


Notice of Alteration Form



Client File No. :	Environment Act Licence No. : EAL 1907
Legal name of the Licencee: City of Portage la Prairie	
Name of the development: Water Pollution Control Facility	
Category and Type of development per Classes of Development Regulation: Waste Treatment and Disposal <SELECT>	
Licencee Contact Person: Karly Friesen Mailing address of the Licencee: City of Portage la Prairie City: Portage la Prairie Province: Manitoba Postal Code: R1N 0L8 Phone Number: 204-239-8359 Fax: Email: kfriesen@city-plap.com	
Name of proponent contact person for purposes of the environmental assessment (e.g. consultant): Natalie Wilson, P.Eng, AECOM Canada	
Phone: 204-928-8322 Fax:	Mailing address: 99 Commerce Drive, Winnipeg, R3P 0Y7
Email address: natalie.wilson@aecom.com	
Short Description of Alteration (max 90 characters): Equivalent digestion process of Biosolids in Storage Tanks 1 & 2 for land application	
Alteration fee attached: Yes: <input type="checkbox"/> No: <input checked="" type="checkbox"/>	
If No, please explain: Minor NOA	
Date: 2020/08/20	Signature:  Printed name: Karly Friesen
<p>A complete Notice of Alteration (NoA) consists of the following components:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Cover letter <input checked="" type="checkbox"/> Notice of Alteration Form <input type="checkbox"/> 2 hard copies and 1 electronic copy of the NoA detailed report (see "Information Bulletin - Alteration to Developments with Environment Act Licences") <input type="checkbox"/> \$500 Application fee, if applicable (Cheque, payable to the Minister of Finance) 	
<p>Submit the complete NoA to:</p> <p>Director Environmental Approvals Branch Manitoba Sustainable Development 1007 Century Street Winnipeg, Manitoba R3H 0W4</p> <p>For more information:</p> <p>Phone: (204) 945-8321 Fax: (204) 945-5229 http://www.gov.mb.ca/sd/eal</p>	
<p>Note: Per Section 14(3) of the Environment Act, Major Notices of Alteration must be filed through submission of an Environment Act Proposal Form (see "Information Bulletin – Environment Act Proposal Report Guidelines")</p>	

File No. WPCF 30-4

August 20, 2020

Ms. Tracey Braun
Environmental Approvals
Manitoba Conservation and Climate
1007 Century Street
Winnipeg, Manitoba
R3H 0W4

Re: Notice of Alteration for Alternative Digestion Method for Residual Solids Stored in Biosolids Storage Tanks at the Water Pollution Control Facility.

Dear Ms. Braun:

The City of Portage la Prairie is submitting a Notices of Minor Alteration regarding residual solids material that is stored at the Water Pollution Control Facility (WPCF). The anaerobic digester that processes the residual solids does not provide a 30-day residence time as required in Clause 2, EAL 1907 and would like an equivalent digestion process to be considered for approval. Clause 2 of Biosolids Environment Act License 1907 states, “the licensee shall, after the 1st of June 1996, ensure that prior to removal for disposal on agricultural land, the biosolids have been subjected to anaerobic digestion for a period of 30 days at a minimum temperature of 20°C or an equivalent digestion process acceptable to the Director.” The mixers in the anaerobic digester failed and solids have accumulated in the tank, reducing the overall capacity which in turn reduces the residence time. The residual materials processed through the anaerobic digester do not comply with the license requirement of 30 days.

The biosolids license uses the time and temperature criteria as a confirmation of bacterial destruction and for the reduction in volatile solids to reduce vector attraction. The US EPA states that for Class B biosolids, (40 CFR Part 503, Standards for the Use or Disposal of Sewage Sludge) expected fecal coliforms levels in Class B biosolids should be < 2,000,000 CFU per gram total dry weight. The CCME “A Review of the Current Canadian Legislative Framework for Wastewater Biosolids” also refers to this standard. The US EPA standard states a reduction in volatile solids concentration lowers vector attraction. Through ongoing laboratory analysis, the City of Portage la Prairie has been able to demonstrate that the fecal coliform count is below the EPA standard as stated above. Although the anaerobic digester at is not functioning as designed, the intended outcome of bacterial destruction is occurring and meets the US EPA guidelines for Class B biosolids. Regarding the second objective of

reduced vector attraction, this is mitigated when biosolids are injected, as is done by the City of Portage la Prairie.

As required as part of the NOA application, the City of Portage la Prairie engaged AECOM Engineering to review the provision of using EPA guidelines for bacteria count. The memo provided demonstrated how bacterial destruction is considered an equivalent measurement of time and temperature under the EPA guidelines. A copy of this memo was submitted with the original applications. Ongoing monitoring of temperature, pH and coliform counts of residual solids in BST Tank 1 and 2 have been conducted and these results are included with this NOA. Updates of the data will be sent to all as they become available.

The City has completed the clean-out of the digester and is in the processes of installing equipment to assist with mixing to reduce the build up of solids. The long-term plan to remedy this situation includes refurbishing the digester with externally located mixing equipment. This is included in the Nutrient Reduction upgrade for the wastewater facility which also includes a second anaerobic digester. This will allow either digester to be taken offline for maintenance and repair. The construction of a new digester and refurbishment of the existing is including with the Water Pollution Control Facility Nutrient Reduction upgrade which is scheduled for construction to start in 2022.

It is necessary for biosolids to be removed from storage to ensure ongoing capacity is available for solids being removed from the secondary system. Without storage room, the solids would accumulate in the secondary system and wash out to the river with the discharged effluent. The City of Portage la Prairie requests that the Director approve the alternative digestion process as described in EAL 1907, clause 2 to allow the land application of biosolids if the requirement of fecal coliform count is below 2,000,000 CFU per dry gram and if biosolids is applied via injection until November 30, 2020. We intend to being land application September 8, 2020, weather permitting.

If you have any questions or require any additional information, please contact me at (204) 239-8359.

Regards,



Karly Friesen
Director of Utility

Cc: Jay Rackham, Environmental Compliance and Enforcement
Tyler Kneeshaw, Environmental Compliance and Enforcement
Natalie Wilson, P. Eng., AECOM Engineering

Memorandum

To	Karly Friesen	Page 1
CC	Jean-Marc Nadeau, Kelly Braden	
Subject	Portage la Prairie Water Pollution Control Facility Environment Act Licence 1907 Land application Review	
From	Natalie Wilson	
Date	May 5, 2017	Project Number 60539202

1. Introduction

AECOM has been requested by the City of Portage la Prairie to review the current operation of biosolids treatment with respect to Environment Act Licence 1907, issued April 13, 1995. The licence states that:

"prior to removal for disposal on agricultural land, the biosolids have been subjected to anaerobic digestion for a period of 30 days at a minimum temperature of 20°C, or an equivalent digestion process acceptable to the Director".

This provision of the Licence is very typical within the industry as it provides Class B biosolids, as defined by the United States Environmental Protection Agency (USEPA). Due to malfunctions in the digestion process, this provision of the Licence is not being met. However, this memo demonstrates that the biosolids continues to meet the requirements for Class B biosolids and thus is still acceptable for land application.

2. Solids Treatment Process

The solids treatment at WPCF involves removing waste activated sludge from the sequencing batch reactors to an aerated equalization tank prior to thickening in two gravity belt thickeners. After thickening the solids stream is directed to one 1900 m³ digester.

Temperatures in the digester averaged 21°C in 2016. While the calculated retention time averaged 24.5 days in 2016, it is not believed to be representative of actual operation. Due to failure of mixing equipment in the digester, solids have likely accumulated within the digester, which would cause noticeable short circuiting. This short circuiting is believed to decrease the residence time for digestion. After digestion, the solids are stored in two biosolids storage tanks until the land application program, which runs in spring and fall of each year.

3. Biosolids Land Application

The USEPA has well-established regulations for land application of biosolids in particular Title 40 of the Code of Federal Regulations, Part 503. The intent of these regulations is to:

“protect public health and the environment from any reasonably anticipated adverse effects of certain pollutants that might be present in sewage sludge biosolids”

These regulations are followed throughout the United States and are used in many jurisdictions around the world, including Canada, in the development of biosolids regulations. Although the Province of Manitoba does not necessarily follow all aspects of Part 503, it follows the key requirements of the USEPA, namely controlling pollutant (heavy metals) limits, and requiring a treatment process for pathogen and vector attraction reduction.

Table 1: Comparison of Licence 1907 and USEPA Part 503

	Licence 1907	USEPA Part 503
Pollutant (Heavy Metal) limits	Heavy metal application rate (kg/hectare)	Heavy metal application rate (kg/hectare)
Pathogen Reduction Limits	Anaerobic digestion	Three Alternatives are allowed. Alternative 2 includes anaerobic digestion as one of the allowable treatment options.
Vector Attraction Reduction Limits	Injection into the soil	Twelve Options are allowed. Option 9 is for injection into the soil.

Table 1 shows that Licence 1907 follows the same approach for biosolids application as the USEPA 503 regulations. However, due to the faulty mixing equipment, it is likely that the City’s digester is not providing sufficient anaerobic digestion time before transfer to the biosolids storage tanks. This means that the biosolids for land application are likely not in strict compliance with the provisions of Licence 1907.

The City needs to dispose of the biosolids currently stored in the biosolids storage tanks and therefore needs to be able to demonstrate that land application without sufficient anaerobic digestion time remains within the overall intent Licence 1907 i.e. land application of Class B biosolids. AECOM recommends that other provisions of USEPA Part 503 be used to demonstrate that the existing biosolids can be classified as Class B to provide equivalency with the provisions of Licence 1907.

As described in **Table 1**, Pathogen Reduction Limits in USEPA Part 503 can be one of three Alternatives. All three Alternatives are considered by USEPA as equivalent to each other, i.e. one Alternative is not considered better or worse than another Alternative. Licence 1907 follows the approach of Alternative 2 where treatment in a prescribed process (e.g. anaerobic digestion) is

deemed to have reduced pathogens to the necessary level. Alternative 1 requires actual measurement of pathogens in the biosolids to demonstrate that pathogens have been reduced to the necessary level. Alternative 1 is summarized below:

"Test for fecal coliform density as an indicator for all pathogens. The geometric mean of seven samples shall be less than 2 million MPNs per gram per total solids or less than 2 million CFUs per gram of total solids at the time of use or disposal."

Samples of biosolids from Biosolids Storage Tank No.1 have been taken by the City and analyzed for fecal coliform density. The eight samples taken in March and April of 2017 have a geometric mean density of 0.23 million MPNs per gram of total solids, or about ten times lower than the minimum allowed by the USEPA.

4. Conclusion

Testing shows that the biosolids from Biosolids Storage Tank No.1 contains fecal coliform densities well below the minimum required to demonstrate pathogen reduction and is therefore suitable for land application subject to compliance with the provisions of Licence 1907 related to heavy metals and sub-surface soil injection. AECOM recommends that the City of Portage la Prairie gets approval from the Province of Manitoba to land apply irrespective of anaerobic digester performance, as long as the fecal coliform density is less than 2 million MPN per gram.