 L/d, serving 60 serviced sites and 10 unserviced sites to be modified by replacing a previously approved above grade Waterloo Biofilter Treatment System (open-bottom units) with a proposed underground Waterloo Biofilter Treatment (closed bottom units) and installation of proposed Type A Dispersal Bed, as follows:

Septic Tanks:

- two (2) precast concrete septic tanks, installed in series, each a two-compartment tank with capacity of 30,000 Litres, equipped with an effluent filter fitted at the outlet of the last septic tank, servicing 60 serviced sites and 10 unserviced sites, discharging via gravity to pumping station as described below;

Pumping Station:

- one (1) single-compartment precast concrete pumping station having total capacity 30,000 L, having approximate dimensions as 3.0 m width x 5.0 m length x 3.3 m depth, housing two (2) alternating submersible pumps, installed on an alternating timed duplex panel with all required floats for high/low shut-off and audible/visual alarm system, each pump having rated capacity as 294 L/min at an estimated TDH of 11.6 m to transfer wastewater via existing approximately 250 m long 75 mm diameter forcemain to a Waterloo Biofilter Treatment System (closed bottom) as described below;

Proposed Waterloo Biofilter Treatment System with Pumps

- two (2) proposed closed bottom Waterloo Biofilter units (Model 150) replacing existing above grade open bottom Waterloo Biofilter system, both units installed under ground connected in parallel at the bases of both tanks (A & B), each tank is a concrete tank housing two (2) wire mesh baskets. Effluent from the pumping station is distributed evenly over the surface of the foam by helical spray nozzles. Waterloo Biofilter Tank B is equipped with a simplex pump system for recirculation of 50% of treated effluent back to septic tanks (Little Giant WS50M-12-20 or equivalent), pump rated at 273 l/min at 5.3 m TDH and an alternating duplex pumps system for disposal of treated effluent (Little Giant WS100M-12-20 or equivalent), each pump rated at 231 L/min at 19.8 m TDH to dose treated effluent collected at the bottom of the Waterloo treatment units to a proposed dispersal bed, as described below, at a rate not exceeding 28,250 L/d (pump is 'ON' for 8.3 min @15 cycles per day);

Proposed Type A Dispersal Bed

- a proposed above grade Type A Dispersal Bed constructed in imported sand fill which has less than 5% fines passing the #200 sieve (0.074 mm) and a percolation rate of 6 to 10 min/cm, consisting of six (6) cells, each cell with four (4) parallel runs of 75 mm dia distribution pipes installed 1.2 m apart centre to centre, each 18.8 m long with a total length of 451.2 m (75.2 m per cell) installed within a minimum of 200 mm thick stone layer area of 580 m^2 (29 m x 20 m), and overlying a minimum 300 mm thick unsaturated sand layer of 580 m^2 (29 m x 20 m), complete with a minimum of 300 mm thick unsaturated sand mantle (T= 6 to 10 min/cm) extending for a minimum 15 m beyond the outermost distribution pipes in any direction which the effluent will move laterally in the soil away from the area bed; constructed such that the bottom of the stone layer is at least 600 mm above the high ground water table, rock or soil with a percolation time of 1 min or less or greater than 50 min.

PREVIOUS WORKS

Sewage Works at Service Area '1' - Phase 1 (Completed in March 2013, ECA # 7034-89CKAX dated Oct 29, 2010)

Sewage Works rated at maximum daily sanitary sewage flow of 30,625 L/d, serving 65 serviced sites and a dumping station located within Service Area '1A', '1B' and '1C', as follows:

Septic Tanks:

- one (1) two-compartment precast concrete septic tank having holding capacity of 29,500 L, fitted with Zabel A300 12 x 28 effluent filter, serving Service Area '1A' comprised of 38 serviced sites;

- one (1) two-compartment precast concrete septic tank having holding capacity of 22,700 L, fitted with Zabel A300 12 x 20 effluent filter, serving Service Area '1B' comprised of 24 serviced sites; and

- one (1) two-compartment precast concrete septic tank having holding capacity of 6,800 L, fitted with Polylok PL-122 effluent filter, serving Service Area '1C' comprised of 3 serviced sites and a dumping station; and

all of the above septic tanks for Service Area '1' discharging to a pumping station as described below;

Pumping Station:

- one (1) single-compartment precast concrete pumping station having a total capacity of 31,800 L, having dimensions as 3.0 m width x 5.0 m length x 3.3 m depth, equipped with two

(2) submersible effluent pumps installed on an alternating timed duplex panel with all required floats for high/low shut off and audible/visual alarm system, each pump having rated capacity as 390 L/min at an estimated Total Dynamic Head (TDH) of 7.0 m to transfer wastewater via 50 mm diameter forcemain to Waterloo Biofilter Area Bed System as described below;

Waterloo Biofilter Area Bed System:

- four (4) above-grade, open bottom Waterloo Biofilter units (Model 77 Cedar Shed) each having dimensions 1.98 m width x 3.51 m length x 2.07 m height, each unit fed through three (3) downward facing "Twister" cone spray nozzles, containing a total of 41 m^3 of foam media for the design loading rate of 30,625 L/d, with treated effluent discharging by gravity to the underlying absorption bed, minimum 300 mm in depth and 629 m^2 in area, comprised of washed 200 mm diameter stone layer covered by permeable geotextile fabric, overlying an unsaturated sand layer to be constructed in imported sand fill which has less than 5% fines passing the #200 sieve, and having percolation rate of 6-8 min/cm, having minimum area as 800 m^2 and a minimum depth of 300 mm such that the stone remains at least 900 mm above the seasonal high groundwater table;

Existing Northwest Sewage Works

an existing sewage treatment and disposal system rated at 15,500 L/d serving 30 serviced and 10 unserviced Northwest trailer sites, consisting of the following:

Existing Septic Tank:

- one (1) existing septic tank having capacity of approximately 18,200 L discharging by gravity to an existing effluent pumping chamber as described below;

Existing Pumping Chamber:

- one (1) existing 1.2 m diameter pumping chamber equipped with two (2) submersible effluent pumps alternately discharging to an existing leaching bed as described below;

Existing Leaching Bed:

- an existing raised leaching bed consisting of 12 rows of 100 mm diameter distribution pipes, each having length of approximately 30 m.

all in accordance with the documents submitted to the Ministry as listed in the **Schedule A** in this Approval.

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

"Approval" means this entire Approval document and any Schedules to it, including the application and Supporting Documentation.

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

"Director" means a person appointed by the Minister pursuant to Section 5 of the EPA for the purposes of Part II.I of the EPA.

"District Manager" means the District Manager of the London District Office.

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

"Licensed Installer" means a person who holds a licence under Article 2.12.3.1 of the Ontario Building Code.

"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.

"OBC" means the Ontario Building Code.

"Owner" means The Corporation of the Municipality of West Elgin and includes its successors and assignees;

"OWRA" means the Ontario Water Resources Act, R.S.O. 1990, c.O40, as amended.

"Professional Engineer" means a person entitled to practice as a Professional Engineer in the Province of Ontario under a licence issued under the Professional Engineers Act.

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

"Proposed Works" means the sewage works described in the Owner's application, this Approval, to the extent approved by this Approval.

"Supporting Documentation" means the documents listed in Schedule A of this Approval.

"Works" means the sewage works described in the Owner's application, and this Approval, and includes both Proposed Works and Previous Works.

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

The approval issued by 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 District Manager 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 District Manager;

(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 Information Act, R.S.O. 1990, c. C39 shall be included in the notification to the District Manager;

(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 District Manager and the Director.

4. CONSTRUCTION

(1) The Owner shall ensure that the construction of the works is supervised by a licensed installer or a Professional Engineer, as defined in the Professional Engineers Act.

(2) Upon construction of the works, the Owner shall prepare a statement, certified by a licensed installer or 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 staff and staff of the local municipality.

(3) Within six (6) months of the completion of the Works construction, 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. 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) Samples shall be collected of raw sewage and effluent being discharged to the subsurface disposal system at the frequency specified, by means of the specified sample type and analysed for each parameter listed and all results recorded:

Table 1 - Raw Sewage (Applies to Works at Service Areas 1, 2 & 3)	
Frequency	monthly during the operating season
Sample Type	Grab
Sampling Location	Upstream from tertiary treatment
Parameters	BOD5, Total Suspended Solids (TSS)

Table 2 - Effluent Monitoring (Applies to Works at Service Areas 1, 2 & 3)	
Frequency	monthly during the operating season
Sample Type	Grab
Sampling Location	effluent - post-tertiary treatment
Parameters	CBOD5, Total Suspended Solids (TSS)

(3) The Owner shall employ any measurement devices to accurately measure quantity of effluent being discharged to each subsurface bed, including but not limited to water meters, event counters, running time clocks, or electronically controlled dosing, and shall record the daily volume of effluent being discharged to each sewage Works.

(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; and

(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) The Owner shall retain for a minimum of five (5) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this Approval.

(6) The measurement frequencies specified in subsection (2) are minimum requirements which may, after 24 months of monitoring in accordance with this Condition, be modified by the District Manager in writing from time to time.

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 being discharged to the subsurface disposal system.

Table 3 - Effluent Objectives (Applies to Works at Service Areas 1, 2 & 3)	
Effluent Parameter	**Concentration Objective** (milligrams per litre unless otherwise indicated)
CBOD5	10
Total Suspended Solids	10

(2) For the purposes of determining compliance with subsection (1), the annual average concentrations of parameters named in Column 1 of subsection (1) should not exceed the corresponding concentration objectives set out in Column 2 of subsection (1).

7. OPERATIONS AND MAINTENANCE

(1) The Owner shall prepare an operations manual within six (6) months of the introduction of sewage to the Works, 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 all the Works; copies of maintenance contracts for any routine inspections & pump-outs should be included for all the tanks and treatment units;

(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 District Manager; and

(f) procedures for receiving, responding and recording public complaints, including recording any follow-up actions taken.

(2) 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.

(3) The Owner shall prepare and make available for inspection by Ministry staff, a maintenance agreement with the manufacturer for the treatment process/technology or its authorized agent and a complete set of "as constructed" drawings within one (1) year of Substantial Completion of the Works. The maintenance agreement and drawings must be retained at the site and kept current.

(4) The Owner shall employ for the overall operation of the Works a person who possesses the level of training and experience sufficient to allow safe and environmentally sound operation of the Works.

(5) The Owner shall ensure that grass-cutting is maintained regularly over all the subsurface disposal beds, and the drainage operations in all beds are visually observed on regular basis during the operating season. In the event a break-out is observed from a subsurface disposal bed, the Owner shall ensure that the sewage discharge to the bed is discontinued and the incident immediately reported verbally to the District Manager,followed by a written report within one (1) week. The Owner shall ensure that during the time remedial actions are taking place the sewage generated at the site shall not be allowed to discharge to a surface water body or to the environment, and safely collected and disposed off through a licensed waste hauler to an approved waste disposal site.

(6) The Owner shall ensure that the septic tank(s) is pumped out every 3-5 years or when the tank is 1/3 full of solids and the effluent filter(s) is cleaned out at minimum once a year (or more often if required).

(7) The Owner shall ensure that adequate steps are taken to ensure that the area of the Works are protected from all forms of vehicle traffic.

8. REPORTING

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

(2) The Owner shall prepare and submit a performance report, on an annual basis, within ninety (90) days following the end of each operational season to the District Manager. 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 objectives outlined in Condition 6, including an overview of the success and adequacy of the Works;

(b) 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;

(c) a tabulation of daily volumes of effluent disposed to each of the subsurface disposal area bed No.1 & No.2 during the reporting period;

(d) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works; and

(e) a description of any operating problems encountered and corrective actions taken.

(f) a summary of any complaints received during the reporting period and any steps taken to address the complaints;

(g) a summary of all spill or abnormal discharge events;

(h) any other information the District Manager requires from time to time.

SCHEDULE A

1. Application for Approval of Municipal and Private Sewage Works, dated August 09, 2010, including:

    1.1. Port Glasgow Trailer Park Wastewater Treatment Systems Replacement Report, dated August 10, 2010 and revised October 18, 2010 prepared by Spriet Associates.

    1.2. All other supporting drawings, documentation and correspondence.

2. Application for Environmental Compliance Approval dated May 17, 2015 and received at the Ministry on June 2, 2016 for amendment to ECA # 7034-89CKAX dated Oct 29, 2010 to approve proposed modifications to previously approved Sewage Works for Service Area 2 and 3 located at Port Glasgow Trailer Park, including:

    2.1. "Sanitary Sewage Treatment and Pumping Station Modifications Design Brief: Service Area 3 - Phase 2 and Service Area 2 - Phase 3 at Port Glasgow Trailer Park", dated May 2015, prepared by Strik, Baldinelli, Moniz & Structural Engineers.

    2.2. Engineering Drawings (Project No. KAM-14-024) sealed on May 31, 2016 by K.A. Moniz, P.Eng.

    2.3. All other supporting drawings, documentation and correspondence.

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, when the Works are constructed, the Works will meet the standards that apply 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, and may be operated and maintained such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented.

5. Condition 5 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 specified in the Approval and that the Works does not cause any impairment to the receiving watercourse.

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.

7. Condition 7 is included to require that the Works be properly operated, maintained, and equipped such that the environment is protected. As well, the inclusion of an operations manual, maintenance agreement with the manufacturer for the treatment process/technology and a complete set of "as constructed" drawings 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 information 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.

8. Condition 8 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.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 7034-89CKAX issued on October 29, 2010

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
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** 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) 326-5370 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 24th day of March, 2017

Fariha Pannu.

Fariha Pannu, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

BM/

c: District Manager, MOECC London - District
Dragan Sredojevic, Strik, Baldinelli, Moniz, Civil & Structural Engineers

Ontario

Ministry of the Environment
Ministère de l'Environnement

CERTIFICATE OF APPROVAL
MUNICIPAL AND PRIVATE SEWAGE WORKS
NUMBER 7034-89CKAX
Issue Date: October 29, 2010

The Corporation of the Municipality of West Elgin
22413 Hoskins Line
Post Office Box 490
Rodney, Ontario
N0L 2C0

Site Location: Port Glasgow Trailer Park
Part 3 & 5, RP 11R-2054,
Port Glasgow Trailer Park at dead end of Furnival Road where the road meets Lake Erie
Part of Lot 7, Concession 14
Municipality of West Elgin
County of Elgin

You have applied in accordance with Section 53 of the Ontario Water Resources Act for approval of:

proposed upgrade and replacement of three (3) existing sewage treatment and sub-surface disposal systems to service areas '1', '2' and '3' and inventory of one (1) existing sewage works for Northwest System, serving existing facilities at Port Glasgow Trailer Park as follows:

Proposed Works

construction of three (3) new sewage treatment and sub-surface disposal systems for service area '1', '2' and '3' to replace three (3) existing sewage treatment and sub-surface disposal works:

Service Area '1':

construction of two (2) new septic tanks, one (1) existing septic tank, one (1) pumping chamber and one (1) Waterloo Biofilter Area Bed System, having maximum daily sanitary sewage flow of 30,625 L/d, serving 65 serviced sites and a dumping station, with details as:

Septic Tanks:

- one (1) new two-compartment precast concrete septic tank having holding capacity of 29,500 L, fitted with Zabel A300 12 x 28 effluent filter, serving 'Area 1A' comprised of 38 serviced sites;

- one (1) new two-compartment precast concrete septic tank having holding capacity of 22,700 L, fitted with Zabel A300 12 x 20 effluent filter, serving 'Area 1B' comprised of 24 serviced sites; and

- one (1) existing two-compartment precast concrete septic tank having holding capacity of 6,800 L, fitted with Polylok PL-122 effluent filter, serving 'Area 1C' comprised of 3 serviced sites and a dumping station; and

all of the above septic tanks for Service Area '1' discharging to a pumping station as described below;

Pumping Station:

- one (1) new single-compartment precast concrete pumping station having a total capacity of 31,800 L, having dimensions as 3.0 m width x 5.0 m length x 3.3 m depth, equipped with two (2) submersible effluent pumps installed on

an alternating timed duplex panel with all required floats for high/low shutoff and audible/visual alarm system, each pump having rated capacity as 390 L/min at an estimated Total Dynamic Head (TDH) of 7.0 m to transfer wastewater via 50 mm diameter forcemain to Waterloo Biofilter Area Bed System as described below;

Waterloo Biofilter Area Bed System:

- four (4) above-grade, open bottom Waterloo Biofilter units (Model 77 Cedar Shed) each having dimensions 1.98 m width x 3.51 m length x 2.07 m height, each unit fed through three (3) downward facing "Twister" cone spray nozzles, containing a total of 41 m^3 of foam media for the design loading rate of 30,625 L/d, with treated effluent discharging by gravity to the underlying absorption bed, minimum 300 mm in depth and 629 m^2 in area, comprised of washed 200 mm diameter stone layer covered by permeable geotextile fabric, overlying an unsaturated sand layer to be constructed in imported sand fill which has less than 5% fines passing the #200 sieve, and having percolation rate of 6-8 min/cm, having minimum area as 800 m^2 and a minimum depth of 300 mm such that the stone remains atleast 900 mm above the seasonal high groundwater table;

Service Area '2':

consisting of two (2) new septic tanks, one (1) new pumping chamber and one (1) Waterloo Biofilter Area Bed System, having maximum daily sanitary sewage flow of 28,250 L/d, serving 60 serviced sites and 10 unserviced sites, with details as:

Septic Tanks:

- two (2) new two-compartment precast concrete septic tanks, installed in series, each having capacity of 29,500 Litres, with Zabel A300 12 x 20 effluent filter fitted at the outlet of the last septic tank, servicing 60 serviced sites and 10 unserviced sites, discharging via gravity to pumping station as described below;

Pumping Station:

- one (1) new single-compartment precast concrete pumping station having total capacity 31,800 L, having dimensions as 3.0 m width x 5.0 m length x 3.3 m depth, housing two (2) alternating submersible pumps, installed on an alternating timed duplex panel with all required floats for high/low shutoff and audible/visual alarm system, each pump having rated capacity as 294 L/min at an estimated TDH of 11.6 m to transfer wastewater via existing 250 m long 75 mm diameter forcemain to Waterloo Biofilter Area Bed System as described below;

Waterloo Biofilter Area Bed System:

- four (4) above-grade, open bottom Waterloo Biofilter units (Model 77 Cedar sheds) each having dimensions 1.98 m width x 3.51 m length x 2.07 m height, each unit fed through three (3) downward facing "Twister" cone spray nozzles, having a total of 41m^3 of foam media for the design loading rate of 28,250 L/day with treated effluent discharging by gravity to the underlying absorption bed, minimum 300 mm in depth and 578 m^2 in area, comprised of washed 200 mm diameter stone layer covered by permeable geotextile fabric, overlying an unsaturated sand layer to be constructed in imported sand fill which has less than 5% fines passing the #200 sieve, and having percolation rate of 6-8 min/cm, having minimum area as 706 m^2 and a minimum depth of 300 mm such that the stone remains atleast 900 mm above the seasonal high groundwater table;

Service Area '3' :

consisting of two (2) new septic tanks, one (1) new oil and grease trap, one (1) new pumping chamber and one (1) Waterloo Biofilter Area Bed System having maximum daily sanitary sewage flow of 17,375 L/d, serving 15 serviced sites and 40 unserviced sites, with details as:

Septic Tanks:

- one (1) new two-compartment precast concrete septic tank, having holding capacity of 13,600 L, fitted with Zabel A300 12 x 20 effluent filter, serving 'Area 3A' comprised of 15 serviced sites;

- one (1) new 3,600 L precast concrete oil and grease trap to serve the sink drain from the snack bar discharging to the new 22,700 L septic tank ('Area 3B');

- one (1) new two-compartment precast concrete septic tank, having holding capacity of 22,700 L, fitted with Zabel A300 12 x 20 effluent filter, serving 'Area 3B' comprised of 40 unserviced sites;

both the above septic tanks for Service Area '3' discharging to a pumping station as described below;

Pumping Station:

- one (1) new single-compartment precast concrete pumping station having total capacity as 20,400 L, having dimensions as 2.6 m width x 5.0 m length x 2.5 m depth, housing two (2) submersible effluent pumps installed on an alternating timed duplex panel with all required floats for high/low shutoff and audible/visual alarm system, each pump having rated capacity as 426 Litres per minute at an estimated TDH of 5.5 m to transfer wastewater via 50 mm diameter forcemain to Waterloo Biofilter Area Bed System as described below;

Waterloo Biofilter Area Bed System:

- three (3) above-grade, open bottom Waterloo Biofilter units (Model 60 Cedar Shed) each having dimensions 1.84 m width x 3.51 m length x 2.05 m height, each unit fed through three (3) downward facing "Twister" cone spray nozzles, containing a total of 24 m^3 of foam media for the design loading rate of 17,375 L/day with treated effluent discharging by gravity to the underlying absorption bed, minimum depth of 300 mm and 350 m^2 in area, comprised of washed 200 mm diameter stone layer covered by permeable geotextile fabric, overlying an unsaturated sand layer to be constructed in imported sand fill which has less than 5% fines passing the #200 sieve, and having percolation rate of 6-8 min/cm, having minimum area as 448 m^2 and a minimum depth of 300 mm such that the stone remains atleast 900 mm above the seasonal high groundwater table;

Existing Works:

an existing sewage treatment and disposal system rated at 15,500 L/d serving 30 serviced sites and 10 unserviced sites, consisting of the following:

Existing Septic Tank:

one (1) existing septic tank having capacity of approximately 18,200 L discharging by gravity to an existing effluent pumping chamber as described below;

Existing Pumping Chamber:

one (1) existing 1.2 m diameter pumping chamber equipped with two (2) submersible effluent pumps alternately discharging to an existing leaching bed as described below;

Existing Leaching Bed:

an existing raised leaching bed consisting of 12 rows of 100 mm diameter distribution pipes, each having length of approximately 30 m;

all in accordance with the following documents submitted to the *Ministry*:

1. Application for Approval of Municipal and Private Sewage Works, dated August 09, 2010,

2. Port Glasgow Trailer Park Wastewater Treatment Systems Replacement Report, dated August 10, 2010 and revised October 18, 2010 prepared by Spriet Associates.

3. All other supporting drawings, documentation and correspondence.

For the purpose of this Certificate of Approval and the terms and conditions specified below, the following definitions

apply:

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

"Certificate" means this entire certificate of approval document, issued in accordance with Section 53 of the *Act,* and includes any schedules;

"*Director"* means any *Ministry* employee appointed by the Minister pursuant to section 5 of the *Act;*

"*District Manager"* means the District Manager of the London District Office of the Ministry;

"*Ministry"* means the Ontario Ministry of the Environment;

"*Owner"* means The Corporation of the Municipality of West Elgin and includes its successors and assignees;

"Works" means the sewage works described in the *Owner*'s application, this *Certificate* and in the supporting documentation referred to herein, to the extent approved by this *Certificate.*

You are hereby notified that this 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 *Certificate* 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 *Certificate,* the application for approval of the works and the submitted supporting documents and plans and specifications as listed in this *Certificate,*

(3) Where there is a conflict between a provision of any submitted document referred to in this *Certificate* and the Conditions of this *Certificate,* the Conditions in this *Certificate* 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.

2. EXPIRY OF APPROVAL

The approval issued by this *Certificate* will cease to apply to those parts of the *Works* which have not been constructed within five (5) years of the date of this *Certificate.*

3. CHANGE OF OWNER

(1) The *Owner* shall notify the *District Manager* and the *Director,* in writing, of any of the following changes within thirty (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 *District Manager;*

(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 Information Act, R.S.O. 1990, c. C39 shall be included in the notification to the *District Manager;*

(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 *Certificate,*and a copy of such notice shall be forwarded to the *District Manager*and the *Director*.

4. CONSTRUCTION

(1) The *Owner*shall ensure that the construction of the works is supervised by a licensed installer or a Professional Engineer, as defined in the Professional Engineers Act.

(2) Upon construction of the works, the *Owner*shall prepare a statement, certified by a licensed installer or a Professional Engineer, that the *Works*are constructed in accordance with this *Certificate,*and upon request, shall make the written statement available for inspection by *Ministry*staff and staff of the local municipality.

(3) Within six (6) months of the completion of the *Sewage Works*construction, 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. 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 *Certificate*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) Samples shall be collected of the effluent being discharged to the subsurface disposal system at the frequency specified, by means of the specified sample type and analyzed for each parameter listed and all results recorded:

Table 1 - Effluent Monitoring - (sample collected from Waterloo Biofilter System)	
Frequency	Once a month during the months of operation
Sample Type	Grab
Parameters	*CBOD5,*Total Suspended Solids.

(3) The *Owner*shall measure and record the daily volume of effluent being discharged to subsurface disposal system.

(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; and

(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) The *Owner*shall retain for a minimum of three (3) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this *Certificate.*

6. EFFLUENT OBJECTIVES

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 being discharged from the Waterloo Biofilter system

Table 2 - Effluent Objectives	
Effluent Parameter	**Concentration Objective** (milligrams per litre unless otherwise indicated)
CBOD5	30
Total Suspended Solids	30

7. OPERATIONS AND MAINTENANCE

(1) The *Owner*shall prepare an operations manual within six (6) months of the introduction of sewage to the *Works,*that includes, but not necessarily limited to, the following information:

(a) operating procedures for routine operation of the *Works;*and

(b) inspection programs, including frequency of inspection, for the *Works*and the methods or tests employed to detect when maintenance is necessary.

(2) 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.

(3) The *Owner*shall prepare and make available for inspection by *Ministry*staff, a maintenance agreement with the manufacturer for the treatment process/technology or a licensed contractor who is authorized by the manufacturer of the Waterloo Biofilter systems.

8. REPORTING

(1) One week prior to the start up of the operation of the *Works,*the *Owner*shall notify the *District Manager*(in writing) of the start up date.

(2) The *Owner*shall prepare, and submit upon request, 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 objectives outlined in Condition 6, including an overview of the success and adequacy of the *Works;*

(b) a tabulation of the daily volumes of effluent disposed through the subsurface disposal system during the reporting period;

(c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the *Works;*and

(d) a description of any operating problems encountered and corrective actions taken.

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 *Certificate*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 *Certificate*the existence of this *Certificate.*

2. Condition 2 is included to ensure that, when the *Works*are constructed, the *Works*will meet the standards that apply 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 *Certificate*and continue to operate the *Works*in compliance with it.

4. Condition 4 is included to ensure that the works are constructed, and may be operated and maintained such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented.

5. Condition 5 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 specified in the *Certificate*and that the *Works*does not cause any impairment to the receiving watercourse.

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.

7. Condition 7 is included to require that the *Works*be properly operated, maintained, and equipped such that the environment is protected. As well, the inclusion of an operations manual, maintenance agreement with the manufacturer for the treatment process/technology and a complete set of "as constructed" drawings 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 information 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.

8. Condition 8 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 *Certificate,*so that the *Ministry*can work with the *Owner*in resolving any problems in a timely manner.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, 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 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the 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.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

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, 15th Floor
Toronto, Ontario
M5G 1E5

AND

The Director
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
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) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 29th day of October, 2010

Jennifer Barolet, P.Eng.
Director
Section 53, *Ontario Water Resources Act*

MK/
c: District Manager, MOE London District Office.
Art W. Bos, Bos Engineering & Environmental Services Inc.