City of Portage la Prairie

2020 Residual Biosolids Land Application Program

As per Environment Licence 1907

Portage la Prairie
City of Possibilities

97 Saskatchewan Avenue East
Portage la Prairie, MB R1N 0L8
www.city-plap.com

2020 Residual Biosolids Land Application Program

City of Portage la Prairie, Water Pollution Control Facility

Report to Manitoba Sustainable Development

Introduction

The 2020 Residual Biosolids Land Application report is submitted as required by Clause 2.1 of the Environment Act Licence #1907 issued to the City of Portage la Prairie. The objective of this report is to document the operations and procedures of the 2020 Residual Biosolids Land Application program conducted by the City of Portage la Prairie. The report contains information on land solicitation and advertising; information pertaining to the request for suspension of license for land application due to reduced retention time within the anaerobic digester; and the data pertaining to the biosolids applied and fields utilized during the fall application along with application rates and volumes applied.

The City of Portage la Prairie owns and operates a wastewater treatment system known as the Water Pollution Control Facility (WPCF). Flows from the McMillan Industrial Park are pre-treated in the Low-Rate Anaerobic Reactor. This pre-treated water is combined with municipal flows as well as pre-treated industrial wastewater from Poplar Bluff industrial park. These flows are conveyed to the Sequencing Batch Reactors (SBRs) that provide secondary treatment. Waste Activated sludge (WAS) is the residual solids that are generated through this process and required to be removed from the SBRs to ensure ongoing treatment. WAS is thickened through the addition of polymer and dewatered by gravity belt. The material is then stabilized in the City's anaerobic digester to produce biosolids material that is suitable for land application as a fertilizer. The biosolids is stored throughout the year in the Bulk Volume Fermenter (BVF) or the Biosolids Storage Tanks (BSTs) until weather and harvest permits an opportunity to remove the material and inject it on agricultural land as a soil enhancement product. The removal, hauling, analyses and injection of this stored material constitutes the Residual Biosolids Land Application program.

Samples of biosolids from the two storage areas are sent to a contract lab for analyses as required in the EAL #1907. The fields to be used are also sampled and analyzed. From this, application rates are calculated to determine how much, if any, biosolids can be applied. Once the land is approved for use, biosolids are pumped from one of the two storage areas into tanker trucks and transported to the field. From there, material is pumped into a nurse tank which feeds the application equipment that inject the material below the surface. Injection helps to reduce runoff, prevent vector attraction, and minimize odours.

Section 2 of the Environment Act License #1907 requires that wastewater solids must be held for a minimum of 30 days at 20°C prior to land application. The anaerobic digester currently does not have mixing which has reduced the overall capacity of the digester and the minimum 30 days of retention time cannot be confirmed. The BVF provides an additional 90 days of anaerobic digestion at 32°C however, the material stored in the BSTs does not receive this additional high temperature treatment. The City of Portage la Prairie requested a suspension of license to allow the land application of biosolids material that had not met the license requirements in the Biosolids Storage Tanks based on the criteria that the material in the biosolids storage tanks still met the intended outcomes of anaerobic digestion using US EPA (40 CRF Part 503, Standards for the Use or Disposal of Sewage Sludge) as a reference. Testing for fecal coliform was performed 3 times per week for several weeks leading up to the removal of biosolids. Temperature, pH, conductivity and solids were also monitored. Manitoba Conservation and Climate granted the suspensions for BST 1 and 2 for the 2020 application program. Copies of the letters of request, data, and approval letters are included in this report in Appendix A.

In July and August 2020, the City engaged a contractor to clean all of the contents from the Anaerobic Digester. Most of this material was hardened biosolids that were liquified and pumped to the BVF. Any grit and non-biodegradable materials were dewatered and sent to landfill. A summary of this activity was submitted to Manitoba Conservation and Climate. Once the digester was cleaned, maintenance staff installed and one mixer back into the digester. It is anticipated that this will provide sufficient mixing to reduce solids build up and maintain the required retention time within the digester. A majority of the biosolids pumped to the BVF were removed as part of the fall biosolids land application.

Field Selection Process

After calculating how much land would be needed based on the quantity of biosolids to be removed, the City of Portage la Prairie administration contacted owners of land located in the Rural Municipality of Portage la Prairie. Initial screening consisted of reviewing the proposed land application area and determining the subsurface geological formation. This was obtained from a map of the Rural Municipality of Portage la Prairie on which was superimposed areas that had been deemed acceptable in accordance with Manitoba Environment Licence #1907. The criteria can be listed as follows:

i) Depth of clay or clay till of less than 1.5 metres between the soil surface and the water table;

ii) Within 100 metres of an identifiable boundary of an aquifer which is exposed to the ground surface;

iii) Where, prior to the application of biosolids, the soil pH is less than 6.0;

iv) Where the surface slope of the land is greater than 5 percent;

v) where, prior to application of biosolids, the level of nitrate-nitrogen exceeds 100 kilograms per hectare in the upper 60 cm of the soil; or

vi) Where, prior to the application of biosolids, the concentration of sodium bicarbonate extractable phosphorous, as P, exceeds 60 micrograms per gram in the upper 15 centimetres of the soil.

All sites that met the above criteria were considered for biosolids application. Potential fields for use were advertised in the local newspaper as well as on the City of Portage la Prairie website. Letters of notification were also sent to Manitoba Conservation and Climate and the Rural Municipality of Portage la Prairie. Copies of the ad and letters are included in this report. Areas selected were then subject to soil testing processes and final selection.

Nutrient Testing

Soil testing was carried out on all usable fields to determine the pH, sodium bicarbonate extractable phosphorous, as P, and nitrate nitrogen according to the following criteria as specified in Manitoba Environment Licence #1907.

Parameter	**Depth of Analysis (cm)**
Phosphorous	15
pH	15
Potassium	15
Nitrate-Nitrite	60
Total Nitrogen	60

Core samples were obtained from the selected application sites, as per license requirements. One core sample was collected for each 2-hectare area and combined to form a composite sample for analysis. A sample for clay analyses and to verification of water table was also taken. An external laboratory was contracted by the City of Portage la Prairie to conduct all soils testing.

Heavy Metals

Soil samples were collected and analysed for background heavy metal concentrations. Heavy metal application was limited to one-third of the initial maximum addition of each heavy metal to be applied in any single application period as per environment license. All heavy metal analysis was conducted by an external laboratory. See Appendix B for background heavy metal concentration results. Back-ground heavy metal concentrations in the soil not exceeding the following:

Metal	**Background Concentration (kg/h)**
Cadmium	2.88
Copper	90
Nickel	90
Lead	90
Zinc	270
Mercury	0.9
Chromium	216

The following fields were sampled and analyzed;

NW 1-13-7 (McDonald)

S 21-12-8 (Brooks)

E 31-12-8 (Westroc)

S 33-12-8 (Westroc)

Based on results, all fields were deemed acceptable for use. Once a field had been tested and selected for application, prior to application, an agreement with each landowner was signed specifying the restrictions on future growing conditions. Copies of these agreements are also included in this report.

Biosolids Sampling and Testing

It is also necessary to sample and analyze the residual solids material to determine nutrient and metals levels. This is used to firstly- confirm the material contains levels lower than the maximum allowable concentration before applying and secondly- to determine the application rate that the material can be applied to ensure the cumulative amounts are below license limits.

Once approval was received, the BSTs and BVF were sampled and analyzed in accordance with Clause 1, Appendix A of Environmental Act Licence 1907, for the following components:

a. conductivity

b. pH

c. total solids

d. volatile solids

e. nitrate nitrogen

f. total Kjeldahl nitrogen

g. ammonia nitrogen

h. organic nitrogen

i. total phosphorous

j. lead

k. mercury

I. nickel

m. potassium

n. cadmium

o. copper

p. zinc

q. chromium

Based on the reported results, the materials contained in the BVF and the BSTs met the required criteria and were available for land application.

Sludge Handling

Bulk Volume Fermenter

Sludge was withdrawn from the BVF by means of internal lateral sludge lines that are normally used for sludge recirculation within the BVF. Sludge was pumped directly to the trucks through a sludge transfer port and an overhead fill pipe. City staff continuously monitored the entire filling process and operation of the sludge pumps. Communication was maintained by means of two-way radios.

Very little spillage was observed throughout the filling process. All spillage that occurred was contained on a concrete spill pad that was washed after each load hauled. The spilled material and wash water were conveyed to the headworks of the WPCF by means of a gravity collection line to a pumping station.

Biosolids Storage Facility

The contents of the storage tank were thoroughly mixed using the Seepex progressive cavity pumps in the facility and pumped to tanker trucks through an overhead fill line. City staff continuously monitored the entire filling process and operation of the sludge pumps.

Very little spillage was observed throughout the filling process. All material that drips from the overhead filling hose is collected on the concrete spill pad that is washed down into a pit that conveys all material back to the Biosolids Storage Tanks.

Biosolids Transportation and Transfer Station

The biosolids was hauled via tanker truck to the application area. Transportation routes were determined prior to application and Manitoba Conservation and Climate and the RM of Portage la Prairie were notified of the intended routes.

A transfer station was located on site and contained a turning area, nurse tank and transfer pump. Sludge was transferred from the trucks via a sludge transfer pump to the nurse tank. The nurse tank can hold approximately four (4) sludge loads. Cam-lock connections were used for all hose connection mitigating any spillage, which may have occurred during the sludge transfer stage.

Injection

All sludge injection was conducted by a Drag-Line injection system which had been modified to allow for sludge injection and to allow for a furrow spacing of 0.50 metres (20 inches). A total of 6 furrows were created with each pass.

Injection rate was based on the ground speed of the Dragline and the solids and ammonia information of the sludge. Solids content and ammonia data was transferred to the field by means of cellular phones. This data was used by the driver to estimate the speed of the unit by means of an injection rate chart. Approximately 100 kg/ha of plant available nitrogen was applied to each application area as based on the following formula:

$$S = \frac{N_p}{(NO_3\text{–}N + NH_3\text{–}N + F \times \text{Org-N})}$$

Where:

S= sludge application rate (dry kg/ha)

N_p= plant available nitrogen requirement (kg/ha) = 100 kg/ha

NO_3-N= nitrate nitrogen content of sludge (kg/kg sludge)

NH_3-N= ammonia nitrogen content of sludge (kg/kg sludge)

F= organic nitrogen mineralization factor (0.2 dimensionless)

Org-N= organic nitrogen content of sludge (kg/kg sludge)

Biosolids Testing During Land Application

During the land application program, ongoing testing of samples from the BSTs and BVF is conducted. One grab sample is collected from five truck tankers to form a composite sample. Each composite is analyzed for solids and ammonia content.

The ammonia and solids testing that occurs during the biosolids hauling process are analyzed in-house by City of Portage lab techs. Solids are determined using a moisture balance and ammonia is determined via Flow Injection Analysis in accordance with APHA Standard Methods for the Examination of Water and Wastewater 20th Ed, 1998 Method 4500-NH_3 H. Flow Injection Analysis.

The ongoing testing of ammonia and solids for each composite sample ensures that the application rate is being adjusted accordingly as the program proceeds. The spreadsheets used to determine rates, also calculates the applied quantity of metals, Phosphorous, and Nitrogen along with the background soil composition to ensure the cumulative values do not exceed license requirements. This information is documented in the Biosolids Application Recording sheets which are included in this report. A copy of this report is also given to each landowner.

Summary

Residual solids were removed and transported for land application between September 8 - September 30, 2020. This included injection of 728.8 dry tonnes of solids from the BVF and 175.1 dry tonnes from the Biosolids Storage Tanks for a total removal of 903.9 dry tonnes. All metals and nutrient application requirements were met. There were no incidents or spills that occurred during the land application process. Follow up with all farmers indicated they were content with the application process and are willing to have residual solids applied in future years.

APPENDIX A

LAND SOLICITATION AND ADVERTISING

Portage la Prairie
City of Possibilities

97 Saskatchewan Avenue East
Portage la Prairie, MB R1N 0L8
www.city-plap.com

August 20, 2020

Mr. Tyler Kneeshaw
Regional Supervisor- Environment Officer
Manitoba Sustainable Development
Portage la Prairie, MB R1N 3K1

Re: Truck Routes for 2020 Residual Biosolids Application Program

Dear Mr. Kneeshaw:

The City of Portage la Prairie intends to conduct land application of residual biosolids in the fall of 2020. As required in Environment Act License 1907, clause 17, notice of intent to land apply to the above noted sites has been sent to the RM of Portage la Prairie as well as yourself as the representative for the Department of Sustainable Development. For public notification, this information was printed in the City of Portage la Prairie Citizens Info page, posted on the City of Portage la Prairie website and an ad was also published in the Portage Daily Graphic in March.

Below you will find the land areas that have been selected. A copy of the land map has been included as well. Pending soil analysis, biosolids **may** be applied to the following agricultural lands:

LEGAL LAND DESCRIPTIONS

Owner: *Lori Stangl-* W 15-12-8

Owner: *Ron Brooks-* S 21-12-8

Owner: *Darren McDonald-* NW 1-13-7

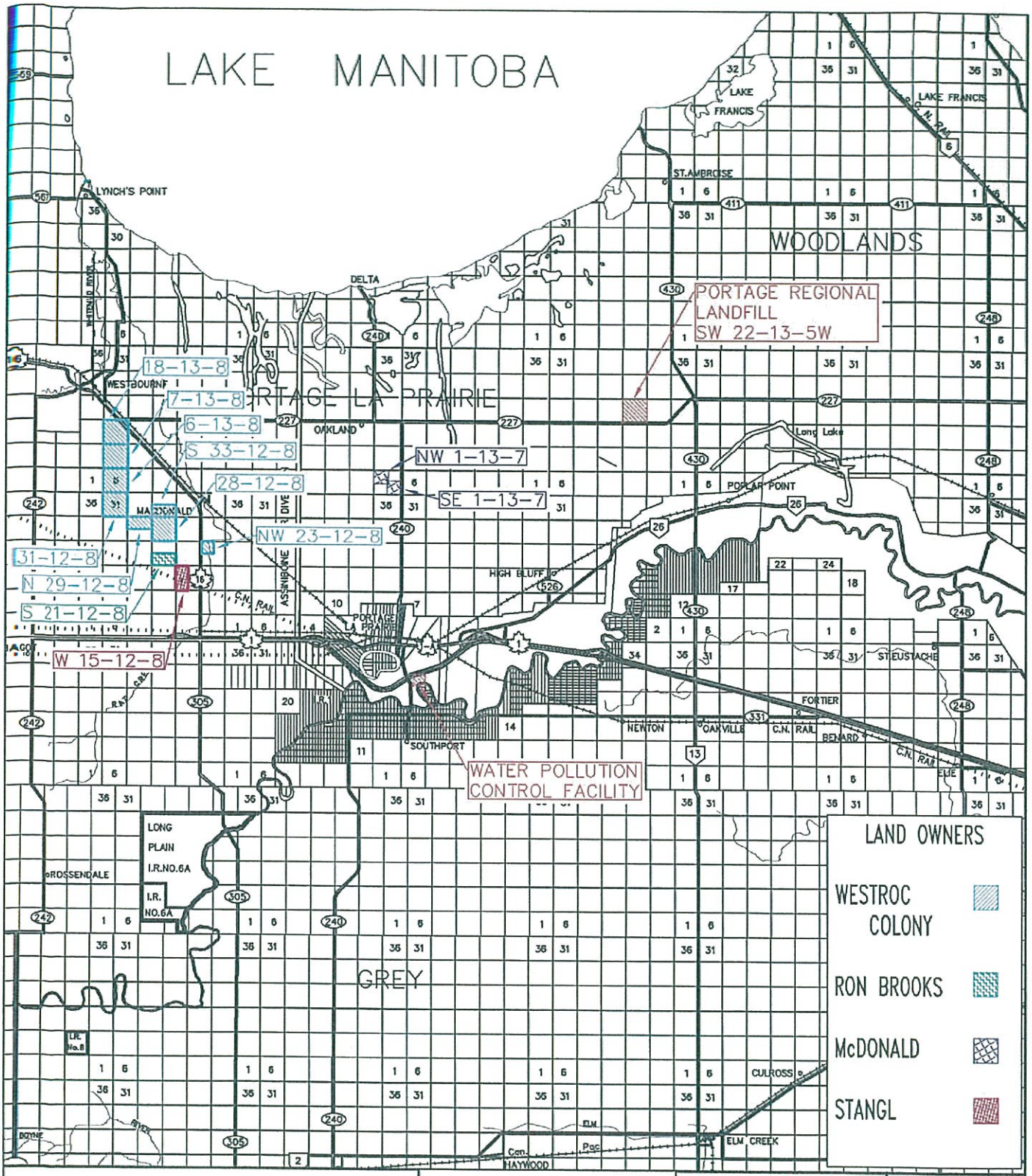
Owner: *Westroc Colony-* 31-12-8
S 33-12-8
28-12-8
N 29-12-8
NW 23-12-8

A copy of the intended routes of transport have been included for your review and comment. The application of biosolids is scheduled to being on Tuesday, September 8,2020, pending dry weather conditions. Should there be any concerns throughout the hauling process with traffic or dust, please contact me as the contractor is responsible for these items.

I can be reached directly at 204-239-8359.

Sincerely,

Karly Friesen
Director of Utility
City of Portage la Prairie



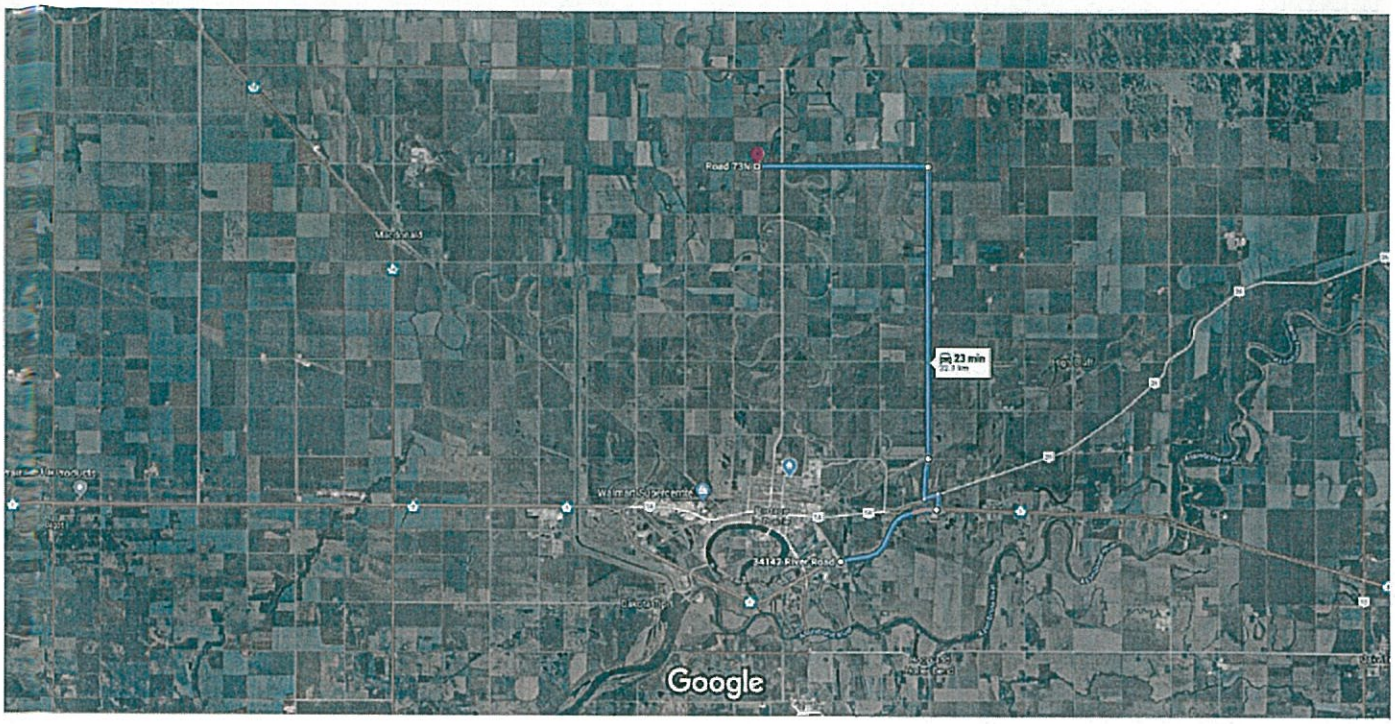
Portage la Prairie
City of Possibilities

Project
2020
BIOSOLIDS
APPLICATION
LAND DESCRIPTION

Sheet 1 y/m/d 20/03/03
Scale N.T.S
Drawing No. M-214 Rev. 0

Google Maps 34142 River Rd, Southport, MB R0H 1N1 to Rd 73N, Macdonald, MB R0H 0S0 Drive 22.1 km, 23 min

From WPCF to NW 1-13-7



Imagery ©2020 TerraMetrics, Map data ©2020 2 km

34142 River Rd

Southport, MB R0H 1N1

1. Head east on River Rd
   36 m
2. Turn left at the 1st cross street toward Trans-Canada Hwy/MB-1 E
   34 m
3. Turn right at the 1st cross street onto Trans-Canada Hwy/MB-1 E
   4.0 km
4. Turn left onto MB-26 E
   500 m
5. Turn left
   500 m
6. Turn right onto Rd 33W
   11.2 km
7. Turn left onto Rd 73N
   Destination will be on the left
   5.7 km

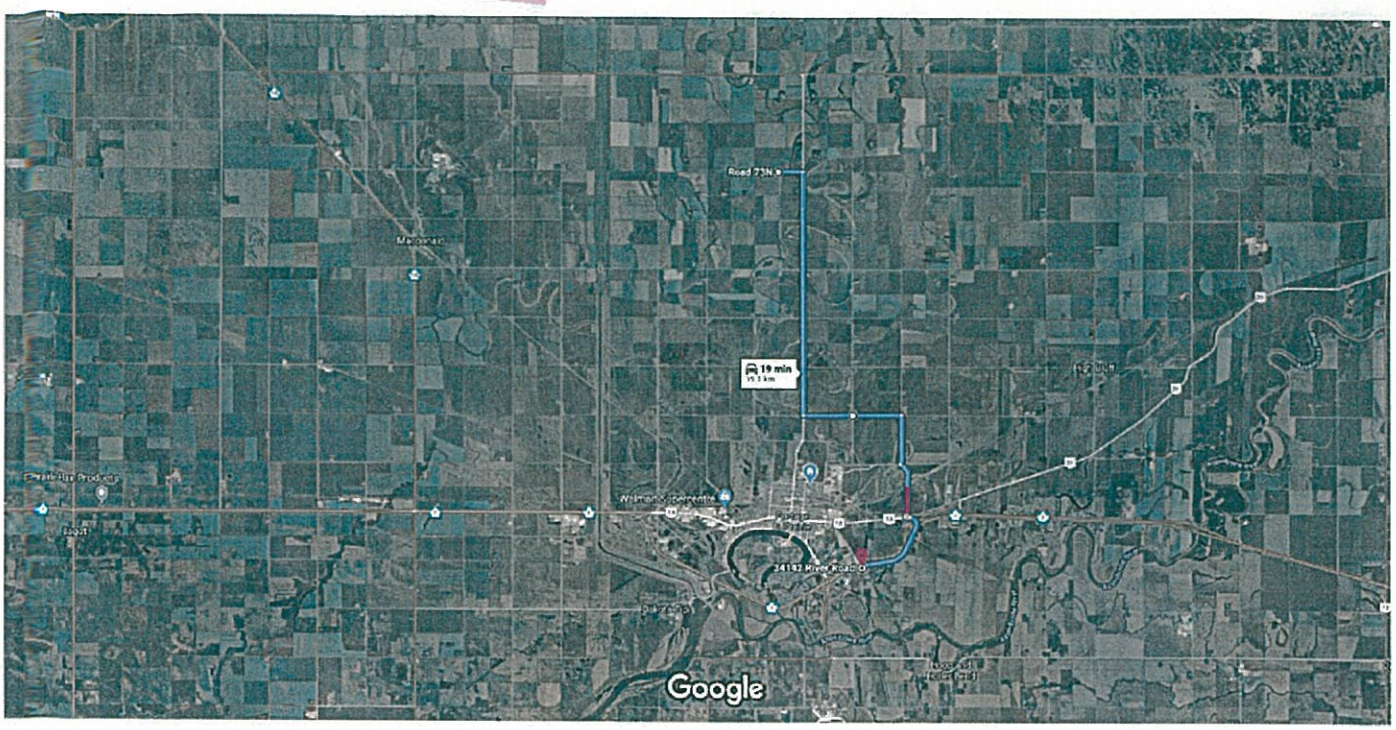
Rd 73N

Macdonald, MB R0H 0S0

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Google Maps Rd 73N, Macdonald, MB R0H 0S0 to 34142 River Rd, Southport, MB R0H 1N1 Drive 19.1 km, 19 min

From NW 1-13-7 to WPCF



Imagery ©2020 TerraMetrics, Map data ©2020 2 km

Rd 73N

Macdonald, MB R0H 0S0

1. Head east on Rd 73N toward MB-240 N

59 s (850 m)

2. Turn right at the 1st cross street onto MB-240 S

6 min (8.2 km)

Drive

6 min (5.0 km)

3. Turn left onto Rd 68N

3.3 km

4. Turn right onto Rd 34W

1.7 km

Drive along Trans-Canada Hwy/MB-1 W

5 min (5.0 km)

5. Turn left at Lincoln Ave

1.9 km

6. Turn left onto MB-1A/Trans-Canada Hwy 1A

170 m

7. Keep right at the fork, follow signs for MB-1 W/Trans-Canada Highway/Brandon/Yellowhead Highway and merge onto Trans-Canada Hwy/MB-1 W

2.9 km

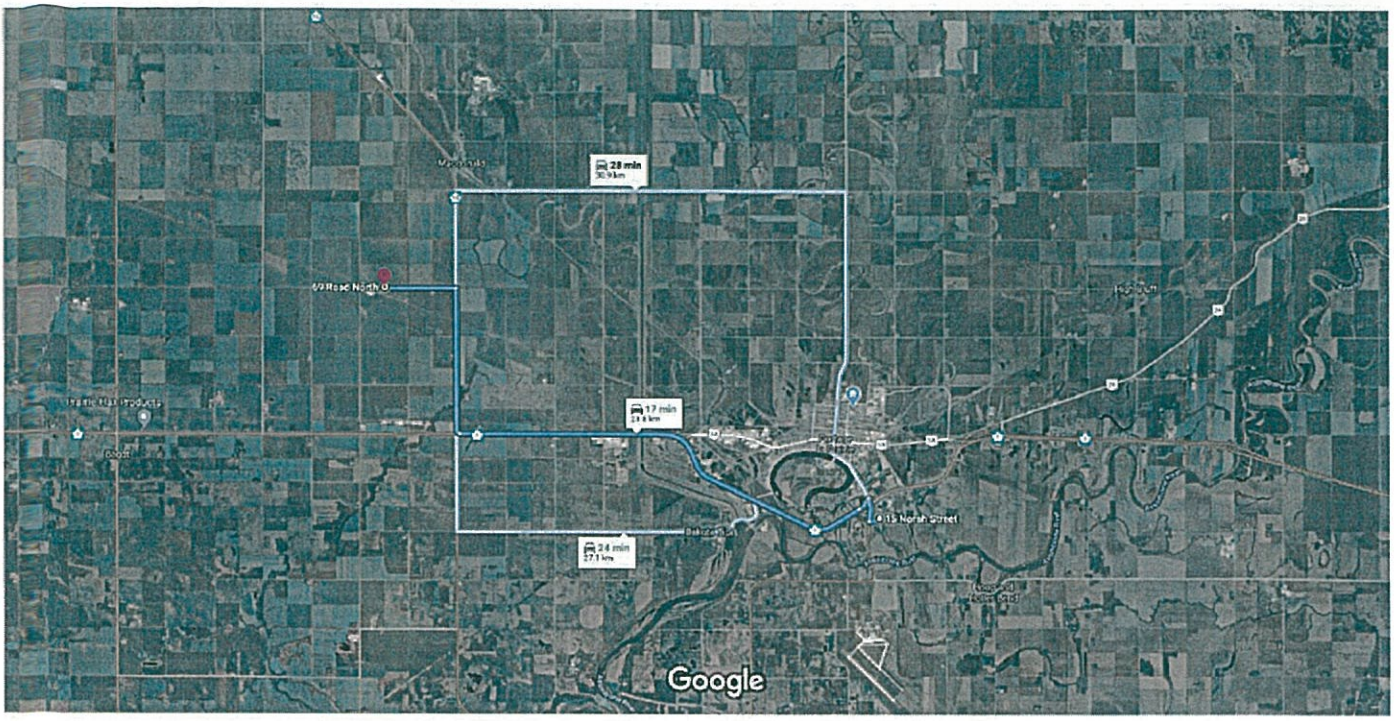
Drive to River Rd

22 s (100 m)

8. Turn left at Angle Rd

Google Maps 15 Norah St, Southport, MB R0H 1N1 to 69 Rd N, Macdonald, MB R0H 0S0 Drive 23.8 km, 17 min

From WPCF to S 21-12-8



Imagery ©2020 TerraMetrics, Map data ©2020 2 km

15 Norah St

Southport, MB R0H 1N1

1. Head west on Norah St toward Wellington Crescent

350 m

2. Turn right onto River Rd/MB-240 N

800 m

3. Turn left onto the MB-1 W/TC ramp to Brandon

500 m

4. Merge onto Trans-Canada Hwy/MB-1 W

14.8 km

5. Turn right onto MB-16 W (signs for Trans Canada Highway/Saskatoon/Neepawa/Yellow Head Highway)

5.0 km

6. Turn left onto 69 Rd N

Destination will be on the right

2.4 km

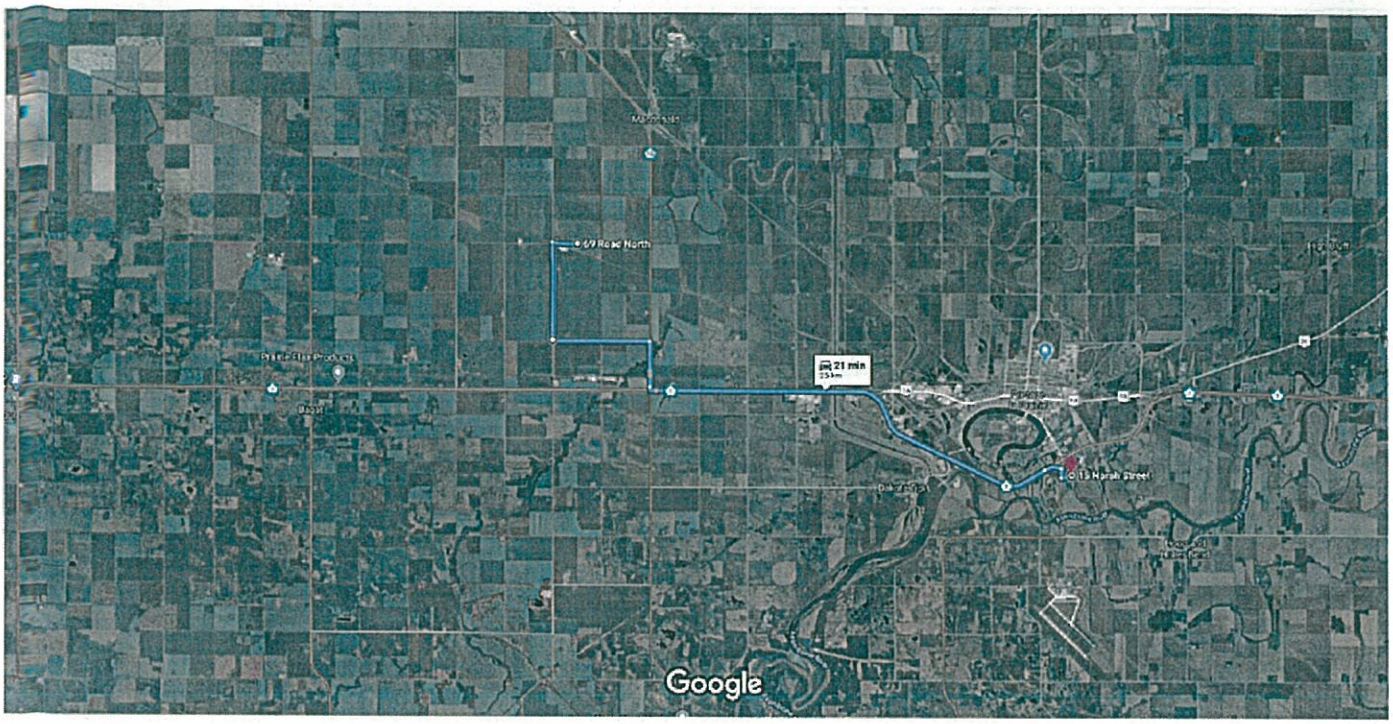
69 Rd N

Macdonald, MB R0H 0S0

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Google Maps 69 Rd N, Macdonald, MB R0H 0S0 to 15 Norah St, Southport, MB R0H 1N1 Drive 25.0 km, 21 min

From S 21-12-8 to WPCF



Imagery ©2020 TerraMetrics, Map data ©2020 2 km

69 Rd N

Macdonald, MB R0H 0S0

Take Rd 46W and McIntyre Rd to MB-16 E

8 min (7.4 km)

1. Head west on 69 Rd N toward Rd 46W

850 m

2. Turn left onto Rd 46W

3.3 km

3. Turn left onto McIntyre Rd

3.2 km

Take Trans-Canada Hwy/MB-1 E to River Rd/MB-240 S in Portage la Prairie. Take the MB-240 exit from Trans-Canada Hwy/MB-1 E

11 min (16.9 km)

4. Turn right onto MB-16 E

1.6 km

5. Turn left onto Trans-Canada Hwy/MB-1 E (signs for Trans Canada Highway/Winnipeg/Yellow Head Highway)

14.8 km

6. Take the MB-240 exit toward Southport/Portage la Prairie

600 m

Drive to Norah St

55 s (700 m)

7. Turn right onto River Rd/MB-240 S (signs for Southport)

350 m

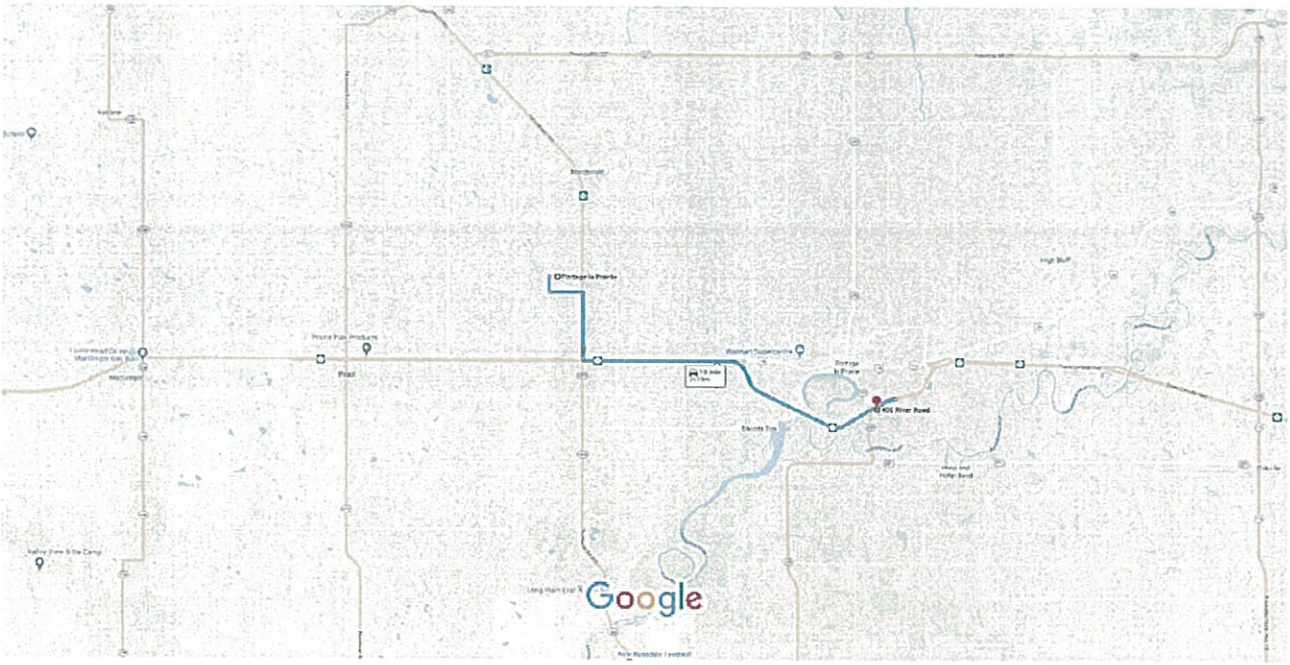
8. Turn left onto Norah St

Google Maps

Portage la Prairie, Manitoba to 400 River Rd

Drive 23.5 km, 18 min

From WPCF to W 15-12-8



Map data ©2020 Google 2 km

Portage la Prairie

Manitoba

1. Head south on Rd 45W toward Rd 68N

750 m

2. Turn left at the 1st cross street onto Rd 68N

1.6 km

3. Turn right at the 1st cross street onto MB-16 E

3.2 km

4. Turn left onto Trans-Canada Hwy/MB-1 E (signs for Trans Canada Highway/Winnipeg/Yellow Head Highway)

16.7 km

5. Turn right at Angle Rd

34 m

6. Turn right at the 1st cross street onto River Rd

Destination will be on the left

1.1 km

400 River Rd

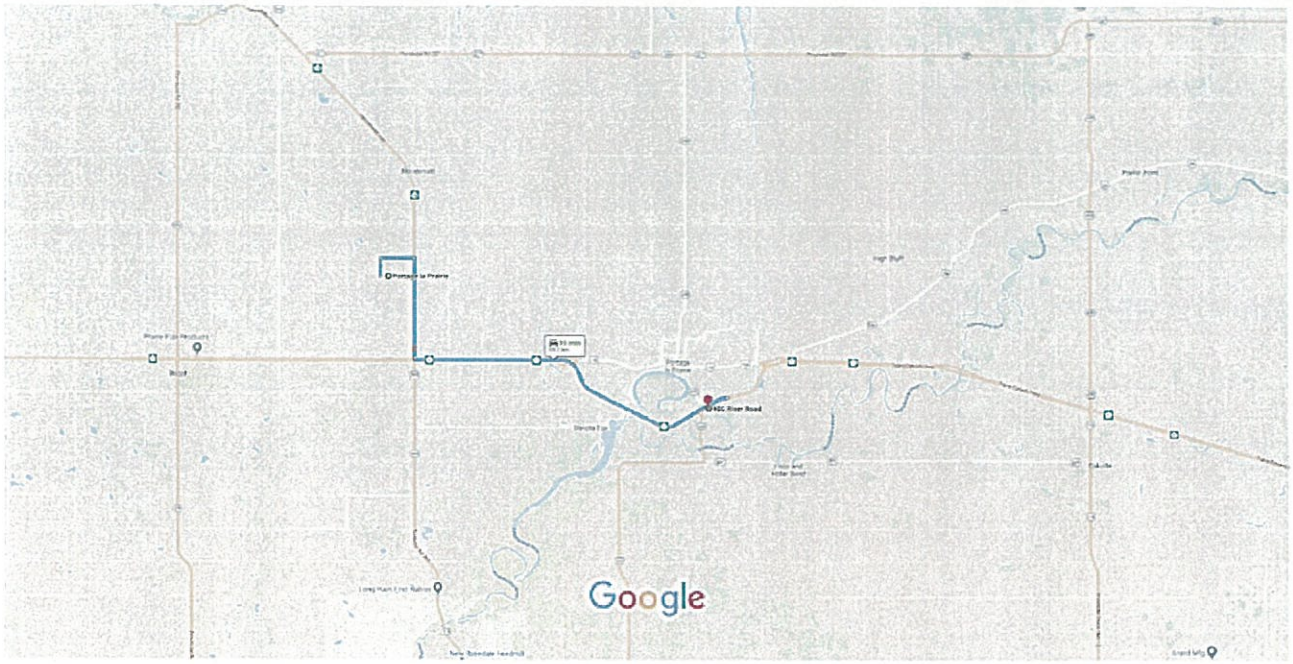
Portage la Prairie, MB R1N 3V6

Google Maps

Portage la Prairie, Manitoba to 400 River Rd

Drive 25.2 km, 19 min

From W 15-12-8 to WPCF



Map data ©2020 Google 2 km

Portage la Prairie

Manitoba

1. Head north on Rd 45W toward 69 Rd N

850 m

2. Turn right onto 69 Rd N

1.6 km

3. Turn right at the 1st cross street onto MB-16 E

4.8 km

4. Turn left onto Trans-Canada Hwy/MB-1 E (signs for Trans Canada Highway/Winnipeg/Yellow Head Highway)

16.7 km

5. Turn right at Angle Rd

34 m

6. Turn right at the 1st cross street onto River Rd

Destination will be on the left

1.1 km

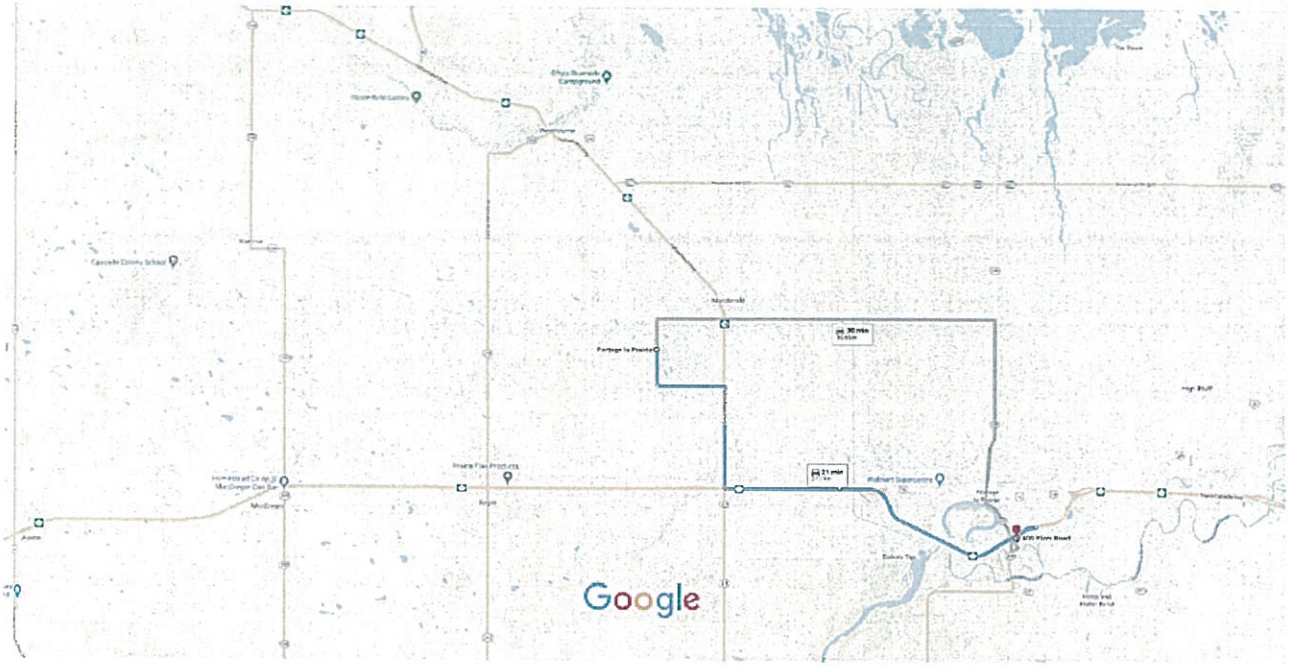
400 River Rd

Portage la Prairie, MB R1N 3V6

Google Maps

Portage la Prairie, Manitoba to 400 River Rd Drive 27.7 km, 21 min

From WPCF to 28-12-8



Map data ©2020 Google 2 km

Portage la Prairie

Manitoba

1. Head south on Rd 46W toward Rd 70N

1.7 km

2. Turn left onto 69 Rd N

3.3 km

3. Turn right onto MB-16 E

4.8 km

4. Turn left onto Trans-Canada Hwy/MB-1 E (signs for Trans Canada Highway/Winnipeg/Yellow Head Highway)

16.7 km

5. Turn right at Angle Rd

34 m

6. Turn right at the 1st cross street onto River Rd

Destination will be on the left

1.1 km

400 River Rd

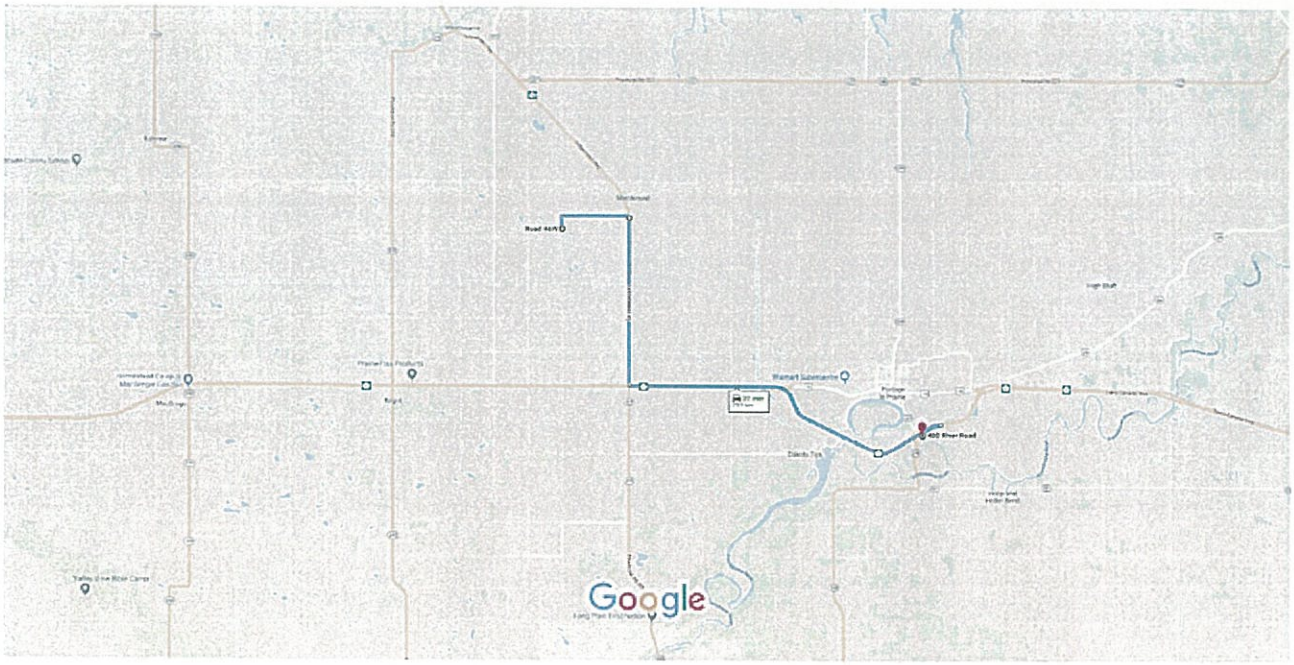
Portage la Prairie, MB R1N 3V6

Google Maps

Rd 46W, Macdonald, MB R0H 0S0 to 400 River Rd

Drive 29.9 km, 22 min

From 28-12-8 to WPCF



Map data ©2020 Google 2 km

Rd 46W

Macdonald, MB R0H 0S0

1. Head north on Rd 46W toward Rd 71N

600 m

2. Turn right at the 1st cross street onto Rd 71N

3.3 km

3. Turn right onto MB-16 E

8.1 km

4. Turn left onto Trans-Canada Hwy/MB-1 E (signs for Trans Canada Highway/Winnipeg/Yellow Head Highway)

16.7 km

5. Turn right at Angle Rd

34 m

6. Turn right at the 1st cross street onto River Rd

Destination will be on the left

1.1 km

Portage la Prairie
City of Possibilities

97 Saskatchewan Avenue East
Portage la Prairie, MB R1N 0L8
www.city-plap.com

August 20, 2020

Ms. Nettie Neudorf, CPA, CGA, CMMA
Chief Administrative Officer
Rural Municipality of Portage la Prairie
35 Tupper Street South
Portage la Prairie, MB R1N 1W7

Re: Truck Routes for 2020 Residual Biosolids Application Program

Dear Ms. Neudorf:

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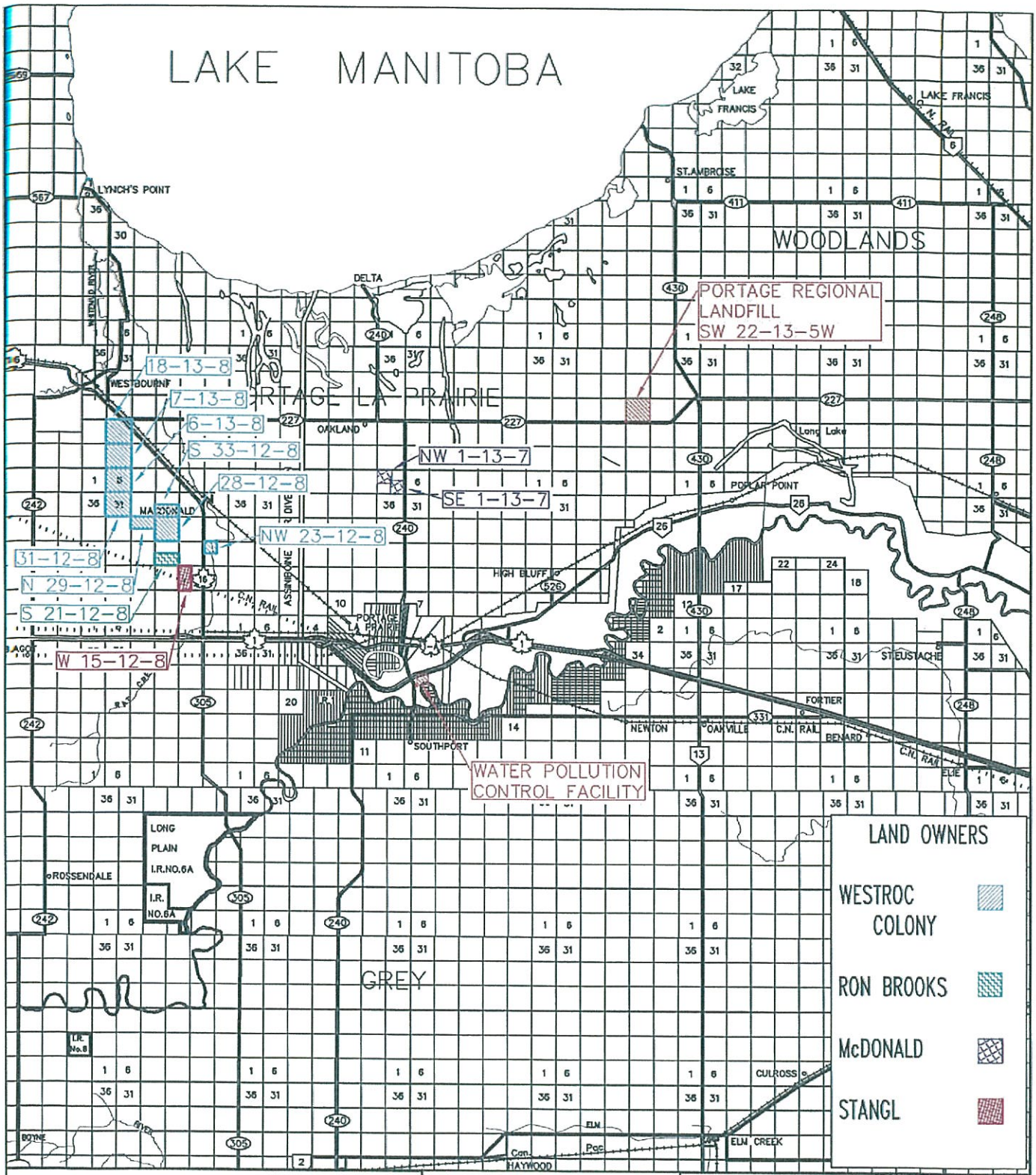
Owner: *Westroc Colony-* 31-12-8
S 33-12-8
28-12-8
N 29-12-8
NW 23-12-8

A copy of the intended routes of transport have been included for your review and comment. Transport and application of biosolids is scheduled to being on Tuesday, September 8,2020, pending dry weather conditions. Should there be any concerns throughout the hauling process with traffic or dust, or if you have any questions regarding the land application process, please call me at 204-239-8359.

Sincerely,

Karly Friesen
Director of Utility
City of Portage la Prairie



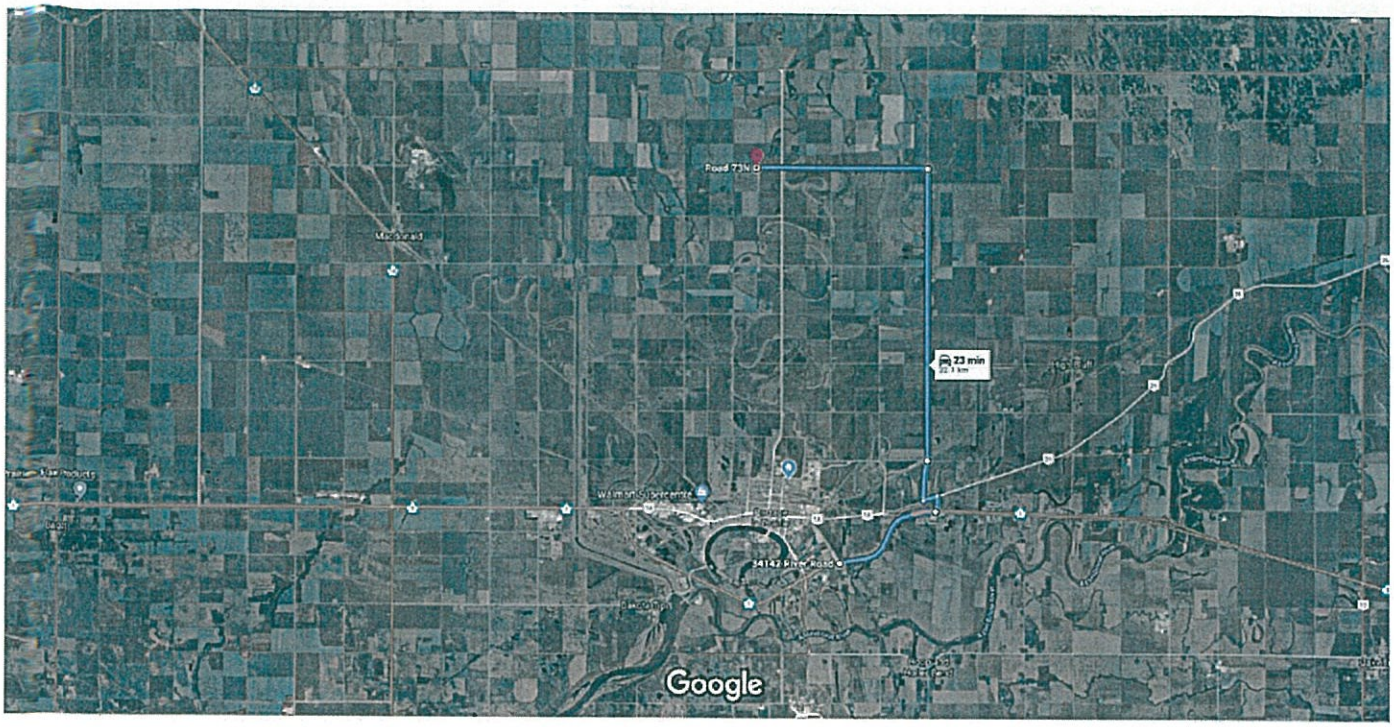
Portage la Prairie
City of Possibilities

Project
2020
BIOSOLIDS
APPLICATION
LAND DESCRIPTION

Sheet 1 y/m/d 20/03/03
Scale N.T.S
Drawing No. M-214
Rev. 0

Google Maps 34142 River Rd, Southport, MB R0H 1N1 to Rd 73N, Macdonald, MB R0H 0S0 Drive 22.1 km, 23 min

From WPCF to NW 1-13-7



Imagery ©2020 TerraMetrics, Map data ©2020 2 km

34142 River Rd

Southport, MB R0H 1N1

1. Head east on River Rd

36 m

2. Turn left at the 1st cross street toward Trans-Canada Hwy/MB-1 E

34 m

3. Turn right at the 1st cross street onto Trans-Canada Hwy/MB-1 E

4.0 km

4. Turn left onto MB-26 E

500 m

5. Turn left

500 m

6. Turn right onto Rd 33W

11.2 km

7. Turn left onto Rd 73N

Destination will be on the left

5.7 km

Rd 73N

Macdonald, MB R0H 0S0

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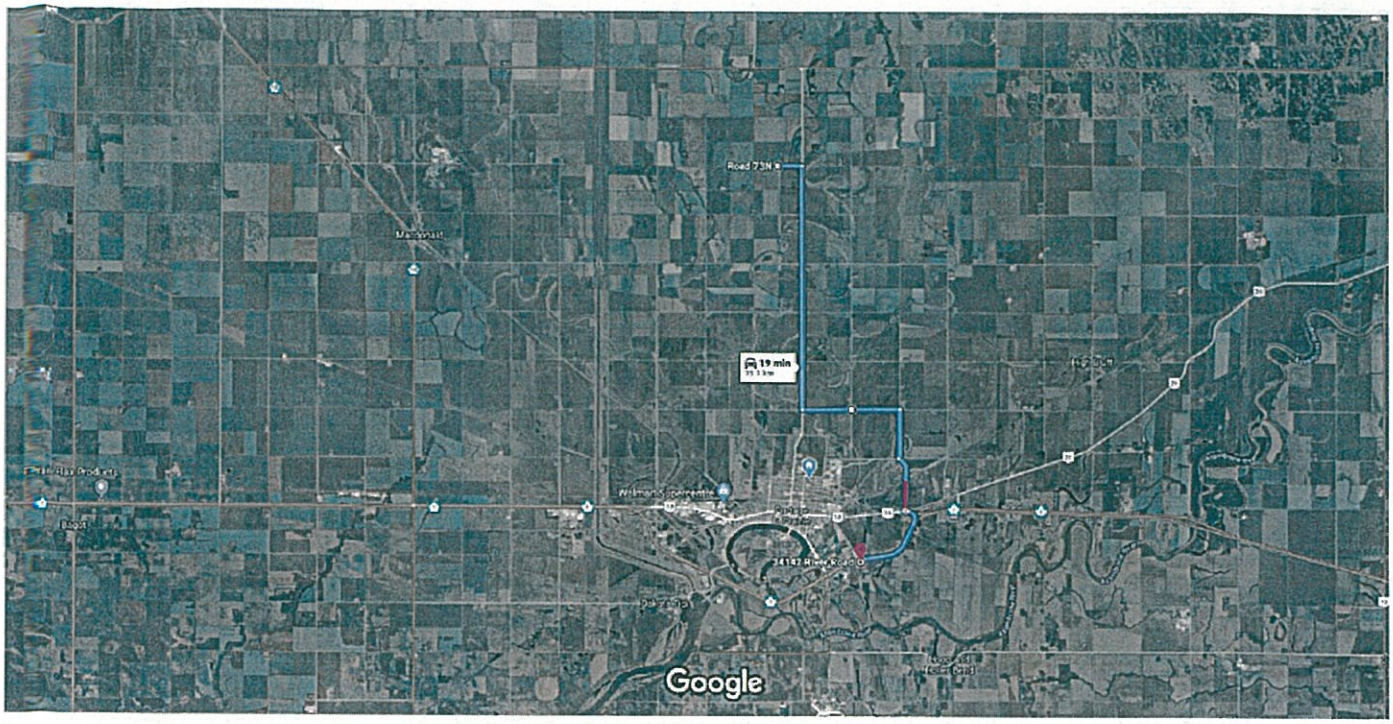
Google Maps Rd 73N, Macdonald, MB R0H 0S0 to 34142 River Rd, Southport, MB R0H 1N1 Drive 19.1 km, 19 min

From NW 1-13-7 to WPGF



Imagery ©2020 TerraMetrics, Map data ©2020 2 km

Rd 73N

Macdonald, MB R0H 0S0

1. Head east on Rd 73N toward MB-240 N

59 s (850 m)

2. Turn right at the 1st cross street onto MB-240 S

6 min (8.2 km)

Drive

6 min (5.0 km)

3. Turn left onto Rd 68N

3.3 km

4. Turn right onto Rd 34W

1.7 km

Drive along Trans-Canada Hwy/MB-1 W

5 min (5.0 km)

5. Turn left at Lincoln Ave

1.9 km

6. Turn left onto MB-1A/Trans-Canada Hwy 1A

170 m

7. Keep right at the fork, follow signs for MB-1 W/Trans-Canada Highway/Brandon/Yellowhead Highway and merge onto Trans-Canada Hwy/MB-1 W

2.9 km

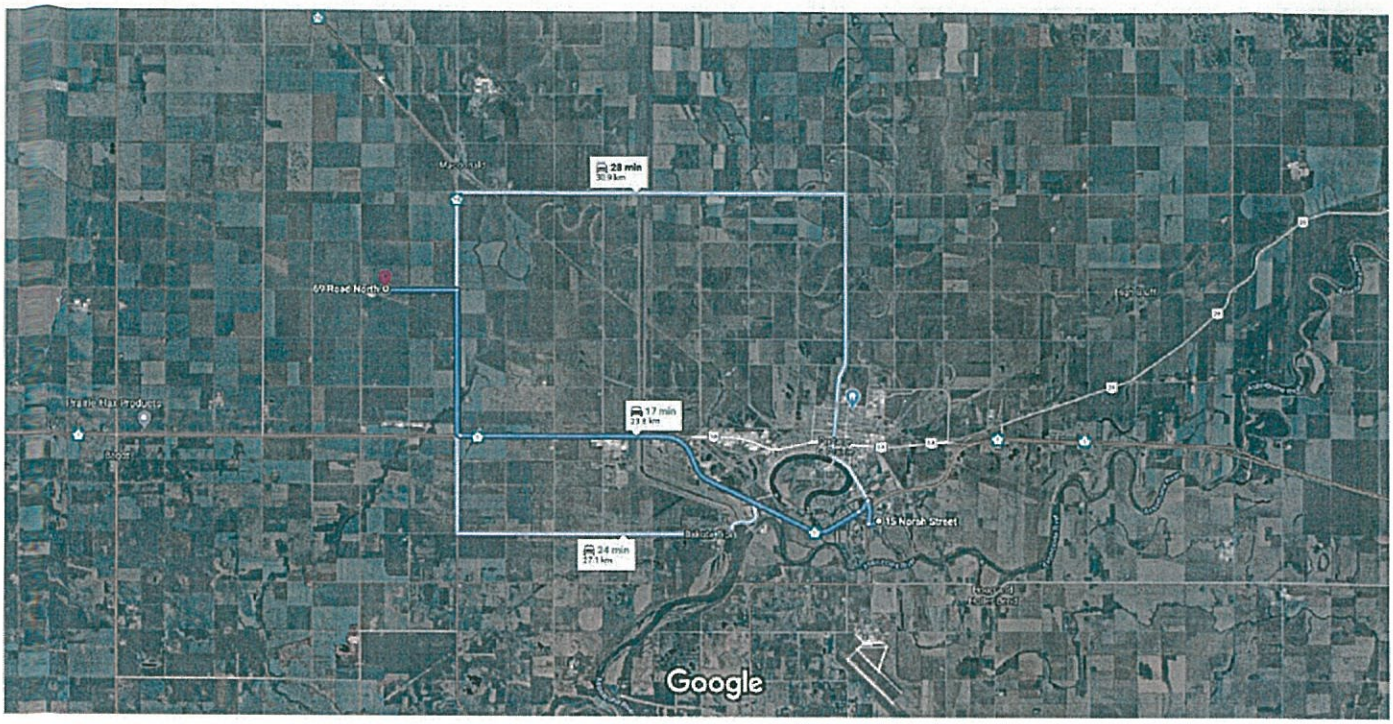
Drive to River Rd

22 s (100 m)

8. Turn left at Angle Rd

Google Maps 15 Norah St, Southport, MB R0H 1N1 to 69 Rd N, Macdonald, MB R0H 0S0 Drive 23.8 km, 17 min

From WPCF to S 21-12-8



Imagery ©2020 TerraMetrics, Map data ©2020 2 km

15 Norah St

Southport, MB R0H 1N1

1. Head west on Norah St toward Wellington Crescent

350 m

2. Turn right onto River Rd/MB-240 N

800 m

3. Turn left onto the MB-1 W/TC ramp to Brandon

500 m

4. Merge onto Trans-Canada Hwy/MB-1 W

14.8 km

5. Turn right onto MB-16 W (signs for Trans Canada Highway/Saskatoon/Neepawa/Yellow Head Highway)

5.0 km

6. Turn left onto 69 Rd N

Destination will be on the right

2.4 km

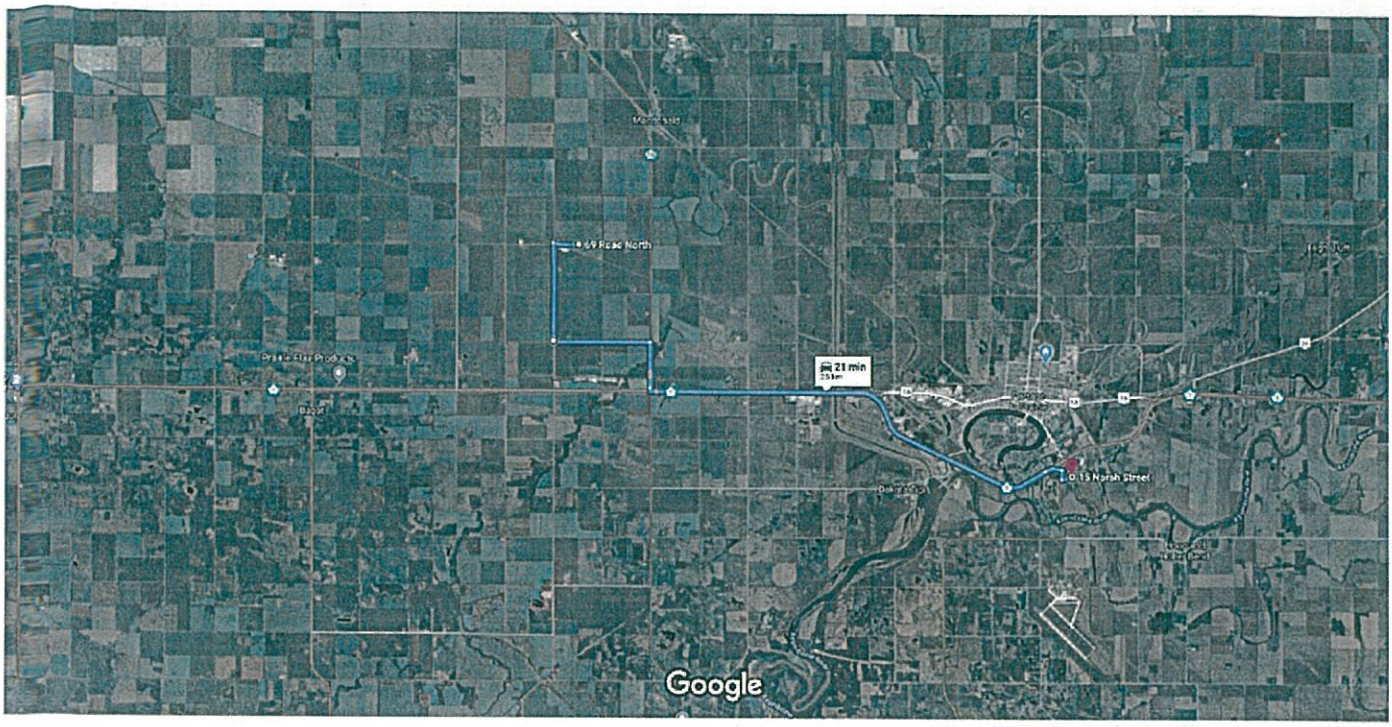
69 Rd N

Macdonald, MB R0H 0S0

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Google Maps 69 Rd N, Macdonald, MB R0H 0S0 to 15 Norah St, Southport, MB R0H 1N1 Drive 25.0 km, 21 min

From S 21-12-8 to WPCF



Imagery ©2020 TerraMetrics, Map data ©2020 2 km

69 Rd N

Macdonald, MB R0H 0S0

Take Rd 46W and McIntyre Rd to MB-16 E

8 min (7.4 km)

1. Head west on 69 Rd N toward Rd 46W

850 m

2. Turn left onto Rd 46W

3.3 km

3. Turn left onto McIntyre Rd

3.2 km

Take Trans-Canada Hwy/MB-1 E to River Rd/MB-240 S in Portage la Prairie. Take the MB-240 exit from Trans-Canada Hwy/MB-1 E

11 min (16.9 km)

4. Turn right onto MB-16 E

1.6 km

5. Turn left onto Trans-Canada Hwy/MB-1 E (signs for Trans Canada Highway/Winnipeg/Yellow Head Highway)

14.8 km

6. Take the MB-240 exit toward Southport/Portage la Prairie

600 m

Drive to Norah St

55 s (700 m)

7. Turn right onto River Rd/MB-240 S (signs for Southport)

350 m

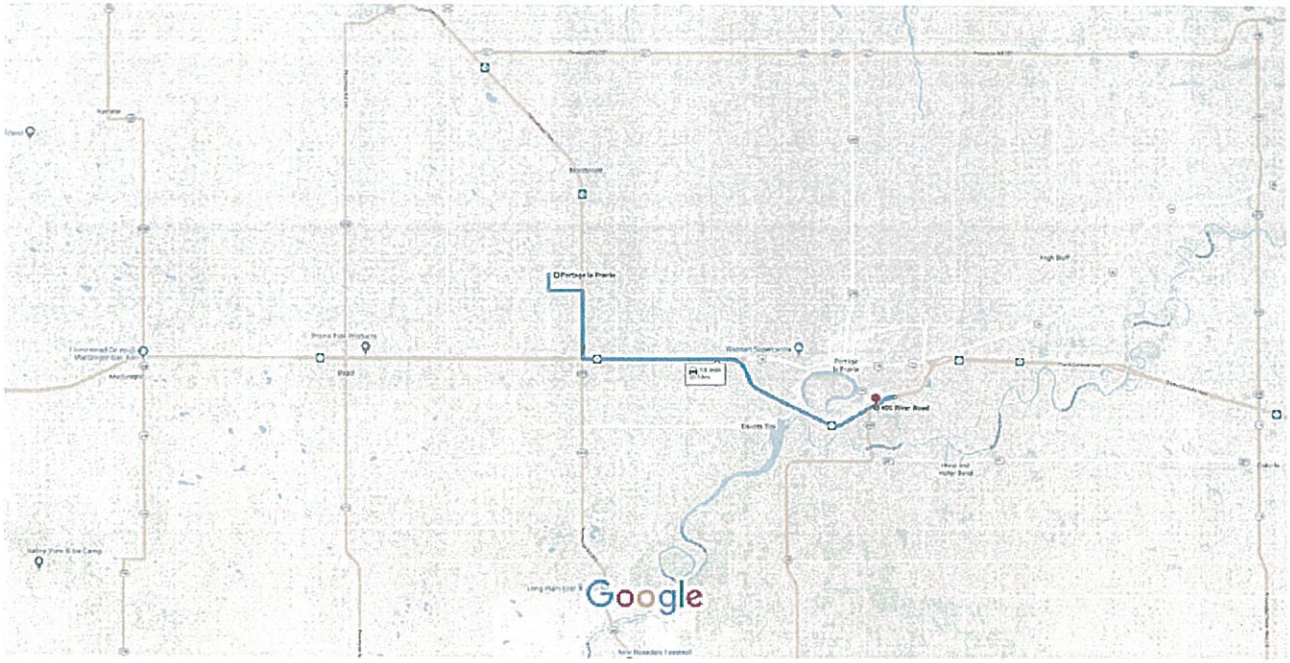
8. Turn left onto Norah St

Google Maps

Portage la Prairie, Manitoba to 400 River Rd

Drive 23.5 km, 18 min

From WPCF to W 15-12-8



Map data ©2020 Google 2 km

Portage la Prairie

Manitoba

1. Head south on Rd 45W toward Rd 68N

750 m

2. Turn left at the 1st cross street onto Rd 68N

1.6 km

3. Turn right at the 1st cross street onto MB-16 E

3.2 km

4. Turn left onto Trans-Canada Hwy/MB-1 E (signs for Trans Canada Highway/Winnipeg/Yellow Head Highway)

16.7 km

5. Turn right at Angle Rd

34 m

6. Turn right at the 1st cross street onto River Rd

Destination will be on the left

1.1 km

400 River Rd

Portage la Prairie, MB R1N 3V6

Google Maps

Portage la Prairie, Manitoba to 400 River Rd

Drive 25.2 km, 19 min

From W 15-12-8 to WPCF

Map data ©2020 Google 2 km

Portage la Prairie

Manitoba

1. Head north on Rd 45W toward 69 Rd N

850 m

2. Turn right onto 69 Rd N

1.6 km

3. Turn right at the 1st cross street onto MB-16 E

4.8 km

4. Turn left onto Trans-Canada Hwy/MB-1 E (signs for Trans Canada Highway/Winnipeg/Yellow Head Highway)

16.7 km

5. Turn right at Angle Rd

34 m

6. Turn right at the 1st cross street onto River Rd

Destination will be on the left

1.1 km

400 River Rd

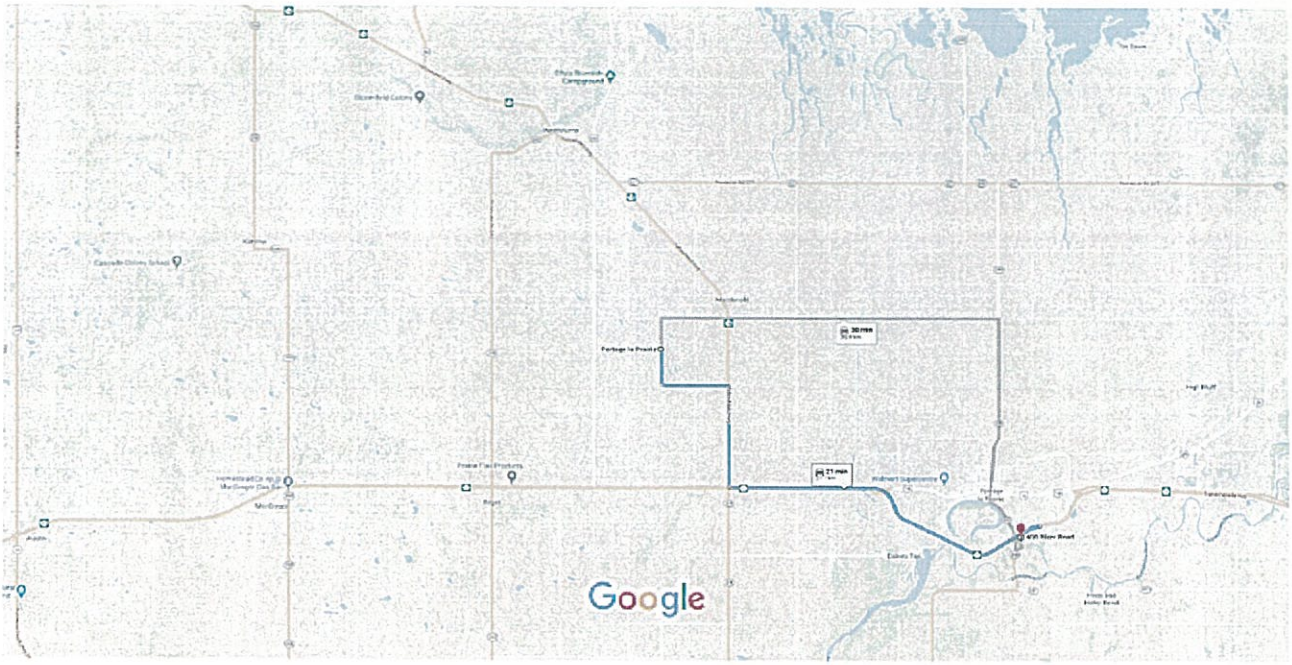
Portage la Prairie, MB R1N 3V6

Google Maps

Portage la Prairie, Manitoba to 400 River Rd

Drive 27.7 km, 21 min

From WPCF to 28-12-8



Map data ©2020 Google 2 km

Portage la Prairie

Manitoba

1. Head south on Rd 46W toward Rd 70N

1.7 km

2. Turn left onto 69 Rd N

3.3 km

3. Turn right onto MB-16 E

4.8 km

4. Turn left onto Trans-Canada Hwy/MB-1 E (signs for Trans Canada Highway/Winnipeg/Yellow Head Highway)

16.7 km

5. Turn right at Angle Rd

34 m

6. Turn right at the 1st cross street onto River Rd

Destination will be on the left

1.1 km

400 River Rd

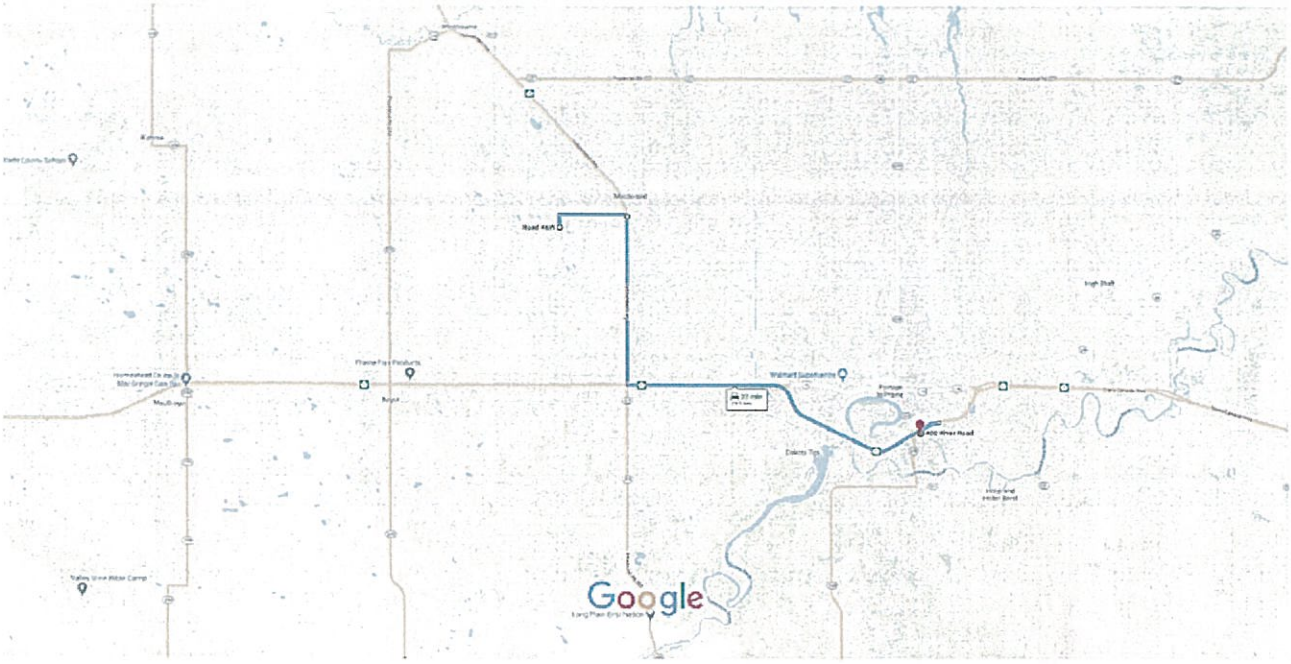
Portage la Prairie, MB R1N 3V6

Google Maps

Rd 46W, Macdonald, MB R0H 0S0 to 400 River Rd

Drive 29.9 km, 22 min

From 28-12-8 to WPCF



Rd 46W

Macdonald, MB R0H 0S0

1. Head north on Rd 46W toward Rd 71N

600 m

2. Turn right at the 1st cross street onto Rd 71N

3.3 km

3. Turn right onto MB-16 E

8.1 km

4. Turn left onto Trans-Canada Hwy/MB-1 E (signs for Trans Canada Highway/Winnipeg/Yellow Head Highway)

16.7 km

5. Turn right at Angle Rd

34 m

6. Turn right at the 1st cross street onto River Rd

Destination will be on the left

1.1 km

The City of Portage la Prairie intends to conduct the Residual Biosolids Land Application Program commencing in the fall of 2020.

Pending soil analysis, biosolids **may** be applied to the following agricultural lands:

LEGAL DESCRIPTION

S 21-12-8, NW 1-13-7, SE 1-13-7, W 15-12-8, SW 23-12-8, NW 23-12-8, 31-12-8, 6-13-8, 7-13-8, 18-13-8, N 29-12-8, S 33-12-8, 28-12-8

A map of land locations can be found at www.city-plap.com

Please contact Karly Friesen, Manager, Wastewater Treatment Division at 204-239-8359 if you have or receive any concerns regarding the above sites.

APPENDIX B

SUSPENSION OF LICENSE –

CORRESPONDANCE & SUPPORTING DATA

Portage la Prairie
City of Possibilities

97 Saskatchewan Avenue East
Portage la Prairie, MB R1N 0L8
www.city-plap.com

File No. WPCF 30-4

March 31, 2020

Director
Environmental Approvals Branch
Manitoba Sustainable Development
1007 Century Street
Winnipeg, Manitoba
R3H 0W4

Re: Notice of Alteration for removal and disposal of contents from anaerobic digester

Dear Director:

The City of Portage la Prairie is submitting a Notices of Minor Alteration regarding the removal and disposal of contents from the anaerobic digester located at the Water Pollution Control Facility (WPCF). The digester, which is identified in the Environment Act License 2543 R as the anaerobic WAS digester, stabilizes residual solids that are generated as part of the wastewater treatment process. Solids are processed in the anaerobic WAS digester then placed in storage before land applying as biosolids. The mixers in the anaerobic WAS digester failed and solids have accumulated in the tank. This accumulation of solids has reduced the overall capacity and in turn has reduced the residence time, therefore the digester is not able to provide a 30-day residence time as required in Clause 2, EAL 1907 or as identified in EAL 2543 R, section 17. The City has applied for Notice of Alterations to allow an equivalent digestion process to be utilized and maintain license compliance.

In the summer of 2020, the City intends to clean out the contents of the digester and install two chopper pumps to assist in mixing of the digester solids once it is brough back online. 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. The current timeline for the construction and operation of the new anaerobic digester is in 2022.

To remove the contents, the City will hire a professional contractor who specialized in digester cleaning to complete the scope of work. The digester contains approximately 3400m3 of material. It is estimated that the top 2400 m3 can be slurried with either potable water or treated effluent and pumped overland to the Bulk Volume Fermenter (BVF) as the BVF is no longer being used for pre-treatment of industrial wastewater and is available for use. This material will be screened prior to being pumped to remove rags, grease, plastic and hair that may be contained within the digester. The screening unit uses a No. 6 mesh followed by a press auger before disposal into waste bins. The

material in the bin will meet the Portage Regional Landfill license 3278 that requires solid waste to have a slump of less than 150 mm using the Canadian Standards Association Slump test method A23.2-5C.

As the digester is drawn down, the contents will be analysed for organic content. It is expected that the inorganic content will increase toward the bottom of the digester as sand and debris settled out over time. The remaining 1000 m3 of material will be conveyed to first to the fine filter and then to the sand separation unit that is capable of screening to 105 microns. This will remove any sand and grit that is contained within the material. The liquid side stream and organics will be pumped to the BVF. The sand filter will be implemented sooner as required.

The debris collected from screening will be stored in waste bins and then transported to the Portage Regional landfill for disposal under EAL 1907, 1b. This practice is consistent with the disposal of screenings from the bar screen and grit removal system that is already in use at the WPCF as identified in the Environment Act License 2543 R, Section 48c.

The timeframe for this work is estimated at twenty days with an anticipated start date of June 1, 2020. However, considering the travel restrictions and work force reductions due to Covid-19, the start date is expected to be moved. The City will require five days for shutdown and isolation of the digestor prior to contractor arrival. An additional ten days is required to install the pumps. During these twenty days, the digester will be offline. The waste activated sludge from the secondary system will be held within the Sequencing Batch Reactors if possible. When wasting of excess solids is required, it will be directed to the BVF for treatment and storage until land application. There is no other interruption to wastewater treatment expected and effluent quality will not be impacted.

The City of Portage la Prairie is requesting a notice of alteration for the suspension of use of the anaerobic digester for cleaning out purposes as well as the disposal of screened grit material in the Portage regional landfill beginning June 1, 2020 until September 30, 2020. Alternatively, the City would request a suspension of license for up to sixty days to commence one week prior to the date that the contractor is able to begin work.

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

Regards,

Karly Friesen
Director of Utility

Cc: Nathan Peto, City of Portage la Prairie
Robert Boswick, Manitoba Conservation and Climate
Jay Rackham, Manitoba Conservation and Climate
Tyler Kneeshaw, Manitoba Conservation and Climate

Notice of Alteration Form

Manitoba
Sustainable Development

Client File No. :	Environment Act Licence No. : 2543R/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: 97 Saskatchewan Ave E 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):	
Phone: Fax:	Mailing address:
Email address:	
Short Description of Alteration *(max 90 characters)*: Anaerobic digester to be taken offline, cleaned out & contents disposed of onsite/landfill	
Alteration fee attached: Yes: ☐ No: ☑ If No, please explain: MINOR NOA	
Date: 31/3/20	Signature: [signature] Printed name: Karly Friesen

A complete Notice of Alteration **(NoA)** consists of the following components:

- ☑ **Cover letter**
- ☑ **Notice of Alteration Form**
- ☑ **2 hard copies and 1 electronic copy of the NoA detailed report** (see "Information Bulletin - Alteration to Developments with Environment Act Licences")
- ☐ **$500 Application fee, if applicable** (Cheque, payable to the Minister of Finance)

Submit the complete NoA to:

Director
Environmental Approvals Branch
Manitoba Sustainable Development
1007 Century Street
Winnipeg, Manitoba R3H 0W4

For more information:

Phone: (204) 945-8321
Fax: (204) 945-5229
http://www.gov.mb.ca/sd/eal

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")

Manitoba
Conservation and Climate
Environmental Stewardship Division
Environmental Approvals Branch
1007 Century Street, Winnipeg Manitoba R3H 0W4
T 204-945-8321 F 204-945-5229
www.gov.mb.ca/sd

FILE NO.: 1020.50

April 14, 2020

Karly Friesen
Manager, Wastewater Treatment Division
City of Portage la Prairie
97 Saskatchewan Avenue East
Portage la Prairie, MB R1N 0L8

Dear Karly Friesen:

Re: Notice of Alteration – City of Portage la Prairie Water Pollution Control Facility – Removal and Disposal of Contents from Anaerobic Digester

I am responding to your March 31, 2020 Notice of Alteration (NoA) consisting of a request for approval for removal and disposal of the contents from the anaerobic digester of the City of Portage la Prairie Water Pollution Control Facility (WPCF). Environment Act Licence No. 2543 R applies to the WPCF and identifies this digester as the anaerobic WAS digester.

The March 31, 2020 letter indicates that the anaerobic WAS digester's mixers have failed and solids have accumulated in it, reducing its overall capacity and ability to provide a minimum 30-day residence time as identified in Environment Act Licence No. 2543 R. The letter indicates that the digester will be cleaned out in the summer of 2020 and have two chopper pumps installed to assist with mixing. The letter also mentions that the long-term plan is to refurbish this digester with external mixing equipment and that a second anaerobic digester will be added in 2022.

The NoA requests that the City of Portage la Prairie be allowed to suspend use of the anaerobic WAS digester between June 1, 2020 and September 30, 2020 for the purpose of being cleaned out with screened grit material to be disposed of at the Portage Regional Landfill.

Upon review of the NoA and the Licences, I have decided that the environmental impacts of the proposed alteration are insignificant. Accordingly, pursuant to Section 14(2) of The Environment Act, I hereby approve the request to allow the inorganic content from the anaerobic digester to be directed to the Portage Regional Landfill for disposal as waste subject to the following limits, terms and conditions:

1. All associated activities and ongoing operations are completed in accordance with the requirements of Environment Act Licence No. 2543 R;

…2/

2. The handling and processing of materials involved must be done by a professional contractor specializing in such activities, particularly in digester cleaning, and in conformity with the activities and schedules proposed in the NoA;

3. The City of Portage la Prairie shall submit to the assigned Environment Officers once every week, or as may be requested by the assigned Environment Officers, updates of movement and processing activities and results of analyses associated with the various types of materials removed from the anaerobic WAS digester for overland pumping to the BVF, storage in bins or hauling to the Portage Regional Landfill for disposal as waste; and

4. This approval shall terminate on the 30th day of October, 2020, unless otherwise approved by the Director.

Unless otherwise indicated, the assigned Environment Officers for activities associated with the handling, processing and disposal of all materials associated with this Notice of Alteration shall be Jay Rackham of the Environmental Compliance and Enforcement Branch (Jay.Rackam@gov.mb.ca) and Robert Boswick of the Environmental Approvals Branch (Robert.Boswick@gov.mb.ca).

If you have any questions or would like to discuss the foregoing, please contact Robert Boswick, Environmental Engineer, at 204-945-6030.

Yours sincerely,

Original signed by

Shannon Kohler
Director
Environment Act

c: Yvonne Hawryliuk/Tyler Kneeshaw/Jay Rackham, Environmental Compliance and Enforcement Branch
Robert Boswick/Cory Graham, Environmental Approvals Branch
Public Registries

Portage la Prairie
City of Possibilities

97 Saskatchewan Avenue East
Portage la Prairie, MB R1N 0L8
www.city-plap.com

File No. WPCF 30-4

October 9, 2020

Director
Environmental Approvals Branch
Manitoba Sustainable Development
1007 Century Street
Winnipeg, Manitoba
R3H 0W4

Re: Final Report regarding Removal and Disposal of Contents from Anaerobic Digester

Dear Director:

The City of Portage la Prairie requested and received a Notice of Alteration for the removal and disposal of contents from the Anaerobic Digester on April 14, 2020. The digester, which is identified in the Environment Act License 2543 R as the anaerobic WAS digester, stabilizes residual solids that are generated as part of the wastewater treatment process. Solids are processed in the anaerobic WAS digester then placed in storage before land applying as biosolids. The mixers in the anaerobic WAS digester failed and solids have accumulated in the tank. This accumulation of solids has reduced the overall capacity and in turn has reduced the residence time, therefore the digester is not able to provide a 30-day residence time as required in Clause 2, EAL 1907 or as identified in EAL 2543 R, section 17. The City has applied for Notice of Alterations for several years to allow an equivalent digestion process to be utilized and maintain license compliance.

In the summer of 2020, the City contracted Wessuc to remove the contents of the digester. It was estimated that 3400m3 of material would need to be removed. Wessuc arrived onsite on July 13 and began the process of removing the digester contents on July 17. By adding treated effluent to the digester, they were able to slurry of the contents where it was then pumped out and screened using a No. 6 mesh to remove rags, grease, plastics, and hair that may be contained within the digester. The liquid material was pumped overland to the Bulk Volume Fermenter (BVF) for land application in the fall. The material that was screened out of the viable sludge was passed through a press auger before disposal into waste bins. The material in the bin was transported to the Regional Landfill for disposal.

The contractor reported that 2839 m3 of material was transferred into the BVF and approximately 34,000 kg was transported to the land fill from the Vac Truck and a further 83,500 kg was disposed of from the grit bins. The landfill material would have contained sand, grit, and any other solid material.

Once the digester was emptied, the contractor completed a visual inspection. In addition, the hired structural engineers from AECOM to also inspect the digester. Minor repairs were completed to the accessory equipment such as boiler pump and a valve was installed for future maintenance. One of the original mixers was also installed into the digester. The report provided by Wessuc is included with this update which also includes the daily volumes removed.

The anaerobic digester has been brought back online as of October 1, 2020 and all waste activated sludge is now being processed through the digester prior to storage. Once a sufficient amount of material is in the digester for the boiler and mixer to be turned on, those systems will be operated continually bringing the anaerobic digestion process within licence compliance.

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

Regards,

Karly Friesen
Director of Utility

Cc: Nathan Peto, City of Portage la Prairie
Robert Boswick, Manitoba Conservation and Climate
Jay Rackham, Manitoba Conservation and Climate
Tyler Kneeshaw, Manitoba Conservation and Climate

1.866.4.Wessuc
519 752-0837 t.
752-0840 f.
1693 Colborne St. E., Brantford, ON N3T 5L4

Project Debriefing

Project: 2020-006 Portage la Prairie Digester Cleanout

Duration: July 13 2020 - August 14 2020

Project Manager: Shawn Whalen

Project Coordinator: Austin Van Veen

Supervisor: Herman Van Veen/ Daren Mills

Project Summary

Wessuc was contracted for its first out of province Digester Cleanout by the city of Portage la Prairie to screen material from the onsite Anaerobic Digester and to perform a full cleanout/ washdown. Solids were screened out of the material by means of a screening unit and shaker. Due to the pre-screening processes present in the plant, the solids content was below the estimated volume which allowed for temporary bypassing of screening processes to the BVF Storage tank. There was minimal to no large screenings (garbage, rags, gravel.) Screening units were implemented toward the final stages of the digester cleanout when the solids content (sand) began to surface requiring further processing.

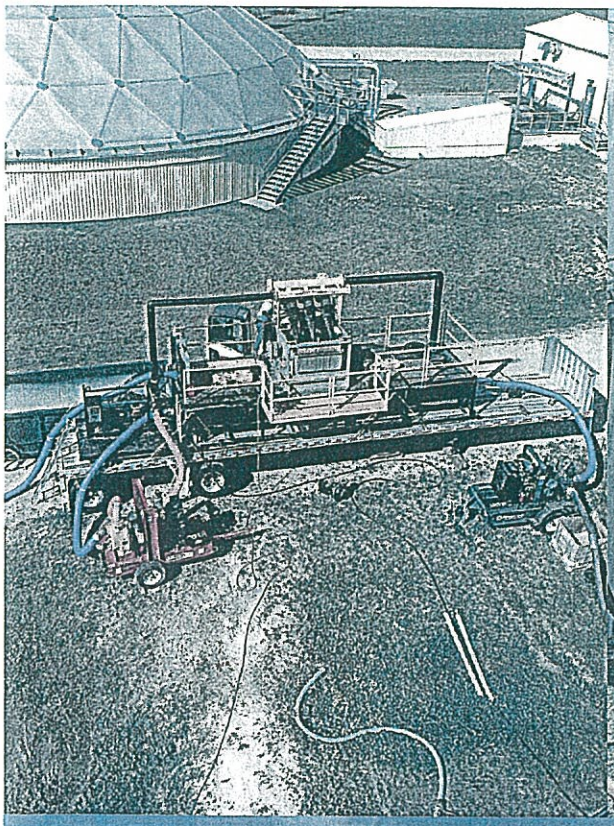
Wessuc experienced a minor hurdle due to an unforeseen equipment malfunction. The shaker units onboard motor system broke down but, was resolved by instituting an additional Vac Assist Pump sourced in Manitoba, to allow for continuous production through the system with filtered waste water returning to the BVF Storage Tank.

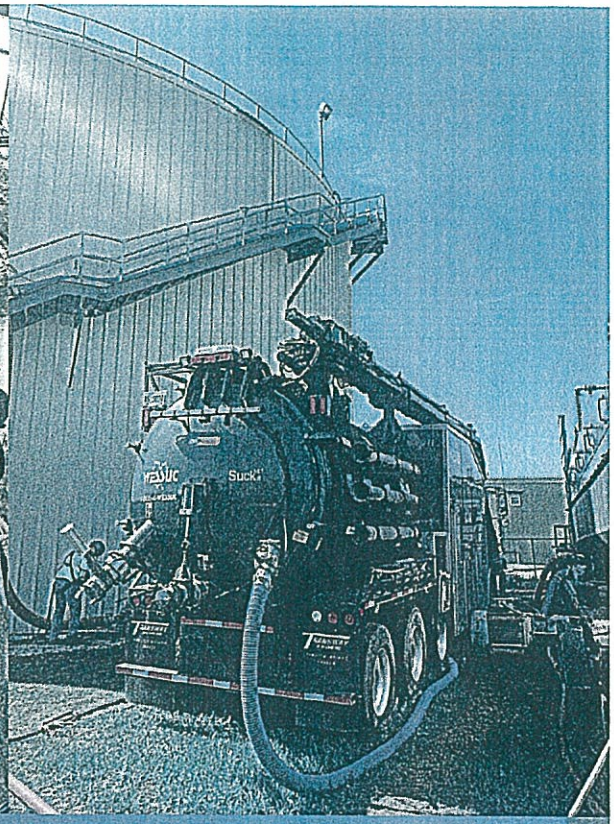
Due to the texture and density of the material, the screening unit experienced two (2) spills. Having a Vac unit onsite allowed Wessuc to respond immediately and eliminate any negative environmental impact. Although both spills were under 100L, Wessuc purchased a berm to contain any future incidents.

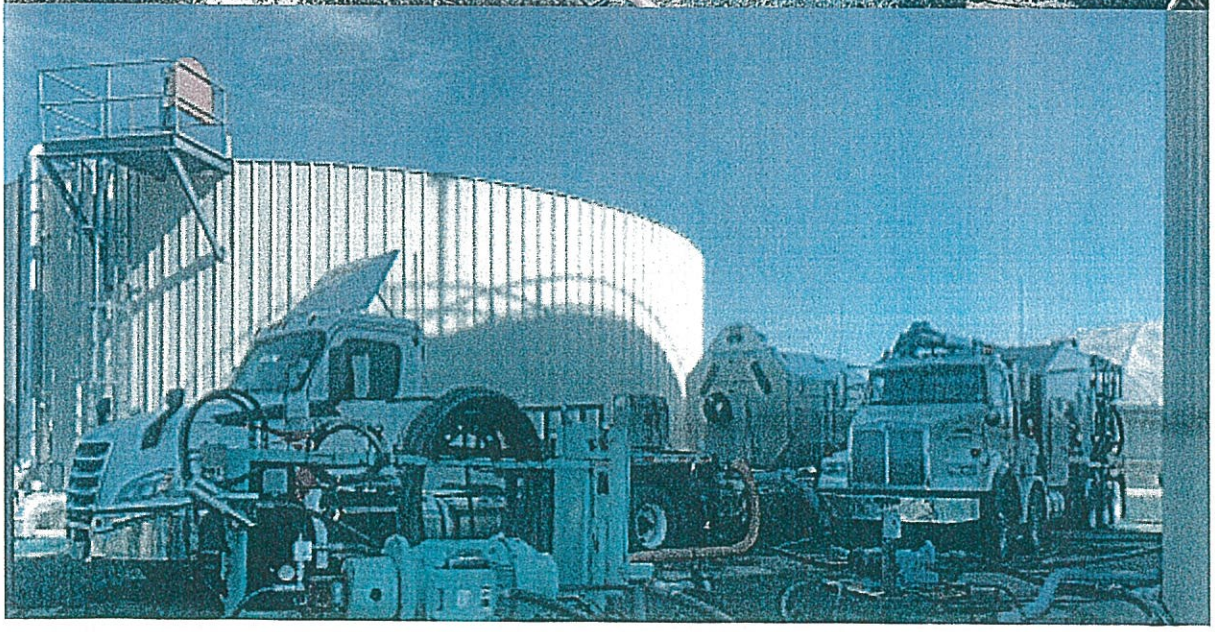
Below are photos taken throughout the course of the project. The volumes removed per day have been provided as a second document for review. These volumes have been based on measurements taken at the beginning and end of each day from each access point and are approximations based on provided drawings.

WESSUC

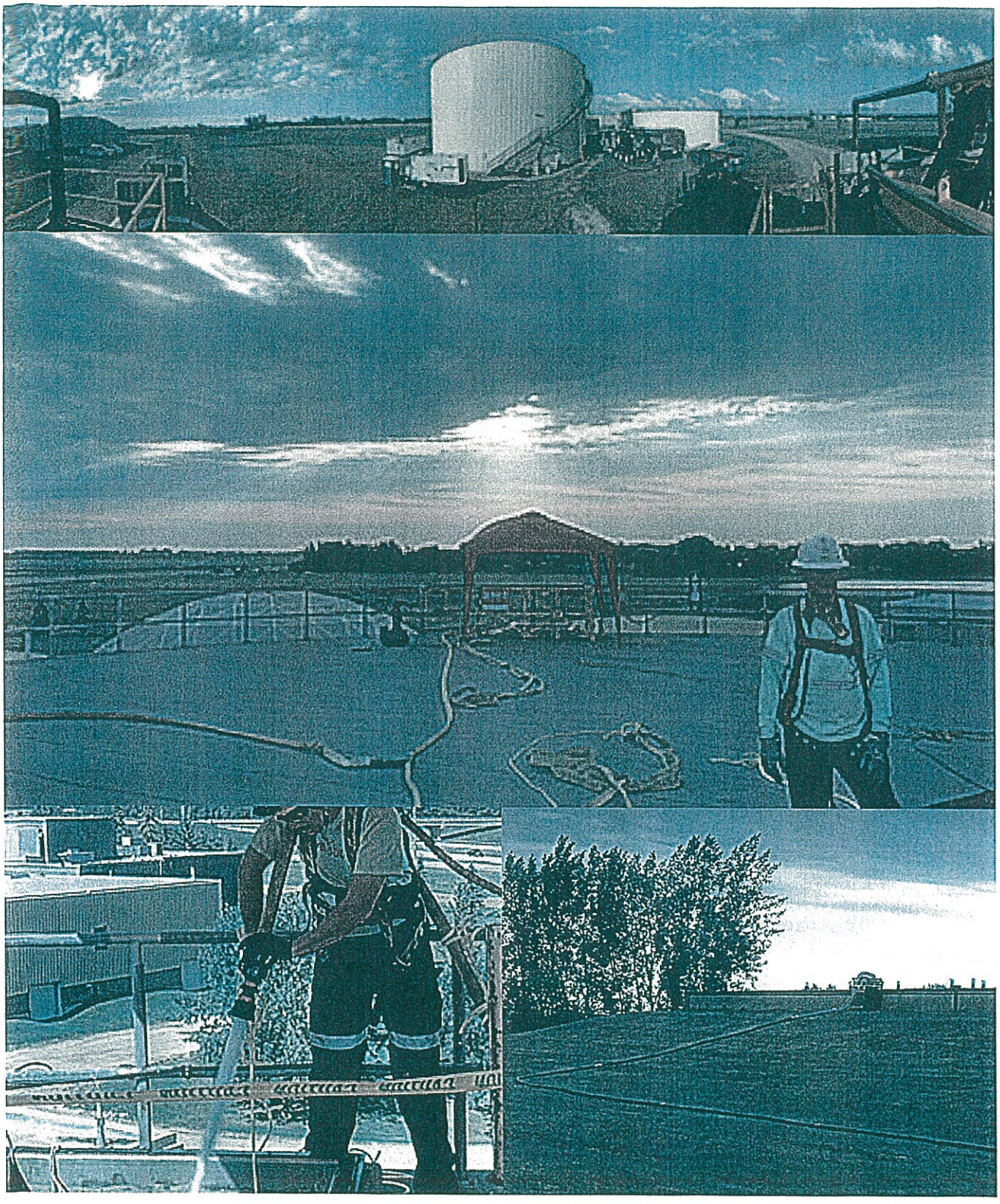
Site Photos





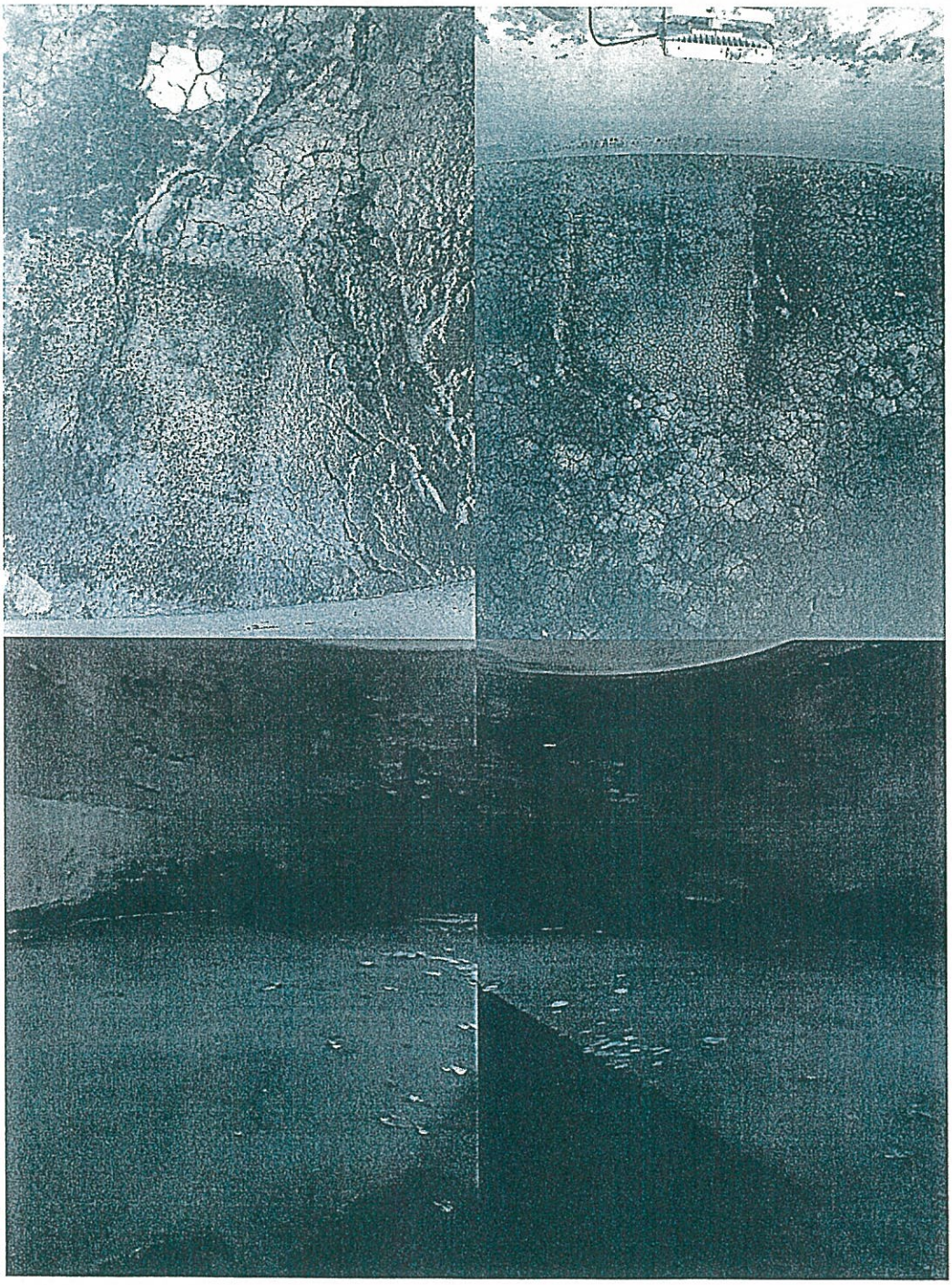


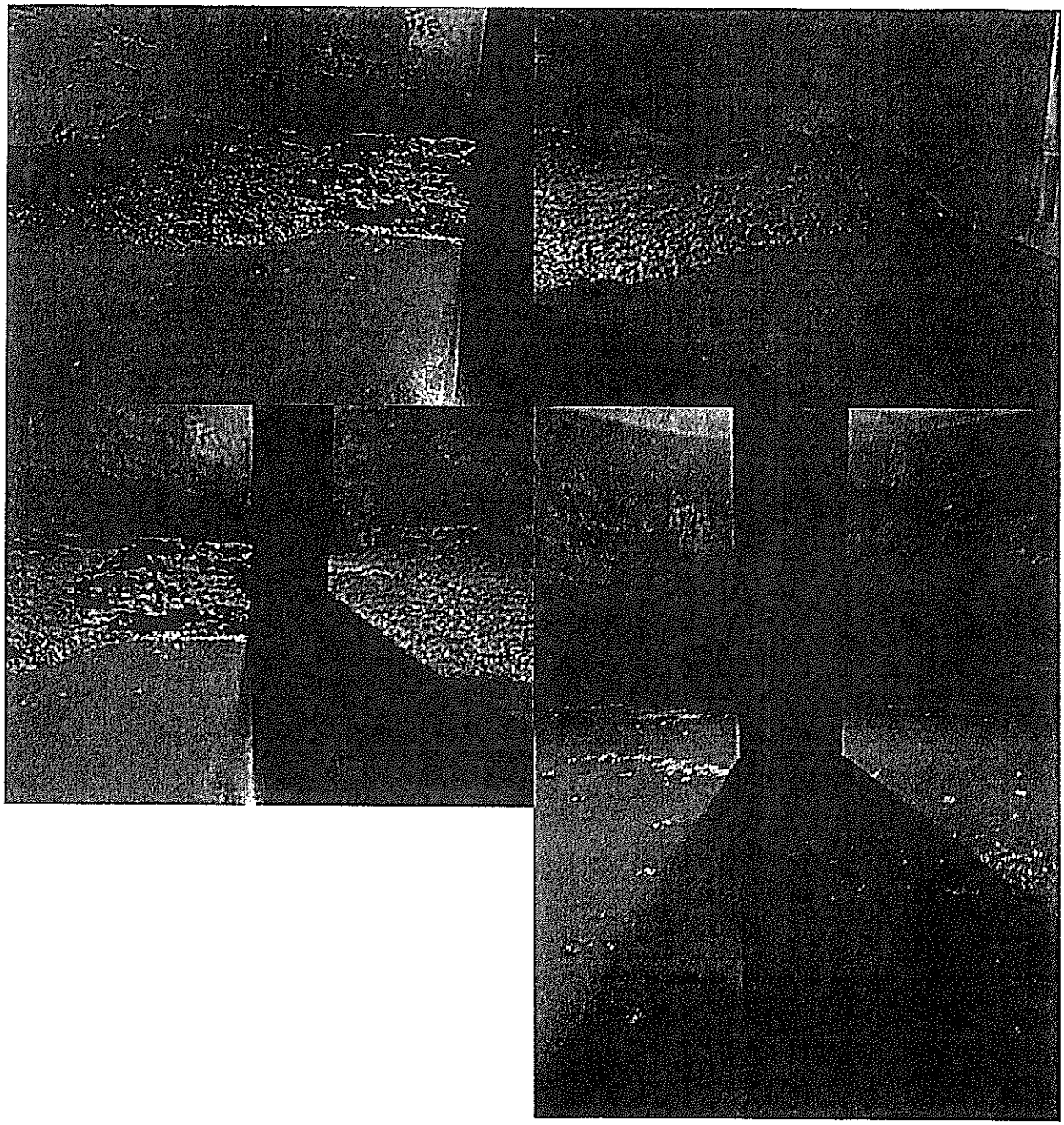
WESSUC



WESSUC

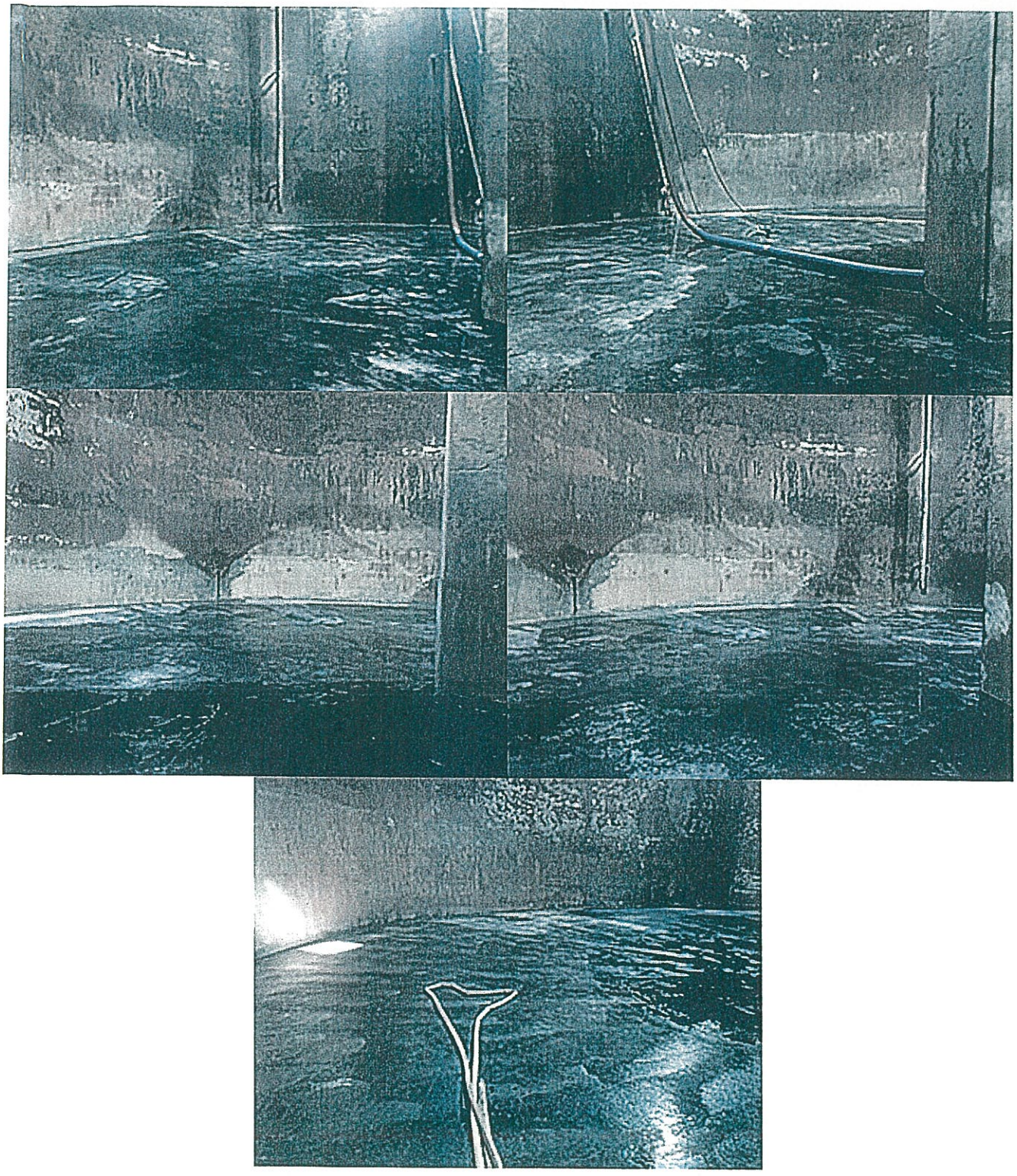
Pre-Cleaning Photos





WESSUC

Final Wash



First Quarter

Measurements (ft)	Jul 17	Jul 18	Jul 20	Jul 21	Jul 22
Measurement 1 (EHAM)	27.87	27.203	26.203	23.2867	20.703
Measurement 2 (WHAM)	26.953	25.62	24.537	19.62	20.703
Measurement 3 (EHPM)	27.203	26.203	23.2867	20.703	15.62
Measurement 4 (WHPM)	25.62	24.537	19.62	20.703	16.37
Average EHAM - WHAM	27.4115	26.4115	25.37	21.45335	20.703
Average EHPM - WHPM	26.4115	25.37	21.45335	20.703	15.995
Initial Volume	2838.99	2735.42	2627.56	2221.91	2144.20
End of Day Volume	2735.42	2627.56	2221.91	2144.20	1656.59
Total Volume Removed	103.57	107.87	405.65	77.71	487.60
Notes:	First Measurements				

Second Quarter

	Jul 23	Jul 28	Jul 29	Jul 30	Jul 31
Measurement 1 (EHAM)	15.62	11.12	8.703		
Measurement 2 (VHAM)	16.37	10.62	8.453		
Measurement 3 (EHPM)	11.12	8.703	1.12		
Measurement 4 (VHPM)	10.62	8.453	0.62		
Average EHAM - VHAM	15.995	10.87	8.578		
Average EHPM - VHPM	10.87	8.578	0.87		
Initial Volume	1656.59	1125.80	888.42		
End of Day Volume	1125.80	888.42	90.11		
Total Volume Removed	530.79	237.38	798.31		
Notes:			CSE - Mix and Wash / Last Measurement	CSE - Mix and Wash	CSE - Mix and Wash

Third Quarter

	Aug 5	Aug 6	Aug 7	Aug 8	N/A
Measurement 1 (EHAM)					
Measurement 2 (WHAM)					
Measurement 3 (EHPM)					
Measurement 4 (WHPM)					
Average EHAM - WHAM					
Average EHPM - WHPM					
Initial Volume					
End of Day Volume					
Total Volume Removed					
Notes:	CSE - Mix and Wash	CSE - Wash / Hydraulic Submersible removed from tank. Vac put in service	Final Washdown	Final Washdown	

Fourth Quarter

	N/A	N/A	N/A	N/A	N/A
Total Volume					
Initial Volume					
Measurement 1 (EHM)					
Measurement 2 (WHM)					
Measurement 3 (EHE)					
Measurement 4 (WHE)					
Difference					
Total Volume Removed					

Calculations

	Cubic Meters	Cubic Feet		
Height	12	39.37		
Diameter	20.8	68.24147		
Radius	10.4	34.120735		
Pi	3.14159265358979	3.14159265358979		
Total Volume	4077.54	143996.54	35.3146667	
Provided Max. Volume	3800			

Portage La Prairie Regional Landfill Authority

Box 626 26095 PR 227
Portage la Prairie, MB R1N 3B9
Ph: 204-871-4549 Email : rpohl@city-plap.com

Report on: "ALL CUSTOMERS"
From: 01-Aug-2020 To: 01-Sep-2020

200 - City of Portage la Prairie-WPCF

Address: 350 River Road
Portage la Prairie, MB
R1N 3V6

Date	Ticket No	Item	Code	Description	Vehicle ID	Qty	Weight kg	Amount $
01-Aug-2020	117351	1	501	HAZARDOUS WASTE OR WASTE REQUIRING SPECIAL HANDLING	/AS90341 *WESSUC DIGESTOR SLUDGE*	0	7,100	426.00
01-Aug-2020	117351	2	999	WASTE REDUCTION & RECYCLING LEVY	/AS90341	0	~~7,100~~	71.00
04-Aug-2020	117376	1	501	HAZARDOUS WASTE OR WASTE REQUIRING SPECIAL HANDLING	/AS90341 *WESSUC DIGESTOR SLUDGE*	0	6,890	413.40
04-Aug-2020	117376	2	999	WASTE REDUCTION & RECYCLING LEVY	/AS90341	0	~~6,890~~	68.90
04-Aug-2020	117407	1	501	HAZARDOUS WASTE OR WASTE REQUIRING SPECIAL HANDLING	/AS90341 *WESSUC DIGESTER SLUDGE*	0	8,330	499.80
04-Aug-2020	117407	2	999	WASTE REDUCTION & RECYCLING LEVY	/AS90341	0	~~8,330~~	83.30
06-Aug-2020	117525	1	501	HAZARDOUS WASTE OR WASTE REQUIRING SPECIAL HANDLING	/409478 *WASTE MANAGEMENT GRIT BOB*	0	11,760	705.60
06-Aug-2020	117525	2	999	WASTE REDUCTION & RECYCLING LEVY	/409478	0	~~11,760~~	117.60
05-Aug-2020	117531	1	501	HAZARDOUS WASTE OR WASTE REQUIRING SPECIAL HANDLING	/AS-9034 *WESSUC GRIT*	0	6,710	402.60
05-Aug-2020	117531	2	999	WASTE REDUCTION & RECYCLING LEVY	/AS-9034	0	~~6,710~~	67.10
07-Aug-2020	117557	1	501	HAZARDOUS WASTE OR WASTE REQUIRING SPECIAL HANDLING	/348 *WESSUC GRIT*	0	8,090	485.40
07-Aug-2020	117557	2	999	WASTE REDUCTION & RECYCLING LEVY	/348	0	~~8,090~~	80.90

Portage La Prairie Regional Landfill Authority

Box 626 26095 PR 227
Portage la Prairie, MB R1N 3B9
Ph: 204-871-4549 Email : rpohl@city-plap.com

Report on: "ALL CUSTOMERS"

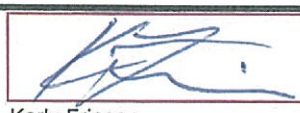
From: 01-Aug-2020 To: 01-Sep-2020

08-Aug-2020	117577	1	501	HAZARDOUS WASTE OR WASTE REQUIRING SPECIAL HANDLING	/348 *WESSUC GRIT*	0	7 650	459.00
08-Aug-2020	117577	2	999	WASTE REDUCTION & RECYCLING LEVY	/348	0	7.650	76.50
08-Aug-2020	117616	1	501	HAZARDOUS WASTE OR WASTE REQUIRING SPECIAL HANDLING	/348 *WESCCU GRIT*	0	3.030	181.80
08-Aug-2020	117616	2	999	WASTE REDUCTION & RECYCLING LEVY	/348	0	3.030	30.30
10-Aug-2020	117644	1	501	HAZARDOUS WASTE OR WASTE REQUIRING SPECIAL HANDLING	/AS90341 *WESSUC*	0	8 320	499.20
10-Aug-2020	117644	2	999	WASTE REDUCTION & RECYCLING LEVY	/AS90341	0	8.320	83.20
11-Aug-2020	117697	1	501	HAZARDOUS WASTE OR WASTE REQUIRING SPECIAL HANDLING	/AS90431 *WESSUC GRIT WASTE MANAGEMENT*	0	280	16.80
11-Aug-2020	117697	2	999	WASTE REDUCTION & RECYCLING LEVY	/AS90431	0	280	2.80
12-Aug-2020	117713	1	501	HAZARDOUS WASTE OR WASTE REQUIRING SPECIAL HANDLING	/CFJ500	0	9.000	540.00
12-Aug-2020	117713	2	999	WASTE REDUCTION & RECYCLING LEVY	/CFJ500	0	9.000	90.00
12-Aug-2020	117734	1	501	HAZARDOUS WASTE OR WASTE REQUIRING SPECIAL HANDLING	/CFJ500 *WASTE MANAGEMENT DUMPING OF GRIT*	0	6 380	382.80
12-Aug-2020	117734	2	999	WASTE REDUCTION & RECYCLING LEVY	/CFJ500	0	6.380	63.80
31-Aug-2020	118711	1	502	HAZARDOUS WASTE (COST PLUS)	/CITY *DIGESTOR SLUDGE EQUIPMENT HOURS*	1	0	4,355.00

Loads: 13 *TOTAL:* **$ 10,202.80**

Notice of Alteration Form

Manitoba
Sustainable Development

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: ☐ No: ☑ If No, please explain: Minor NOA	
Date: 2020/08/20	Signature:  Printed name: Karly Friesen

A complete Notice of Alteration **(NoA)** consists of the following components:

- ☑ **Cover letter**
- ☑ **Notice of Alteration Form**
- ☐ **2 hard copies and 1 electronic copy of the NoA detailed report** (see "Information Bulletin - Alteration to Developments with Environment Act Licences")
- ☐ **$500 Application fee, if applicable** (Cheque, payable to the Minister of Finance)

Submit the complete NoA to:

Director
Environmental Approvals Branch
Manitoba Sustainable Development
1007 Century Street
Winnipeg, Manitoba R3H 0W4

For more information:

Phone: (204) 945-8321
Fax: (204) 945-5229
http://www.gov.mb.ca/sd/eal

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")

Portage la Prairie
City of Possibilities

97 Saskatchewan Avenue East
Portage la Prairie, MB R1N 0L8
www.city-plap.com

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

	Digester					BST #1							BST Tank #2						
Date	pH	Temperature	TSS (mg/L)	VSSin	VSSout	pH	Conductivity	Temperature (oC)	TSS (mg/L)	VSS (mg/L)	Fecal Coliform (MPN/100mL)	Fecal Coliform (MPN/dry gram) (calculated)	pH	Conductivity	Temperature (oC)	TSS (mg/L)	VSS (mg/L)	Fecal Coliform (MPN/100mL)	Fecal Coliform (MPN/dry gram) (calculated)
6/1/2020		17.1	39500		24750														
6/2/2020			43600		27500														
6/3/2020			39850	28413	25700														
6/4/2020			38450		24700														
6/5/2020		17.3	42950		27650														
6/6/2020			35700		24200														
6/7/2020			36400		24300														
6/8/2020		17.5	35100		23700														
6/9/2020		17.5	34600		22950														
6/10/2020		17.4	45850		29150														
6/11/2020			43850		28100														
6/12/2020		17.4	41650		26600														
6/13/2020		17.4	38700		26300														
6/14/2020		17.5	35900		24500														
6/15/2020		17.6	37950		25700														
6/16/2020		17.7	36900		23400														
6/17/2020		18	42000	21750	28800														
6/18/2020		18.5	46000		28600														
6/19/2020		18.5	44750		28250														
6/20/2020		18.5	38700		25300														
6/21/2020		18.4	21400		16000														
6/22/2020		18.5	37300		23750														
6/23/2020		18.5	35750		22200														
6/24/2020		18.8	39500	24350	24600														
6/25/2020		19.2	40000		25600														
6/26/2020		19.5	37000		23900														
6/27/2020		19.3	48000		29600														
6/28/2020		19.63	42300		26200														
6/29/2020		19.6	45150		29000														
6/30/2020		19.8	48650		31050														
7/1/2020		19.7	53400		33400														
7/2/2020		22	47300	48650	30850														
7/3/2020		20.1	38900		24800														
7/4/2020		20.3	52200		26700														
7/5/2020		20.4	49800		31100														
7/6/2020		20.5	44450		28750														
7/7/2020		20.9	49900		32150														
7/8/2020		20.8	39450		24500														
7/9/2020		21.3	41650		26000														
7/10/2020		21.3	24200	24850	26200														
7/11/2020		21.3	51000		31700														
7/12/2020			48100		29800														
7/13/2020		21.7	47550		29850														
7/14/2020		21.7	42900		26200														
7/15/2020		24.5	Digester taken offline for cleaning																
7/16/2020		21.7																	
7/17/2020																			
7/18/2020		22.1																	
7/19/2020		20.1																	
7/20/2020		20.1																	
7/21/2020																			
7/22/2020																			
7/23/2020																			
7/24/2020																			
7/25/2020																			
7/26/2020																			
7/27/2020																			
7/28/2020																			
7/29/2020																			
7/30/2020																			
7/31/2020																			
8/1/2020		21.4																	
8/2/2020		20.7																	
8/3/2020		21.6																	
8/4/2020		25.5																	
8/5/2020		25.1																	
8/6/2020																			
8/7/2020		23.6																	
8/8/2020		23.6																	

8/9/2020																				
8/10/2020																				
8/11/2020						6.7	4.43	19.7	32750	23450	51200	15634	6.8	4.86	15.3	41850	27900	17200	4110	
8/12/2020						6.8		17.4	3890	2940	24200	62211	6.8		15.8	25800	17400	7710	2980	
8/13/2020								17	2310	1850	22800	98701			14.9	28000	19600	2930	1068	
8/14/2020																				
8/15/2020																				
8/16/2020																				
8/17/2020						6.7		17.9	24300	17000	336000	138272	6.8		15.5	41000	27900	4250	1037	
8/18/2020						6.8	Outstanding	17.9	12050	8200	68700	57012	6.8	Outstanding	15.5	40400	26850	2620	649	
8/19/2020						6.7		17.9	35450	22750	173000	48301	6.8		15.3	24400	17150	2920	1197	
8/20/2020																				

AECOM
99 Commerce Drive
Winnipeg, MB, Canada R3P 0Y7
www.aecom.com

204 477 5381 tel
204 284 2040 fax

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 m^3 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.

Manitoba
Conservation and Climate
Environmental Stewardship Division
Environmental Approvals Branch
1007 Century St. Winnipeg MB R3H 0W4
T 204-945-8321 F 204-945-5229

File No.: 1020.50
Licence No.: 1907

September 24, 2020

Karly Friesen
Manager, Wastewater Treatment Division
City of Portage la Prairie
97 Saskatchewan Avenue East
Portage la Prairie MB R1N 0L8

Dear Karly Friesen:

Re: Application for Alternative Digestion – City of Portage la Prairie Water Pollution Control Facility – Biosolids Storage Tanks

I am responding to your August 20, 2020 Notice of Alteration (NoA) consisting of a request for approval for an alternative digestion method for the stabilization of biosolids materials that originate from the City of Portage la Prairie Water Pollution Control Facility (Facility) and are currently held in Biosolids Storage Tank (BST) 1 and BST 2 at the Facility. This request is similar to recent previous requests with the exception that the anaerobic digester was taken out of service as of July 15, 2020. As a result, any digestion of sludge since that time must have occurred in BST 1 and BST 2. Environment Act Licence No. 1907 (Licence) relates to the sludge solids disposal activities associated with the Facility.

The August 20, 2020 letter indicates that solids have accumulated in BST 1 and BST 2. The letter request and attachment indicate that recent laboratory analysis demonstrates that interim bacterial destruction has occurred and that the fecal coliform count of the biosolids is below what the US EPA states as the maximum allowable for Class B biosolids. A previously submitted memorandum from AECOM dated May 8, 2017 concluded that, compared with US EPA Regulations Part 503, testing of biosolids from BST 1 had indicated that similar material was suitable for land application subject to compliance with the provisions of the Licence related to heavy metals and sub-surface soil injection.

Through recent laboratory analysis, the City of Portage la Prairie has determined that the fecal coliform count of the biosolids currently contained in the BST 1 and BST 2 is below the US EPA maximum allowable count for Class B biosolids. The NoA requests authorization to land apply biosolids from BST 1 and BST 2 via injection until November 30, 2020.

Upon review of the NoA and the Licence, I have decided that the environmental impacts of the proposed alteration are insignificant. Accordingly, pursuant to Section 14(2) of The Environment Act, I hereby approve the request to allow the biosolids from BST 1 and BST 2 to be land applied subject to the following limits, terms and conditions:

1. All associated activities are completed in accordance with the requirements of Environment Act Licence No. 1907;

2. The City of Portage la Prairie shall submit updates of monitoring activities and data associated with the removal of biosolids from BST 1 and BST 2 for hauling and land application by sub-surface injection to the assigned Environment Officers once every week as the related monitoring and land application activities commence or as may be requested by the assigned Environment Officers;

3. The City of Portage la Prairie shall not apply, or allow to be applied, biosolids from BST 1 and BST 2 to land where the fecal coliform count of the biosolids exceeds 2,000,000 CFU per dry gram;

4. The City of Portage la Prairie shall notify the assigned Environment Officers upon completion of the installation of new equipment that is to assist with mixing within the anaerobic digester as described in the August 20, 2020 NoA; and

5. This approval shall terminate on the 10th day of November, 2020, unless otherwise approved by the Director.

Unless otherwise indicated, the assigned Environment Officers for activities associated with the removal of biosolids from the biosolids storage tanks for land application shall be Jay Rackham, Environment Officer, Environmental Compliance and Enforcement Branch, Jay.Rackam@gov.mb.ca and Robert Boswick, Environmental Engineer, Environmental Approvals Branch Robert.Boswick@gov.mb.ca.

If you have any questions or would like to discuss the foregoing, please contact Robert Boswick, Environmental Engineer, at 204-918-5853.

Sincerely,

Original Signed By

Shannon Kohler, Director
Environment Act

cc: Yvonne Hawryliuk, Tyler Kneeshaw, Jay Rackham – Environmental Compliance and Enforcement
Siobhan Burland Ross, Robert Boswick – Environmental Approvals
Public Registries

APPENDIX C

APPLICATION AREA SUMMARY, SOIL TESTING, BIOSOLIDS TESTING AND ANALYTICAL RESULTS

FALL

NE 1-13-7

S 21-12-8

LETTER OF AGREEMENT

I, on my part, agree to:

a) Plant a cereal, oilseed, forage, field pea, or lentil crop at the beginning of the next growing season. Only these listed crops will be grown for three growing seasons following biosolids application. A crop will not be grown that is a vegetable or a fruit and livestock will not be allowed to graze for three growing seasons after biosolids application on the land.
b) Provide crop information to the City on an annual basis.
c) Consider the soil and biosolids test results prior to applying nitrogen fertilizer in the growing season following biosolids application and restrict the addition of plant-available nitrogen to a maximum of 100 kg/ha, including that derived from the application of biosolids. Fertilizer, including that derived from biosolids, will be applied at the recommended agronomic rates.
d) Release and discharge the City of Portage la Prairie of and from all claims, demands, actions or causes of actions which I have or may have as the result of the application of wastewater biosolids to my land.
e) Provide the City with a letter of acceptance upon completion of the biosolids application indicating my acceptance of field conditions.
f) Notify the lessee of the land (if applicable) of this agreement.

Yours truly,

Land Owner (DARREN McDONALD)

City Representative (KARLY PAGSEN)

Date

Aug 20/20
Date

Land Location(s): NW 1-13-7

LETTER OF AGREEMENT

Ms. Karly Friesen
Director of Utility
City of Portage la Prairie
97 Saskatchewan Ave. E.
Portage la Prairie, MB
R1N 0L8

Dear Land Owner:

I hereby agree to permit the City of Portage la Prairie to apply wastewater treatment residual biosolids to the land, which I own as described below, on the understanding that:

1. The biosolids will be injected approximately 15 cm below the surface.
2. The biosolids will be injected to a maximum rate of 10 dry tonnes per hectare. (Maximum allowable over a 4-year period.)
3. Application will occur in the 2020 crop year, or as otherwise indicated.
4. Biosolids application will not be closer than 300 meters to a dwelling not belonging to the owner or lessee of the land on which biosolids are applied.
5. Biosolids will not be applied within 15 meters of a ditch draining less than one section and 30 meters from drains serving a larger watershed.
6. All roadways, access roads, and ditches will be repaired to the original condition upon completion of the application program, to the satisfaction of the City, municipality and the landowner.
7. The City makes no warranties or representations as to the fertilizer content nor any soil conditioning effect of the biosolids.
8. The City will determine background levels of nutrients, heavy metals, pH, and clay depth prior to the application of biosolids. This information will be provided to the landowner.
9. The City will assess the biosolids quality prior to the application program and will monitor it throughout the program. Test results will be provided to the landowner.
10. Temporary halting of the application due to wet field conditions will occur upon mutual agreement between representatives of the City, contractor and landowner.
11. Biosolids may be injected at a maximum rate of addition of plant-available nitrogen of 100 kilograms per hectare.
12. The cumulative mass per hectare of each heavy metal in the soil does not exceed the respective value stipulated in the City's Environment Act License, and that not more than one-third of the initial maximum addition of each heavy metal will be applied in this year's program.
13. The City will restore the field to a condition similar that as found prior to the application program.

LETTER OF AGREEMENT

I, on my part, agree to:

a) Plant a cereal, oilseed, forage, field pea, or lentil crop at the beginning of the next growing season. Only these listed crops will be grown for three growing seasons following biosolids application. A crop will not be grown that is a vegetable or a fruit and livestock will not be allowed to graze for three growing seasons after biosolids application on the land.
b) Provide crop information to the City on an annual basis.
c) Consider the soil and biosolids test results prior to applying nitrogen fertilizer in the growing season following biosolids application and restrict the addition of plant-available nitrogen to a maximum of 100 kg/ha, including that derived from the application of biosolids. Fertilizer, including that derived from biosolids, will be applied at the recommended agronomic rates.
d) Release and discharge the City of Portage la Prairie of and from all claims, demands, actions or causes of actions which I have or may have as the result of the application of wastewater biosolids to my land.
e) Provide the City with a letter of acceptance upon completion of the biosolids application indicating my acceptance of field conditions.
f) Notify the lessee of the land (if applicable) of this agreement.

Yours truly,

Land Owner (RON BROOKS)

City Representative (KARLY FRIESEN)

Aug 24/20
Date

Aug 20/20
Date

Land Location(s): S 21-12-8

	Name of Land Owner		Darren McDonald				
	Legal Description		NW 1-13-7				
	Land Owner Authorization		Yes				
	Dist. >300m from residences						
	Map Enclosed		Yes				
	Year Field previously Used						
	GPS	**Lat**		**Long**			
		Date	**Date**	**Date**	**Date**		
		BVF 17/9/2020	**BVF 17/9/2020 lbs/ac**	**BST 16/9/2020**	**BST 16/9/2020lbs /ac**		**Comments**
Field Soil Analysis mg/kg 0-15 cm	Cadmium	0.507		0.507			
	Calcium	17600		17600			
	Chromium	28.7		28.7			
	Copper	23.6		23.6			
	Lead	12.0		12.0			
	Mercury	0.0426		0.0426			
	Nickel	30.0		30.0			
	pH	7.69		7.69			
	Phosphorus < 60 ug/g	11.9		11.9			
	Potassium	2920		2920			
	Soil Nitrate Nitrogen 0-60cm<100kg/ha	4.9		4.9			
	Zinc	101		101			
Bio-Solids Analysis mg/kg	Ammonia Nitrogen	170		230			
	Cadmium	3.26		2.15			
	Chromium	30.2		28.7			
	Conductivity	3600		3900			
	Copper	195		209			
	Lead	8.17		8.44			
	Mercury	0.511		0.290			
	Nickel	50.0		28.1			
	Nitrate Nitrogen	15.1		232.0			
	Organic Nitrogen	392		638			
	pH	6.99		6.96			
	Potassium	8030		9280			
	Total Nitrogen	560		870			
	Total Phosphorus	7650		13100			
	Total Solids	2.20		2.10			
	Volatile Solids	1.3		1.3			
	Zinc	1070		432			
Cummulative Results Kg/Hectare	Cadmium < 2.88	0.934	0.833	0.925	0.83		
	Chromium < 216	51.86	46.27	51.82	46.24		
	Copper < 90	43.76	39.04	43.64	38.94		
	Lead < 90	21.65	19.32	21.65	19.31		
	Mercury < 0.9	0.08	0.07	0.08	0.07		
	Nickel < 90	54.33	48.47	54.16	48.32		
	Nutrient Appl. Rate PA-N<100/kg	105.28	93.93	95.889	85.55		
	Solids <10	2.60	2.32	2.66	2.37		
	Zinc < 270	188.80	168.44	187.64	167.41		
	Phosphorus	71.46	63.75	95.637	85.33		
	Comments						

	Name of Land Owner		Brooks				
	Legal Description		S 21-12-8				
	Land Owner Authorization		Yes				
	Dist. >300m from residences						
	Map Enclosed		Yes				
	Year Field previously Used						
	GPS	**Lat**		**Long**			
		Date	**Date**	**Date**	**Date**		
		BVF 30/9/2020	**BVF 30/9/2020 lbs/ac**	**BST 28/9/2020**	**BST 28/9/2020 lbs/ac**		**Comments**
Field Soil Analysis mg/kg 0-15 cm	Cadmium	0.507		0.507			
	Calcium	13800		13800			
	Chromium	29.9		29.9			
	Copper	26.5		26.5			
	Lead	11.2		11.2			
	Mercury	0.0331		0.0331			
	Nickel	30.5		30.5			
	pH	7.67		7.67			
	Phosphorus < 60 ug/g	14.0		14.0			
	Potassium	4050		4050			
	Soil Nitrate Nitrogen 0-60cm<100kg/ha	4.2		4.2			
	Zinc	92		92			
Bio-Solids Analysis mg/kg	Ammonia Nitrogen	170		230			
	Cadmium	3.26		2.15			
	Chromium	30.2		28.7			
	Conductivity	3600		3900			
	Copper	195		209			
	Lead	8.17		8.44			
	Mercury	0.511		0.290			
	Nickel	50.0		28.1			
	Nitrate Nitrogen	15.1		232.0			
	Organic Nitrogen	392		638			
	pH	6.99		6.96			
	Potassium	8030		9280			
	Total Nitrogen	560		870			
	Total Phosphorus	7650		13100			
	Total Solids	2.20		2.10			
	Volatile Solids	1.3		1.3			
	Zinc	1070		432			
Cummulative Results Kg/Hectare	Cadmium < 2.88	0.937	0.836	0.924	0.824		
	Chromium < 216	54.05	48.22	53.97	48.15		
	Copper < 90	49.18	43.88	48.78	43.52		
	Lead < 90	20.22	18.04	20.20	18.02		
	Mercury < 0.9	0.06	0.06	0.06	0.05		
	Nickel < 90	55.28	49.32	55.05	49.11		
	Nutrient Appl. Rate PA-N<100/kg	100.15	89.35	96.385	85.99		
	Solids <10	2.84	2.53	2.74	2.44		
	Zinc < 270	173.72	154.99	171.11	152.66		
	Phosphorus	83.23	74.26	92.613	82.63		
	Comments						

ASSINIBOINE INJECTIONS LTD

BOX 160 177 NOTRE DAME AVE NOTRE DAME, MB ROG 1M0 PH: 204-248-2559 FAX: 204-248-2799

DAILY SLUDGE APPLICATION PLAN

DATE: _____

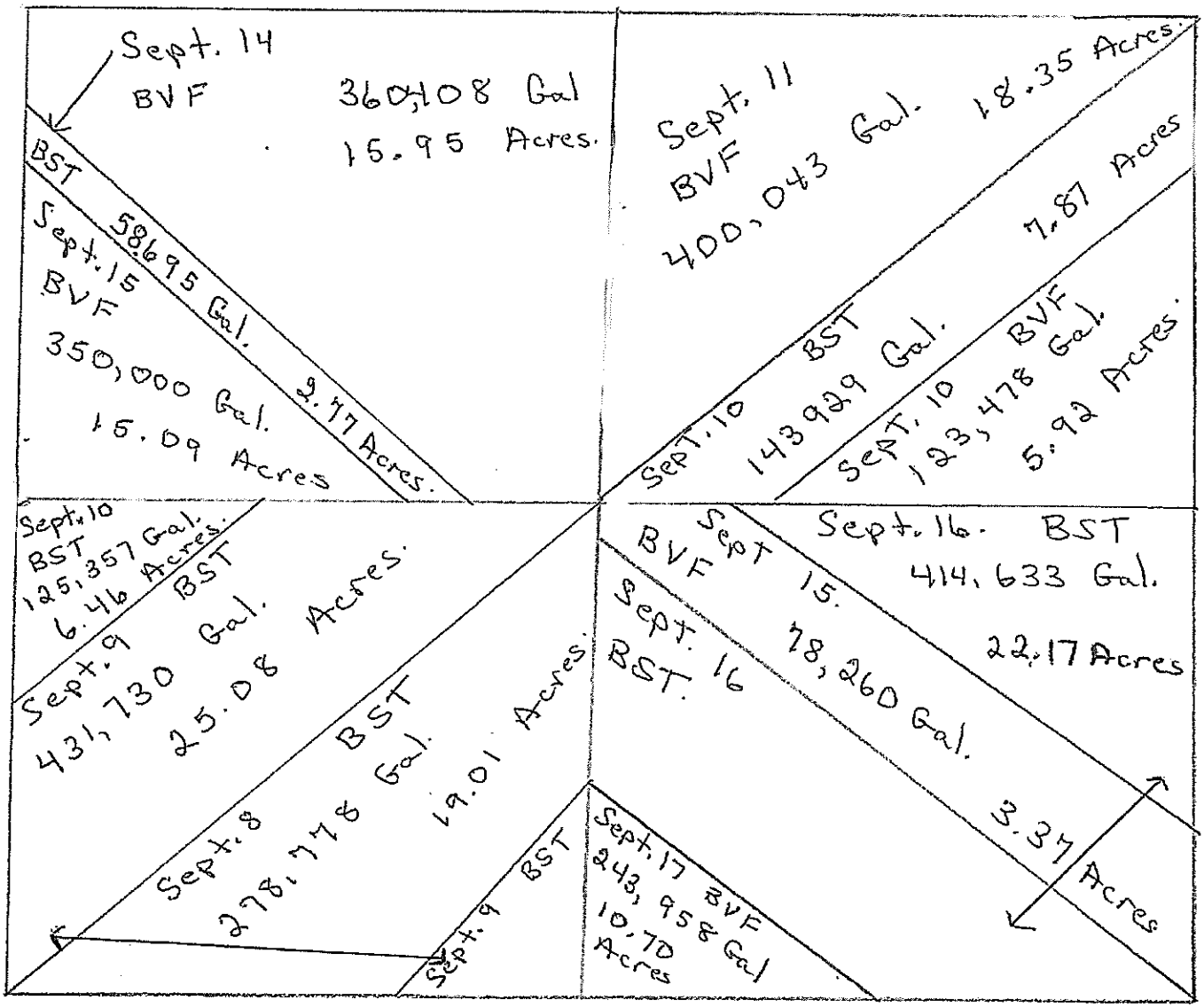
FARMERS NAME: _____

FIELD: SEC. _____ TWP _____ RGE _____

APPLICATION TYPE: INJECTION

DEPTH : ___6"_____ HA: _____ CM3: _____

_____N_____



ASSINIBOINE INJECTIONS LTD

BOX 160 177 NOTRE DAME AVE NOTRE DAME, MB ROG 1M0 PH: 204-248-2559 FAX: 204-248-2799

DAILY SLUDGE APPLICATION PLAN

DATE: _____

FARMERS NAME: _____

FIELD: SEC. _____ TWP _____ RGE _____

APPLICATION TYPE: INJECTION

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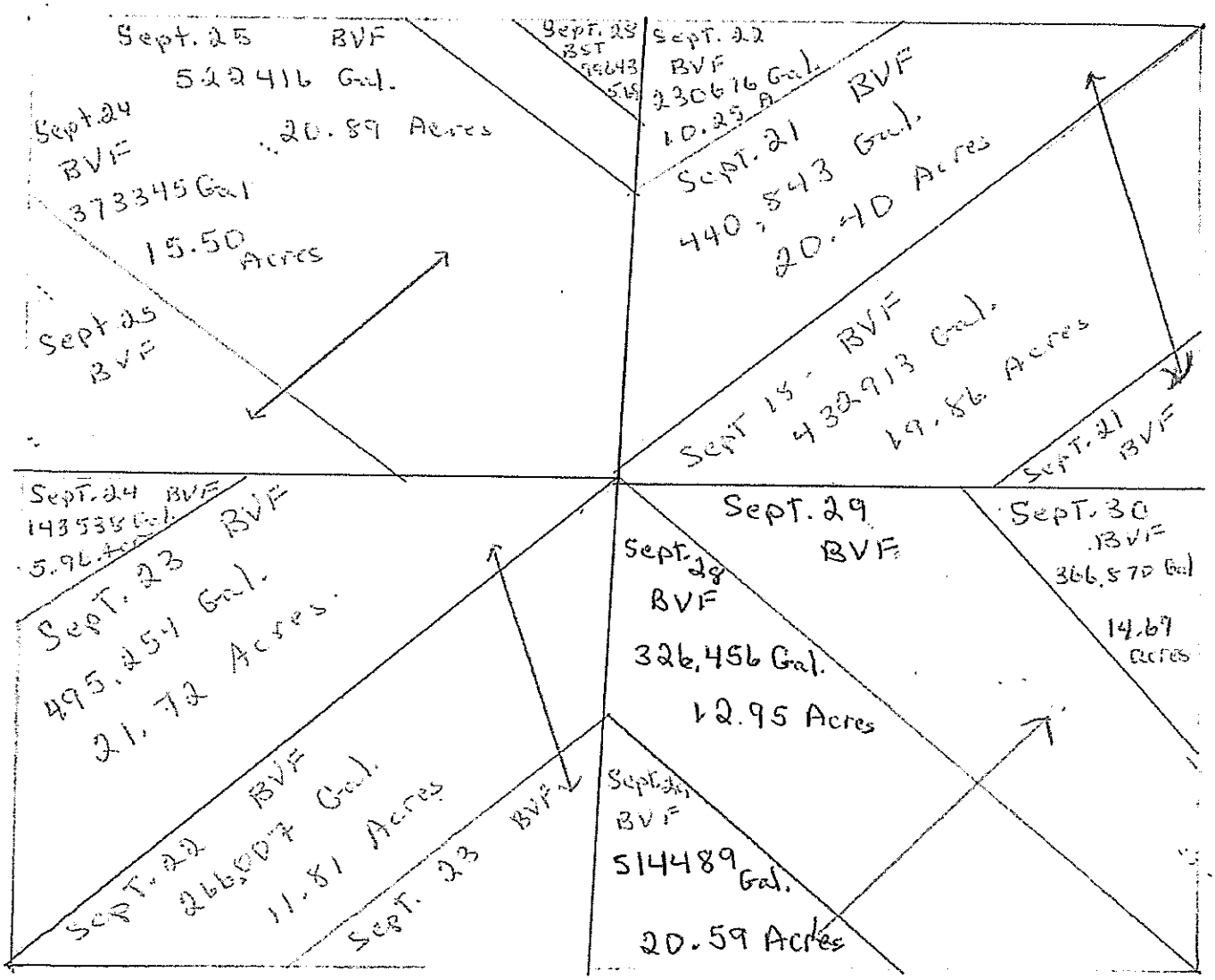
_____N_____



C ity of Portage la Prairie - Wastewater
A TTN: AARON STECHESEN
9 7 Saskatchewan Avenue East
P ortage la Prairie MB R1N 0L8

Date Received: 28-AUG-20
Report Date: 17-SEP-20 07:06 (MT)
Version: FINAL

Client Phone: 204-239-8361

Certificate of Analysis

Lab Work Order #: L2495636
Project P.O. #: W02593
Job Reference:
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2495636-1 20-08-127	McDonald NW 1-13-7						
Sampled By: CLIENT on 26-AUG-20 @ 15:00							
Matrix: SOIL							
Miscellaneous Parameters							
Available Phosphate-P	11.9		1.0	mg/kg	10-SEP-20	10-SEP-20	R5220716
Mercury (Hg)	0.0426		0.0050	mg/kg	05-SEP-20	08-SEP-20	R5215541
% Moisture	22.9		0.10	%	04-SEP-20	04-SEP-20	R5211158
pH (1:2 soil:water)	7.69		0.10	pH	08-SEP-20	08-SEP-20	R5215837
Metals							
Aluminum (Al)	19300		5.0	mg/kg	03-SEP-20	03-SEP-20	R5210284
Antimony (Sb)	0.30		0.10	mg/kg	03-SEP-20	03-SEP-20	R5210284
Arsenic (As)	7.42		0.10	mg/kg	03-SEP-20	03-SEP-20	R5210284
Barium (Ba)	198		0.50	mg/kg	03-SEP-20	03-SEP-20	R5210284
Beryllium (Be)	0.87		0.10	mg/kg	03-SEP-20	03-SEP-20	R5210284
Bismuth (Bi)	0.203		0.020	mg/kg	03-SEP-20	03-SEP-20	R5210284
Boron (B)	17		10	mg/kg	03-SEP-20	03-SEP-20	R5210284
Cadmium (Cd)	0.507		0.020	mg/kg	03-SEP-20	03-SEP-20	R5210284
Calcium (Ca)	17600		100	mg/kg	03-SEP-20	03-SEP-20	R5210284
Chromium (Cr)	28.7		1.0	mg/kg	03-SEP-20	03-SEP-20	R5210284
Cobalt (Co)	10.5		0.020	mg/kg	03-SEP-20	03-SEP-20	R5210284
Copper (Cu)	23.6		1.0	mg/kg	03-SEP-20	03-SEP-20	R5210284
Iron (Fe)	25500		25	mg/kg	03-SEP-20	03-SEP-20	R5210284
Lead (Pb)	12.0		0.20	mg/kg	03-SEP-20	03-SEP-20	R5210284
Magnesium (Mg)	11400		10	mg/kg	03-SEP-20	03-SEP-20	R5210284
Manganese (Mn)	981		0.50	mg/kg	03-SEP-20	03-SEP-20	R5210284
Molybdenum (Mo)	0.31		0.10	mg/kg	03-SEP-20	03-SEP-20	R5210284
Nickel (Ni)	30.0		0.50	mg/kg	03-SEP-20	03-SEP-20	R5210284
Phosphorus (P)	580		100	mg/kg	03-SEP-20	03-SEP-20	R5210284
Potassium (K)	2920		25	mg/kg	03-SEP-20	03-SEP-20	R5210284
Selenium (Se)	<0.50		0.50	mg/kg	03-SEP-20	03-SEP-20	R5210284
Silver (Ag)	0.11		0.10	mg/kg	03-SEP-20	03-SEP-20	R5210284
Sodium (Na)	292		10	mg/kg	03-SEP-20	03-SEP-20	R5210284
Strontium (Sr)	66.8		0.10	mg/kg	03-SEP-20	03-SEP-20	R5210284
Thallium (Tl)	0.30		0.10	mg/kg	03-SEP-20	03-SEP-20	R5210284
Tin (Sn)	<5.0		5.0	mg/kg	03-SEP-20	03-SEP-20	R5210284
Titanium (Ti)	29.2		0.50	mg/kg	03-SEP-20	03-SEP-20	R5210284
Uranium (U)	1.37		0.020	mg/kg	03-SEP-20	03-SEP-20	R5210284
Vanadium (V)	65.6		0.50	mg/kg	03-SEP-20	03-SEP-20	R5210284
Zinc (Zn)	101		10	mg/kg	03-SEP-20	03-SEP-20	R5210284
L2495636-2 20-08-128							
Sampled By: CLIENT on 26-AUG-20 @ 15:00							
Matrix: SOIL							
Miscellaneous Parameters							
Available Nitrate-N	4.6		1.0	mg/kg	16-SEP-20	16-SEP-20	R5224967
% Moisture	18.4		0.10	%	04-SEP-20	04-SEP-20	R5211158
Total Nitrogen by LECO	1950		200	mg/kg	05-SEP-20	05-SEP-20	R5213656
Total Available N & NO3-N, NO2-N & NH4							
Available Ammonium-N							
Available Ammonium-N	5.2		1.0	mg/kg	10-SEP-20	10-SEP-20	R5221971
Available Ammonium-N - Calculation							
Total Available Nitrogen	10.1		2.2	mg/kg		11-SEP-20	
Nitrate, Nitrite & Nitrate+Nitrite-N(KCL							
Nitrite-N	<1.0		1.0	mg/kg	10-SEP-20	10-SEP-20	R5221689
Nitrate+Nitrite-N	4.9		2.0	mg/kg	10-SEP-20	10-SEP-20	R5221689
Nitrate-N	4.9		2.0	mg/kg	10-SEP-20	10-SEP-20	R5221689

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2495636-2 20-08-128							
Sampled By: CLIENT on 26-AUG-20 @ 15:00							
Matrix: SOIL							
L2495636-3 20-08-129							
Sampled By: CLIENT on 26-AUG-20 @ 15:00							
Matrix: SOIL							
Atterberg limits							
Liquid Limit (LL)	52		1	%	04-SEP-20	04-SEP-20	R5210877
Moisture at Plastic Limit	25		1	%	04-SEP-20	04-SEP-20	R5210877
Plasticity Index (PI)	27		1	%	04-SEP-20	04-SEP-20	R5210877

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ATTERBERG-SK	Soil	Atterberg limits	CARTER CSSS 58

The liquid limit (or upper plastic limit) is the point at which the soil becomes semifluid, like softened butter. In operational terms, the liquid limit is defined as the water content at which a trapezoidal groove cut in moist soil is closed after 25 taps on a hard rubber plate (ASTM D-18, 1958).

The plastic limit (or lower plastic limit) is defined as the water content at which soil begins to crumble on being rolled into a thread 1/8 inch (or 3 mm) in diameter. It represents the lowest water content at which soil can be deformed readily without cracking.

The plastic index (which is the difference between the liquid and plastic limits) gives an indication of the "clayeyness" or plasticity of a clay and is employed in engineering classification systems for soils.

This method is equivalent to ASTM D4318-10.

ETL-N-TOT-AVAIL-SK	Soil	Available Ammonium-N - Calculation	Soil Methods of Analysis (1993) CSSS
HG-200.2-CVAA-WP	Soil	Mercury in Soil	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

MET-200.2-MS-WP	Soil	Metals	EPA 200.2/6020B (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

MOISTURE-SK	Soil	Moisture Content	CCME PHC in Soil - Tier 1 (mod)

The weighed portion of soil is placed in a 105 C oven overnight. The dried soil is allowed to cooled to room temperature, weighed and the % moisture is calculated.

N-TOT-LECO-SK	Soil	Total Nitrogen by combustion method	CSSS (2008) 22.4

The sample is ignited in a combustion analyzer where nitrogen in the reduced nitrous oxide gas is determined using a thermal conductivity detector.

N2/N3-AVAIL-KCL-SK	Soil	Nitrate, Nitrite & Nitrate+Nitrite-N(KCL	CSSS (2008) 6.2-6.3

Plant available nitrate and nitrite are extracted from the sample with 2N KCl. Nitrate and Nitrite in the filtered extract are determined colorimetrically by Technicon auto-analyzer or flow injection analyzer at 520 nm.

NH4-AVAIL-SK	Soil	Available Ammonium-N	CSSS Carter 6.2 / Comm Soil Sci 19(6)

Ammonium (NH4-N) is extracted from the soil using 2 N KCl. Ammonium in the extract is mixed with hypochlorite and salicylate to form indophenol blue, which is determined colorimetrically by auto analysis at 660 nm.

NO3-AVAIL-SK	Soil	Available Nitrate-N	Alberta Ag / APHA 4500 NO3F

Available Nitrate and Nitrite are extracted from the soil using a dilute calcium chloride solution.
Nitrate is quantitatively reduced to nitrite by passing of the sample through a copperized cadmium column. The nitrite (reduced nitrate plus original nitrite) is then determined by diazotizing with sulfanilamide followed by coupling with N-(1-naphthyl) ethylenediamine dihydrochloride. The resulting water soluble dye has a magenta color which is measured at colorimetrically at 520nm.

PH-1:2-SK	Soil	pH (1:2 Soil:Water Extraction)	AB Ag (1988) p.7

1 part dry soil and 2 parts de-ionized water (by volume) is mixed. The slurry is allowed to stand with occasional stirring for 30 - 60 minutes. After equilibration, pH of the slurry is measured using a pH meter.

PO4-AVAIL-OLSEN-SK	Soil	Available Phosphate-P by Olsen	CSSS (2008) 8

Plant available phosphorus is extracted from air dried soil using a fixed ratio bicarbonate extraction. Phosphorus is determined by colorimetry.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
WP			

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg – milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

Quality Control Report

Workorder: L2495636 Report Date: 17-SEP-20

Client: City of Portage la Prairie - Wastewater
97 Saskatchewan Avenue East
Portage la Prairie MB R1N 0L8
Contact: AARON STECHESEN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ATTERBERG-SK	Soil							
Batch R5210877								
WG3396839-2 IRM		**ATB-1_SOIL**						
Liquid Limit (LL)			103.1		%		80-120	04-SEP-20
Moisture at Plastic Limit			107.6		%		80-120	04-SEP-20
Plasticity Index (PI)			95.8		%		80-120	04-SEP-20
HG-200.2-CVAA-WP	Soil							
Batch R5215541								
WG3400112-4 CRM		**CANMET TILL-1**						
Mercury (Hg)			90.7		%		70-130	08-SEP-20
WG3400112-2 LCS								
Mercury (Hg)			102.5		%		80-120	08-SEP-20
WG3400112-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	08-SEP-20
MET-200.2-MS-WP	Soil							
Batch R5210284								
WG3397825-4 CRM		**CANMET TILL-1**						
Aluminum (Al)			100.4		%		70-130	03-SEP-20
Antimony (Sb)			97.2		%		70-130	03-SEP-20
Arsenic (As)			95.8		%		70-130	03-SEP-20
Barium (Ba)			99.1		%		70-130	03-SEP-20
Beryllium (Be)			96.9		%		70-130	03-SEP-20
Bismuth (Bi)			91.7		%		70-130	03-SEP-20
Boron (B)			3		mg/kg		0-8	03-SEP-20
Cadmium (Cd)			114.2		%		70-130	03-SEP-20
Calcium (Ca)			100.0		%		70-130	03-SEP-20
Chromium (Cr)			99.4		%		70-130	03-SEP-20
Cobalt (Co)			95.9		%		70-130	03-SEP-20
Copper (Cu)			101.4		%		70-130	03-SEP-20
Iron (Fe)			98.9		%		70-130	03-SEP-20
Lead (Pb)			93.5		%		70-130	03-SEP-20
Magnesium (Mg)			99.2		%		70-130	03-SEP-20
Manganese (Mn)			101.8		%		70-130	03-SEP-20
Molybdenum (Mo)			101.0		%		70-130	03-SEP-20
Nickel (Ni)			97.7		%		70-130	03-SEP-20
Phosphorus (P)			92.3		%		70-130	03-SEP-20
Potassium (K)			97.4		%		70-130	03-SEP-20
Selenium (Se)			120.9		%		70-130	03-SEP-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-MS-WP	Soil							
Batch R5210284								
WG3397825-4 CRM		CANMET TILL-1						
Silver (Ag)			94.8		%		70-130	03-SEP-20
Sodium (Na)			93.6		%		70-130	03-SEP-20
Strontium (Sr)			103.1		%		70-130	03-SEP-20
Thallium (Tl)			0.12		mg/kg		0.03-0.23	03-SEP-20
Tin (Sn)			1.0		mg/kg		0-3.1	03-SEP-20
Titanium (Ti)			88.3		%		70-130	03-SEP-20
Uranium (U)			98.3		%		70-130	03-SEP-20
Vanadium (V)			98.8		%		70-130	03-SEP-20
Zinc (Zn)			105.6		%		70-130	03-SEP-20
WG3397825-2 LCS								
Aluminum (Al)			102.0		%		80-120	03-SEP-20
Antimony (Sb)			99.5		%		80-120	03-SEP-20
Arsenic (As)			99.5		%		80-120	03-SEP-20
Barium (Ba)			102.7		%		80-120	03-SEP-20
Beryllium (Be)			100.2		%		80-120	03-SEP-20
Bismuth (Bi)			97.1		%		80-120	03-SEP-20
Boron (B)			92.6		%		80-120	03-SEP-20
Cadmium (Cd)			102.3		%		80-120	03-SEP-20
Calcium (Ca)			99.6		%		80-120	03-SEP-20
Chromium (Cr)			99.99		%		80-120	03-SEP-20
Cobalt (Co)			101.1		%		80-120	03-SEP-20
Copper (Cu)			106.9		%		80-120	03-SEP-20
Iron (Fe)			108.0		%		80-120	03-SEP-20
Lead (Pb)			97.4		%		80-120	03-SEP-20
Magnesium (Mg)			106.6		%		80-120	03-SEP-20
Manganese (Mn)			101.6		%		80-120	03-SEP-20
Molybdenum (Mo)			98.1		%		80-120	03-SEP-20
Nickel (Ni)			99.1		%		80-120	03-SEP-20
Phosphorus (P)			102.9		%		80-120	03-SEP-20
Potassium (K)			105.6		%		80-120	03-SEP-20
Selenium (Se)			99.3		%		80-120	03-SEP-20
Silver (Ag)			99.2		%		80-120	03-SEP-20
Sodium (Na)			100.3		%		80-120	03-SEP-20
Strontium (Sr)			104.0		%		80-120	03-SEP-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-MS-WP	Soil							
Batch R5210284								
WG3397825-2 LCS								
Thallium (Tl)			94.4		%		80-120	03-SEP-20
Tin (Sn)			98.5		%		80-120	03-SEP-20
Titanium (Ti)			97.1		%		80-120	03-SEP-20
Uranium (U)			101.3		%		80-120	03-SEP-20
Vanadium (V)			103.3		%		80-120	03-SEP-20
Zinc (Zn)			112.1		%		80-120	03-SEP-20
WG3397825-1 MB								
Aluminum (Al)			5.2	B	mg/kg		5	03-SEP-20
Antimony (Sb)			<0.10		mg/kg		0.1	03-SEP-20
Arsenic (As)			<0.10		mg/kg		0.1	03-SEP-20
Barium (Ba)			<0.50		mg/kg		0.5	03-SEP-20
Beryllium (Be)			<0.10		mg/kg		0.1	03-SEP-20
Bismuth (Bi)			<0.020		mg/kg		0.02	03-SEP-20
Boron (B)			<10		mg/kg		10	03-SEP-20
Cadmium (Cd)			0.066	B	mg/kg		0.02	03-SEP-20
Calcium (Ca)			<100		mg/kg		100	03-SEP-20
Chromium (Cr)			<1.0		mg/kg		1	03-SEP-20
Cobalt (Co)			<0.020		mg/kg		0.02	03-SEP-20
Copper (Cu)			2.2	B	mg/kg		1	03-SEP-20
Iron (Fe)			<25		mg/kg		25	03-SEP-20
Lead (Pb)			<0.20		mg/kg		0.2	03-SEP-20
Magnesium (Mg)			<10		mg/kg		10	03-SEP-20
Manganese (Mn)			<0.50		mg/kg		0.5	03-SEP-20
Molybdenum (Mo)			<0.10		mg/kg		0.1	03-SEP-20
Nickel (Ni)			<0.50		mg/kg		0.5	03-SEP-20
Phosphorus (P)			<100		mg/kg		100	03-SEP-20
Potassium (K)			<25		mg/kg		25	03-SEP-20
Selenium (Se)			<0.50		mg/kg		0.5	03-SEP-20
Silver (Ag)			<0.10		mg/kg		0.1	03-SEP-20
Sodium (Na)			<10		mg/kg		10	03-SEP-20
Strontium (Sr)			<0.10		mg/kg		0.1	03-SEP-20
Thallium (Tl)			<0.10		mg/kg		0.1	03-SEP-20
Tin (Sn)			<5.0		mg/kg		5	03-SEP-20
Titanium (Ti)			<0.50		mg/kg		0.5	03-SEP-20

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-MS-WP	Soil							
Batch R5210284								
WG3397825-1 MB								
Uranium (U)			<0.020		mg/kg		0.02	03-SEP-20
Vanadium (V)			<0.50		mg/kg		0.5	03-SEP-20
Zinc (Zn)			<10		mg/kg		10	03-SEP-20
MOIST-SK	Soil							
Batch R5211158								
WG3397972-3 LCS								
% Moisture			102.8		%		90-110	04-SEP-20
WG3397972-2 MB								
% Moisture			<0.10		%		0.1	04-SEP-20
N-TOT-LECO-SK	Soil							
Batch R5213656								
WG3397641-2 IRM		**08-109_SOIL**						
Total Nitrogen by LECO			103.2		%		80-120	05-SEP-20
WG3397641-5 LCS		**SULFADIAZINE**						
Total Nitrogen by LECO			97.1		%		90-110	05-SEP-20
WG3397641-4 MB								
Total Nitrogen by LECO			<0.020		%		0.02	05-SEP-20
N2/N3-AVAIL-KCL-SK	Soil							
Batch R5221689								
WG3398527-3 IRM		**ALS SAL 2019**						
Nitrite-N			0.1		mg/kg		0-2.1	10-SEP-20
Nitrate+Nitrite-N			80.3		%		70-130	10-SEP-20
WG3398527-4 LCS								
Nitrite-N			78.7		%		70-130	10-SEP-20
Nitrate+Nitrite-N			110.2		%		70-130	10-SEP-20
WG3398527-2 MB								
Nitrite-N			<1.0		mg/kg		1	10-SEP-20
Nitrate+Nitrite-N			<2.0		mg/kg		2	10-SEP-20
NH4-AVAIL-SK	Soil							
Batch R5221971								
WG3398504-4 LCS								
Available Ammonium-N			98.9		%		80-120	10-SEP-20
WG3398504-2 MB								
Available Ammonium-N			<1.0		mg/kg		1	10-SEP-20
NO3-AVAIL-SK	Soil							

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-AVAIL-SK	Soil							
Batch R5224967								
WG3405207-3 IRM		**ALS SAL 2019**						
Available Nitrate-N			85.2		%		70-130	16-SEP-20
WG3405207-4 LCS								
Available Nitrate-N			84.6		%		70-130	16-SEP-20
WG3405207-2 MB								
Available Nitrate-N			<1.0		mg/kg		1	16-SEP-20
PH-1:2-SK	Soil							
Batch R5215837								
WG3398613-2 IRM		**13-120_SOIL**						
pH (1:2 soil:water)			8.33		pH		7.83-8.43	08-SEP-20
WG3398613-3 LCS								
pH (1:2 soil:water)			6.91		pH		6.66-7.06	08-SEP-20
PO4-AVAIL-OLSEN-SK	Soil							
Batch R5220716								
WG3399817-1 DUP		**L2495636-1**						
Available Phosphate-P		11.9	12.7		mg/kg	6.6	30	10-SEP-20
WG3399817-3 IRM		**FARM2005**						
Available Phosphate-P			90.0		%		80-120	10-SEP-20
WG3399817-4 LCS								
Available Phosphate-P			103.4		%		80-120	10-SEP-20
WG3399817-2 MB								
Available Phosphate-P			<1.0		mg/kg		1	10-SEP-20

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC #

L2495636-COFC

Report to:		Report Format / Distribution	
Company:	City of Portage la Prairie	Standard: X Other:	
Contact:	Aaron Stechesen	Select: PDF X Excel Digital	
Address:	97 Saskatchewan Ave. E.	Email 1: astechesen@city-plap.com	
	Portage la Prairie, MB R1N 0L8	Email 2:	
Phone:	204-239-8361 Fax: 204-239-8364		
Invoice To:	Same as Report ? Yes / No ?	Client / Project Information:	
Company:	City of Portage la Prairie	Job #:	
Contact:	Accounts Payable	PO / AFE: W02593	
Address:	97 Saskatchewan Ave. E.		
	Portage la Prairie, MB R1N 0L8		
Phone:	204-239-8357 Fax:	Quote #: Q45423	
Lab Work Order # (lab use only)		ALS Contact: Judy Dalmaijer	Sampler:

Analysis Request

(Indicate Filtered or Preserved, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date	Time	Sample Type	pH-1:2-SK	HG-200.2-CVAF-WP	MET-200.2-MS-WP	PO4-AVAIL-OLSEN-SK	N-TOT-AVAIL-SK	N-TOT-LECO-SK	NO3-AVAIL-SK	MOIST-SK	PREP-DRY/GRIND-SK	SPECIAL REQUEST-SK	ATTERBERG-SK	SAMPLE-DISPOSAL-WP	Number of Containers
1	20-08-127	26-Aug-20	15:00	Soil	✓	✓	✓	✓				✓	✓	✓		✓	1
2	20-08-128	26-Aug-20	15:00	Soil					✓	✓	✓	✓	✓	✓		✓	2
3	20-08 129	26-Aug-20	15:00	Soil									✓	✓	✓	✓	2

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
	Aug 27/20 13:30p		Aug 28	10AM	11.3°C			

C ity of Portage la Prairie - Wastewater
A TTN: AARON STECHESEN
9 7 Saskatchewan Avenue East
P ortage la Prairie MB R1N 0L8

Date Received: 03-SEP-20
Report Date: 21-SEP-20 08:12 (MT)
Version: FINAL

Client Phone: 204-239-8361

Certificate of Analysis

Lab Work Order #: L2498631
Project P.O. #: W02593
Job Reference:
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2498631-1 20-09-21	Brooks S 21-12-8						
Sampled By: CLIENT on 02-SEP-20 @ 15:30							
Matrix: SOIL							
Miscellaneous Parameters							
Available Phosphate-P	14.0		1.0	mg/kg	15-SEP-20	15-SEP-20	R5224208
Mercury (Hg)	0.0331		0.0050	mg/kg	11-SEP-20	16-SEP-20	R5224923
% Moisture	26.1		0.10	%	15-SEP-20	15-SEP-20	R5223788
pH (1:2 soil:water)	7.67		0.10	pH	18-SEP-20	18-SEP-20	R5230636
Metals							
Aluminum (Al)	19200		5.0	mg/kg	11-SEP-20	11-SEP-20	R5222945
Antimony (Sb)	0.37		0.10	mg/kg	11-SEP-20	11-SEP-20	R5222945
Arsenic (As)	9.74		0.10	mg/kg	11-SEP-20	11-SEP-20	R5222945
Barium (Ba)	201		0.50	mg/kg	11-SEP-20	11-SEP-20	R5222945
Beryllium (Be)	0.83		0.10	mg/kg	11-SEP-20	11-SEP-20	R5222945
Bismuth (Bi)	0.207		0.020	mg/kg	11-SEP-20	11-SEP-20	R5222945
Boron (B)	20		10	mg/kg	11-SEP-20	11-SEP-20	R5222945
Cadmium (Cd)	0.507		0.020	mg/kg	11-SEP-20	11-SEP-20	R5222945
Calcium (Ca)	13800		100	mg/kg	11-SEP-20	11-SEP-20	R5222945
Chromium (Cr)	29.9		1.0	mg/kg	11-SEP-20	11-SEP-20	R5222945
Cobalt (Co)	10.6		0.020	mg/kg	11-SEP-20	11-SEP-20	R5222945
Copper (Cu)	26.5		1.0	mg/kg	11-SEP-20	11-SEP-20	R5222945
Iron (Fe)	23600		25	mg/kg	11-SEP-20	11-SEP-20	R5222945
Lead (Pb)	11.2		0.20	mg/kg	11-SEP-20	11-SEP-20	R5222945
Magnesium (Mg)	9010		10	mg/kg	11-SEP-20	11-SEP-20	R5222945
Manganese (Mn)	778		0.50	mg/kg	11-SEP-20	11-SEP-20	R5222945
Molybdenum (Mo)	0.51		0.10	mg/kg	11-SEP-20	11-SEP-20	R5222945
Nickel (Ni)	30.5		0.50	mg/kg	11-SEP-20	11-SEP-20	R5222945
Phosphorus (P)	600		100	mg/kg	11-SEP-20	11-SEP-20	R5222945
Potassium (K)	4050		25	mg/kg	11-SEP-20	11-SEP-20	R5222945
Selenium (Se)	<0.50		0.50	mg/kg	11-SEP-20	11-SEP-20	R5222945
Silver (Ag)	0.11		0.10	mg/kg	11-SEP-20	11-SEP-20	R5222945
Sodium (Na)	109		10	mg/kg	11-SEP-20	11-SEP-20	R5222945
Strontium (Sr)	38.6		0.10	mg/kg	11-SEP-20	11-SEP-20	R5222945
Thallium (Tl)	0.32		0.10	mg/kg	11-SEP-20	11-SEP-20	R5222945
Tin (Sn)	<5.0		5.0	mg/kg	11-SEP-20	11-SEP-20	R5222945
Titanium (Ti)	26.7		0.50	mg/kg	11-SEP-20	11-SEP-20	R5222945
Uranium (U)	1.02		0.020	mg/kg	11-SEP-20	11-SEP-20	R5222945
Vanadium (V)	63.7		0.50	mg/kg	11-SEP-20	11-SEP-20	R5222945
Zinc (Zn)	92		10	mg/kg	11-SEP-20	11-SEP-20	R5222945
L2498631-2 20-09-22							
Sampled By: CLIENT on 02-SEP-20 @ 15:30							
Matrix: SOIL							
Miscellaneous Parameters							
Available Nitrate-N	4.2		1.0	mg/kg	14-SEP-20	14-SEP-20	R5223633
% Moisture	20.1		0.10	%	15-SEP-20	15-SEP-20	R5223788
Total Nitrogen by LECO	2380		200	mg/kg		16-SEP-20	R5224035
Total Available N & NO3-N, NO2-N & NH4							
Available Ammonium-N							
Available Ammonium-N	3.1		1.0	mg/kg	16-SEP-20	16-SEP-20	R5227763
Available Ammonium-N - Calculation							
Total Available Nitrogen	7.9		2.2	mg/kg		17-SEP-20	
Nitrate, Nitrite & Nitrate+Nitrite-N(KCL							
Nitrite-N	<1.0		1.0	mg/kg	16-SEP-20	16-SEP-20	R5226556
Nitrate+Nitrite-N	4.8		2.0	mg/kg	16-SEP-20	16-SEP-20	R5226556
Nitrate-N	4.8		2.0	mg/kg	16-SEP-20	16-SEP-20	R5226556

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2498631-2 20-09-22							
Sampled By: CLIENT on 02-SEP-20 @ 15:30							
Matrix: SOIL							
L2498631-3 20-09-23							
Sampled By: CLIENT on 02-SEP-20 @ 15:30							
Matrix: SOIL							
Atterberg limits							
Liquid Limit (LL)	67		1	%	15-SEP-20	15-SEP-20	R5223681
Moisture at Plastic Limit	33		1	%	15-SEP-20	15-SEP-20	R5223681
Plasticity Index (PI)	34		1	%	15-SEP-20	15-SEP-20	R5223681

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ATTERBERG-SK	Soil	Atterberg limits	CARTER CSSS 58

The liquid limit (or upper plastic limit) is the point at which the soil becomes semifluid, like softened butter. In operational terms, the liquid limit is defined as the water content at which a trapezoidal groove cut in moist soil is closed after 25 taps on a hard rubber plate (ASTM D-18, 1958).

The plastic limit (or lower plastic limit) is defined as the water content at which soil begins to crumble on being rolled into a thread 1/8 inch (or 3 mm) in diameter. It represents the lowest water content at which soil can be deformed readily without cracking.

The plastic index (which is the difference between the liquid and plastic limits) gives an indication of the "clayeyness" or plasticity of a clay and is employed in engineering classification systems for soils.

This method is equivalent to ASTM D4318-10.

ETL-N-TOT-AVAIL-SK	Soil	Available Ammonium-N - Calculation	Soil Methods of Analysis (1993) CSSS
HG-200.2-CVAA-WP	Soil	Mercury in Soil	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

MET-200.2-MS-WP	Soil	Metals	EPA 200.2/6020B (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

MOISTURE-SK	Soil	Moisture Content	CCME PHC in Soil - Tier 1 (mod)

The weighed portion of soil is placed in a 105 C oven overnight. The dried soil is allowed to cooled to room temperature, weighed and the % moisture is calculated.

N-TOT-LECO-SK	Soil	Total Nitrogen by combustion method	CSSS (2008) 22.4

The sample is ignited in a combustion analyzer where nitrogen in the reduced nitrous oxide gas is determined using a thermal conductivity detector.

N2/N3-AVAIL-KCL-SK	Soil	Nitrate, Nitrite & Nitrate+Nitrite-N(KCL	CSSS (2008) 6.2-6.3

Plant available nitrate and nitrite are extracted from the sample with 2N KCl. Nitrate and Nitrite in the filtered extract are determined colorimetrically by Technicon auto-analyzer or flow injection analyzer at 520 nm.

NH4-AVAIL-SK	Soil	Available Ammonium-N	CSSS Carter 6.2 / Comm Soil Sci 19(6)

Ammonium (NH4-N) is extracted from the soil using 2 N KCl. Ammonium in the extract is mixed with hypochlorite and salicylate to form indophenol blue, which is determined colorimetrically by auto analysis at 660 nm.

NO3-AVAIL-SK	Soil	Available Nitrate-N	Alberta Ag / APHA 4500 NO3F

Available Nitrate and Nitrite are extracted from the soil using a dilute calcium chloride solution.
Nitrate is quantitatively reduced to nitrite by passing of the sample through a copperized cadmium column. The nitrite (reduced nitrate plus original nitrite) is then determined by diazotizing with sulfanilamide followed by coupling with N-(1-naphthyl) ethylenediamine dihydrochloride. The resulting water soluble dye has a magenta color which is measured at colorimetrically at 520nm.

PH-1:2-SK	Soil	pH (1:2 Soil:Water Extraction)	AB Ag (1988) p.7

1 part dry soil and 2 parts de-ionized water (by volume) is mixed. The slurry is allowed to stand with occasional stirring for 30 - 60 minutes. After equilibration, pH of the slurry is measured using a pH meter.

PO4-AVAIL-OLSEN-SK	Soil	Available Phosphate-P by Olsen	CSSS (2008) 8

Plant available phosphorus is extracted from air dried soil using a fixed ratio bicarbonate extraction. Phosphorus is determined by colorimetry.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
WP			

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg – milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2498631 Report Date: 21-SEP-20

Client: City of Portage la Prairie - Wastewater
97 Saskatchewan Avenue East
Portage la Prairie MB R1N 0L8
Contact: AARON STECHESEN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ATTERBERG-SK	Soil							
Batch R5223681								
WG3404111-1 DUP		**L2498631-3**						
Liquid Limit (LL)		67	66		%	1.3	20	15-SEP-20
Moisture at Plastic Limit		33	33		%	1.2	20	15-SEP-20
Plasticity Index (PI)		34	34		%	1.4	20	15-SEP-20
WG3404111-2 IRM		**ATB-1_SOIL**						
Liquid Limit (LL)			105.0		%		80-120	15-SEP-20
Moisture at Plastic Limit			105.2		%		80-120	15-SEP-20
Plasticity Index (PI)			104.0		%		80-120	15-SEP-20
HG-200.2-CVAA-WP	Soil							
Batch R5224923								
WG3405990-4 CRM		**CANMET TILL-1**						
Mercury (Hg)			90.8		%		70-130	16-SEP-20
WG3405990-2 LCS								
Mercury (Hg)			102.5		%		80-120	16-SEP-20
WG3405990-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	16-SEP-20
MET-200.2-MS-WP	Soil							
Batch R5222945								
WG3402906-4 CRM		**CANMET TILL-1**						
Aluminum (Al)			94.6		%		70-130	11-SEP-20
Antimony (Sb)			102.9		%		70-130	11-SEP-20
Arsenic (As)			96.8		%		70-130	11-SEP-20
Barium (Ba)			102.1		%		70-130	11-SEP-20
Beryllium (Be)			100.4		%		70-130	11-SEP-20
Bismuth (Bi)			90.9		%		70-130	11-SEP-20
Cadmium (Cd)			99.7		%		70-130	11-SEP-20
Calcium (Ca)			96.2		%		70-130	11-SEP-20
Chromium (Cr)			95.7		%		70-130	11-SEP-20
Cobalt (Co)			96.7		%		70-130	11-SEP-20
Copper (Cu)			99.0		%		70-130	11-SEP-20
Iron (Fe)			98.9		%		70-130	11-SEP-20
Lead (Pb)			92.8		%		70-130	11-SEP-20
Magnesium (Mg)			95.4		%		70-130	11-SEP-20
Manganese (Mn)			98.1		%		70-130	11-SEP-20
Molybdenum (Mo)			116.0		%		70-130	11-SEP-20
Nickel (Ni)			96.2		%		70-130	11-SEP-20

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-MS-WP	Soil							
Batch R5222945								
WG3402906-4 CRM		**CANMET TILL-1**						
Phosphorus (P)			79.4		%		70-130	11-SEP-20
Potassium (K)			88.0		%		70-130	11-SEP-20
Selenium (Se)			92.3		%		70-130	11-SEP-20
Silver (Ag)			94.8		%		70-130	11-SEP-20
Sodium (Na)			92.8		%		70-130	11-SEP-20
Strontium (Sr)			96.7		%		70-130	11-SEP-20
Thallium (Tl)			0.12		mg/kg		0.03-0.23	11-SEP-20
Tin (Sn)			1.0		mg/kg		0-3.1	11-SEP-20
Titanium (Ti)			73.9		%		70-130	11-SEP-20
Uranium (U)			91.8		%		70-130	11-SEP-20
Vanadium (V)			95.1		%		70-130	11-SEP-20
Zinc (Zn)			97.4		%		70-130	11-SEP-20
WG3402906-2 LCS								
Aluminum (Al)			95.2		%		80-120	11-SEP-20
Antimony (Sb)			105.0		%		80-120	11-SEP-20
Arsenic (As)			102.5		%		80-120	11-SEP-20
Barium (Ba)			104.3		%		80-120	11-SEP-20
Beryllium (Be)			100.3		%		80-120	11-SEP-20
Bismuth (Bi)			97.2		%		80-120	11-SEP-20
Boron (B)			105.8		%		80-120	11-SEP-20
Cadmium (Cd)			102.0		%		80-120	11-SEP-20
Calcium (Ca)			99.2		%		80-120	11-SEP-20
Chromium (Cr)			97.7		%		80-120	11-SEP-20
Cobalt (Co)			98.7		%		80-120	11-SEP-20
Copper (Cu)			99.8		%		80-120	11-SEP-20
Iron (Fe)			96.6		%		80-120	11-SEP-20
Lead (Pb)			95.5		%		80-120	11-SEP-20
Magnesium (Mg)			101.8		%		80-120	11-SEP-20
Manganese (Mn)			98.6		%		80-120	11-SEP-20
Molybdenum (Mo)			96.6		%		80-120	11-SEP-20
Nickel (Ni)			97.9		%		80-120	11-SEP-20
Phosphorus (P)			95.5		%		80-120	11-SEP-20
Potassium (K)			97.1		%		80-120	11-SEP-20
Selenium (Se)			97.0		%		80-120	11-SEP-20

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-MS-WP	Soil							
Batch R5222945								
WG3402906-2 LCS								
Silver (Ag)			93.7		%		80-120	11-SEP-20
Sodium (Na)			99.7		%		80-120	11-SEP-20
Strontium (Sr)			98.0		%		80-120	11-SEP-20
Thallium (Tl)			97.1		%		80-120	11-SEP-20
Tin (Sn)			99.4		%		80-120	11-SEP-20
Titanium (Ti)			91.8		%		80-120	11-SEP-20
Uranium (U)			95.6		%		80-120	11-SEP-20
Vanadium (V)			100.9		%		80-120	11-SEP-20
Zinc (Zn)			99.9		%		80-120	11-SEP-20
WG3402906-1 MB								
Aluminum (Al)			<5.0		mg/kg		5	11-SEP-20
Antimony (Sb)			<0.10		mg/kg		0.1	11-SEP-20
Arsenic (As)			<0.10		mg/kg		0.1	11-SEP-20
Barium (Ba)			<0.50		mg/kg		0.5	11-SEP-20
Beryllium (Be)			<0.10		mg/kg		0.1	11-SEP-20
Bismuth (Bi)			<0.020		mg/kg		0.02	11-SEP-20
Boron (B)			14	B	mg/kg		10	11-SEP-20
Cadmium (Cd)			<0.020		mg/kg		0.02	11-SEP-20
Calcium (Ca)			<100		mg/kg		100	11-SEP-20
Chromium (Cr)			<1.0		mg/kg		1	11-SEP-20
Cobalt (Co)			<0.020		mg/kg		0.02	11-SEP-20
Copper (Cu)			<1.0		mg/kg		1	11-SEP-20
Iron (Fe)			<25		mg/kg		25	11-SEP-20
Lead (Pb)			<0.20		mg/kg		0.2	11-SEP-20
Magnesium (Mg)			<10		mg/kg		10	11-SEP-20
Manganese (Mn)			<0.50		mg/kg		0.5	11-SEP-20
Molybdenum (Mo)			0.34	B	mg/kg		0.1	11-SEP-20
Nickel (Ni)			<0.50		mg/kg		0.5	11-SEP-20
Phosphorus (P)			<100		mg/kg		100	11-SEP-20
Potassium (K)			<25		mg/kg		25	11-SEP-20
Selenium (Se)			<0.50		mg/kg		0.5	11-SEP-20
Silver (Ag)			<0.10		mg/kg		0.1	11-SEP-20
Sodium (Na)			29	B	mg/kg		10	11-SEP-20
Strontium (Sr)			<0.10		mg/kg		0.1	11-SEP-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-MS-WP	Soil							
Batch R5222945								
WG3402906-1 MB								
Thallium (Tl)			<0.10		mg/kg		0.1	11-SEP-20
Tin (Sn)			<5.0		mg/kg		5	11-SEP-20
Titanium (Ti)			<0.50		mg/kg		0.5	11-SEP-20
Uranium (U)			<0.020		mg/kg		0.02	11-SEP-20
Vanadium (V)			<0.50		mg/kg		0.5	11-SEP-20
Zinc (Zn)			<10		mg/kg		10	11-SEP-20
MOIST-SK	Soil							
Batch R5223788								
WG3403810-3 LCS								
% Moisture			100.6		%		90-110	15-SEP-20
WG3403810-2 MB								
% Moisture			<0.10		%		0.1	15-SEP-20
N-TOT-LECO-SK	Soil							
Batch R5224035								
WG3401286-2 IRM		**08-109_SOIL**						
Total Nitrogen by LECO			102.3		%		80-120	15-SEP-20
WG3401286-4 LCS		**SULFADIAZINE**						
Total Nitrogen by LECO			100.1		%		90-110	15-SEP-20
WG3401286-3 MB								
Total Nitrogen by LECO			<0.020		%		0.02	15-SEP-20
N2/N3-AVAIL-KCL-SK	Soil							
Batch R5226556								
WG3405204-3 IRM		**ALS SAL 2019**						
Nitrite-N			0.2		mg/kg		0-2.1	16-SEP-20
Nitrate+Nitrite-N			71.4		%		70-130	16-SEP-20
WG3405204-4 LCS								
Nitrite-N			74.1		%		70-130	16-SEP-20
Nitrate+Nitrite-N			84.7		%		70-130	16-SEP-20
WG3405204-2 MB								
Nitrite-N			<1.0		mg/kg		1	16-SEP-20
Nitrate+Nitrite-N			<2.0		mg/kg		2	16-SEP-20
NH4-AVAIL-SK	Soil							
Batch R5227763								
WG3405205-4 LCS								
Available Ammonium-N			88.5		%		80-120	16-SEP-20
WG3405205-2 MB								

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH4-AVAIL-SK	Soil							
Batch R5227763								
WG3405205-2 MB								
Available Ammonium-N			<1.0		mg/kg		1	16-SEP-20
NO3-AVAIL-SK	Soil							
Batch R5223633								
WG3403806-3 IRM		**ALS SAL 2019**						
Available Nitrate-N			88.5		%		70-130	14-SEP-20
WG3403806-4 LCS								
Available Nitrate-N			82.2		%		70-130	14-SEP-20
WG3403806-2 MB								
Available Nitrate-N			<1.0		mg/kg		1	14-SEP-20
PH-1:2-SK	Soil							
Batch R5230636								
WG3407065-4 IRM		**13-120_SOIL**						
pH (1:2 soil:water)			8.06		pH		7.83-8.43	18-SEP-20
WG3407065-5 LCS								
pH (1:2 soil:water)			6.87		pH		6.66-7.06	18-SEP-20
PO4-AVAIL-OLSEN-SK	Soil							
Batch R5224208								
WG3404049-1 DUP		**L2498631-1**						
Available Phosphate-P		14.0	13.7		mg/kg	1.8	30	15-SEP-20
WG3404049-3 IRM		**FARM2005**						
Available Phosphate-P			101.5		%		80-120	15-SEP-20
WG3404049-4 LCS								
Available Phosphate-P			115.1		%		80-120	15-SEP-20
WG3404049-2 MB								
Available Phosphate-P			<1.0		mg/kg		1	15-SEP-20

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Plant Available Nutrients							
Available Nitrate-N							
	2	02-SEP-20 15:30	08-SEP-20 12:00	3	6	days	EHT
Nitrate, Nitrite & Nitrate+Nitrite-N(KCL							
	2	02-SEP-20 15:30	08-SEP-20 12:00	3	6	days	EHT

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2498631 were received on 03-SEP-20 15:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

L2498631-COFC

COC # _____

Page 1 of 1

Report to:		Report Distribution:	
Company:	City of Portage la Prairie	Standard: X	Other:
Contact:	Aaron Stechesen	Select: PDF X	Excel ____ Digital ____
Address:	97 Saskatchewan Ave. E.	Email 1:	astechesen@city-plap.com
	Portage la Prairie, MB R1N 0L8	Email 2:	
Phone:	204-239-8361 Fax: 204-239-8364		
Invoice To:	Same as Report ? Yes / No ?	**Client / Project Information:**	
Company:	City of Portage la Prairie	Job #:	
Contact:	Accounts Payable	PO / AFE:	W02593
Address:	97 Saskatchewan Ave. E.		
	Portage la Prairie, MB R1N 0L8		
Phone:	204-239-8357 Fax:	Quote #:	Q45423
Lab Work Order # (lab use only)		ALS Contact:	Judy Dalmaijer
		Sampler:	

Service Requested: (rush - subject to availability)

X	Regular (Default)
	Priority (2-3 Business Days) - 50% Surcharge
	Emergency (1 Business Day) - 100% Surcharge
	For Emergency < 1 Day, ASAP or Weekend - Contact ALS

Analysis Request

(Indicate Filtered or Preserved, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date	Time	Sample Type	pH-1:2-SK	HG-200.2-CVAF-WP	MET-200.2-MS-WP	PO4-AVAIL-OLSEN-SK	N-TOT-AVAIL-SK	N-TOT-LECO-SK	NO3-AVAIL-SK	MOIST-SK	PREP-DRY/GRIND-SK	SPECIAL REQUEST-SK	ATTERBERG-SK	SAMPLE-DISPOSAL-WP	Number of Containers
1	20-09-21	02-Sep-20	15:30	Soil	✓	✓	✓	✓				✓	✓	✓		✓	2
2	20-09-22	02-Sep-20	15:30	Soil					✓	✓	✓	✓	✓	✓		✓	3
3	20-09-23	02-Sep-20	15:30	Soil									✓	✓	✓	✓	1

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Sep 3/20 9:30am	Received by:	Date: Sept 3/20	Time: 330	Temperature: 7.8	Verified by:	Date & Time: Sept 3/20	Observations: Yes / No? If Yes attach SIF

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF 18.00 Front

City of Portage la Prairie - Wastewater
ATTN: AARON STECHESEN
97 Saskatchewan Avenue East
Portage la Prairie MB R1N 0L8

Date Received: 24-AUG-20
Report Date: 04-SEP-20 11:32 (MT)
Version: FINAL

Client Phone: 204-239-8361

Certificate of Analysis

Lab Work Order #: L2493372
Project P.O. #: W02593
Job Reference:
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493372-1 20-08-63	BVF						
Sampled By: CLIENT on 24-AUG-20 @ 08:30							
Matrix: SLUDGE							
Miscellaneous Parameters							
Available Nitrate-N	15.1	DLM	4.0	mg/kg	31-AUG-20	31-AUG-20	R5208346
Available Phosphate-P	335	DLHC	20	mg/kg	04-SEP-20	04-SEP-20	R5210379
Mercury (Hg)	0.511		0.0050	mg/kg	26-AUG-20	28-AUG-20	R5206020
Total Kjeldahl Nitrogen	5.06	DLHC	0.80	%	31-AUG-20	01-SEP-20	R5208393
Metals							
Aluminum (Al)	5090		5.0	mg/kg	26-AUG-20	26-AUG-20	R5202770
Antimony (Sb)	1.16		0.10	mg/kg	26-AUG-20	26-AUG-20	R5202770
Arsenic (As)	5.79		0.10	mg/kg	26-AUG-20	26-AUG-20	R5202770
Barium (Ba)	120		0.50	mg/kg	26-AUG-20	26-AUG-20	R5202770
Beryllium (Be)	0.26		0.10	mg/kg	26-AUG-20	26-AUG-20	R5202770
Bismuth (Bi)	5.11		0.020	mg/kg	26-AUG-20	26-AUG-20	R5202770
Boron (B)	23		10	mg/kg	26-AUG-20	26-AUG-20	R5202770
Cadmium (Cd)	3.26		0.020	mg/kg	26-AUG-20	26-AUG-20	R5202770
Calcium (Ca)	16500		100	mg/kg	26-AUG-20	26-AUG-20	R5202770
Chromium (Cr)	30.2		1.0	mg/kg	26-AUG-20	26-AUG-20	R5202770
Cobalt (Co)	11.5		0.020	mg/kg	26-AUG-20	26-AUG-20	R5202770
Copper (Cu)	195		1.0	mg/kg	26-AUG-20	26-AUG-20	R5202770
Iron (Fe)	21500		25	mg/kg	26-AUG-20	26-AUG-20	R5202770
Lead (Pb)	8.17		0.20	mg/kg	26-AUG-20	26-AUG-20	R5202770
Magnesium (Mg)	6400		10	mg/kg	26-AUG-20	26-AUG-20	R5202770
Manganese (Mn)	469		0.50	mg/kg	26-AUG-20	26-AUG-20	R5202770
Molybdenum (Mo)	37.0		0.10	mg/kg	26-AUG-20	26-AUG-20	R5202770
Nickel (Ni)	50.0		0.50	mg/kg	26-AUG-20	26-AUG-20	R5202770
Phosphorus (P)	7650		100	mg/kg	26-AUG-20	26-AUG-20	R5202770
Potassium (K)	8030		25	mg/kg	26-AUG-20	26-AUG-20	R5202770
Selenium (Se)	3.31		0.50	mg/kg	26-AUG-20	26-AUG-20	R5202770
Silver (Ag)	0.72		0.10	mg/kg	26-AUG-20	26-AUG-20	R5202770
Sodium (Na)	4850		10	mg/kg	26-AUG-20	26-AUG-20	R5202770
Strontium (Sr)	53.2		0.10	mg/kg	26-AUG-20	26-AUG-20	R5202770
Thallium (Tl)	0.31		0.10	mg/kg	26-AUG-20	26-AUG-20	R5202770
Tin (Sn)	9.3		5.0	mg/kg	26-AUG-20	26-AUG-20	R5202770
Titanium (Ti)	41.0		0.50	mg/kg	26-AUG-20	26-AUG-20	R5202770
Uranium (U)	5.47		0.020	mg/kg	26-AUG-20	26-AUG-20	R5202770
Vanadium (V)	16.0		0.50	mg/kg	26-AUG-20	26-AUG-20	R5202770
Zinc (Zn)	1070		10	mg/kg	26-AUG-20	26-AUG-20	R5202770
Total Available N & NO3-N, NO2-N & NH4							
Available Ammonium-N							
Available Ammonium-N	9940	DLHC	800	mg/kg	28-AUG-20	28-AUG-20	R5203892
Note: SAMPLE analyzed as received and calculated to dry							
Available Ammonium-N - Calculation							
Total Available Nitrogen	9940		800	mg/kg		28-AUG-20	
Nitrate, Nitrite & Nitrate+Nitrite-N(KCL							
Nitrite-N	<32	DLM	32	mg/kg	28-AUG-20	28-AUG-20	R5203887
Nitrate+Nitrite-N	<80	DLM	80	mg/kg	28-AUG-20	28-AUG-20	R5203887
Nitrate-N	<80	DLM	80	mg/kg	28-AUG-20	28-AUG-20	R5203887
L2493372-2 20-08-64							
Sampled By: CLIENT on 24-AUG-20 @ 08:30							
Matrix: SLUDGE							
Miscellaneous Parameters							
Available Nitrate-N	232	DLM	6.0	mg/kg	31-AUG-20	31-AUG-20	R5208346

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2493372-2 20-08-64	BSTs						
Sampled By: CLIENT on 24-AUG-20 @ 08:30							
Matrix: SLUDGE							
Available Phosphate-P	892	DLHC	40	mg/kg	04-SEP-20	04-SEP-20	R5210379
Mercury (Hg)	0.290		0.0050	mg/kg	27-AUG-20	28-AUG-20	R5206020
Total Kjeldahl Nitrogen	4.59	DLHC	0.80	%	31-AUG-20	01-SEP-20	R5208393
Metals							
Aluminum (Al)	4700		5.0	mg/kg	27-AUG-20	27-AUG-20	R5203404
Antimony (Sb)	0.83		0.10	mg/kg	27-AUG-20	27-AUG-20	R5203404
Arsenic (As)	4.22		0.10	mg/kg	27-AUG-20	27-AUG-20	R5203404
Barium (Ba)	239		0.50	mg/kg	27-AUG-20	27-AUG-20	R5203404
Beryllium (Be)	0.20		0.10	mg/kg	27-AUG-20	27-AUG-20	R5203404
Bismuth (Bi)	7.17		0.020	mg/kg	27-AUG-20	27-AUG-20	R5203404
Boron (B)	40		10	mg/kg	27-AUG-20	27-AUG-20	R5203404
Cadmium (Cd)	2.15		0.020	mg/kg	27-AUG-20	27-AUG-20	R5203404
Calcium (Ca)	23400		100	mg/kg	27-AUG-20	27-AUG-20	R5203404
Chromium (Cr)	28.7		1.0	mg/kg	27-AUG-20	27-AUG-20	R5203404
Cobalt (Co)	9.86		0.020	mg/kg	27-AUG-20	27-AUG-20	R5203404
Copper (Cu)	209		1.0	mg/kg	27-AUG-20	27-AUG-20	R5203404
Iron (Fe)	8940		25	mg/kg	27-AUG-20	27-AUG-20	R5203404
Lead (Pb)	8.44		0.20	mg/kg	27-AUG-20	27-AUG-20	R5203404
Magnesium (Mg)	8520		10	mg/kg	27-AUG-20	27-AUG-20	R5203404
Manganese (Mn)	778		0.50	mg/kg	27-AUG-20	27-AUG-20	R5203404
Molybdenum (Mo)	14.0		0.10	mg/kg	27-AUG-20	27-AUG-20	R5203404
Nickel (Ni)	28.1		0.50	mg/kg	27-AUG-20	27-AUG-20	R5203404
Phosphorus (P)	13100		100	mg/kg	27-AUG-20	27-AUG-20	R5203404
Potassium (K)	9280		25	mg/kg	27-AUG-20	27-AUG-20	R5203404
Selenium (Se)	3.90		0.50	mg/kg	27-AUG-20	27-AUG-20	R5203404
Silver (Ag)	0.60		0.10	mg/kg	27-AUG-20	27-AUG-20	R5203404
Sodium (Na)	4860		10	mg/kg	27-AUG-20	27-AUG-20	R5203404
Strontium (Sr)	87.4		0.10	mg/kg	27-AUG-20	27-AUG-20	R5203404
Thallium (Tl)	0.17		0.10	mg/kg	27-AUG-20	27-AUG-20	R5203404
Tin (Sn)	6.3		5.0	mg/kg	27-AUG-20	27-AUG-20	R5203404
Titanium (Ti)	41.0		0.50	mg/kg	27-AUG-20	27-AUG-20	R5203404
Uranium (U)	7.88		0.020	mg/kg	27-AUG-20	27-AUG-20	R5203404
Vanadium (V)	14.4		0.50	mg/kg	27-AUG-20	27-AUG-20	R5203404
Zinc (Zn)	432		10	mg/kg	27-AUG-20	27-AUG-20	R5203404
Total Available N & NO3-N, NO2-N & NH4							
Available Ammonium-N							
Available Ammonium-N	11800	DLHC	720	mg/kg	28-AUG-20	28-AUG-20	R5203892
Available Ammonium-N - Calculation							
Total Available Nitrogen	11800		720	mg/kg		28-AUG-20	
Nitrate, Nitrite & Nitrate+Nitrite-N(KCL							
Nitrite-N	<29	DLM	29	mg/kg	28-AUG-20	28-AUG-20	R5203887
Nitrate+Nitrite-N	<72	DLM	72	mg/kg	28-AUG-20	28-AUG-20	R5203887
Nitrate-N	<72	DLM	72	mg/kg	28-AUG-20	28-AUG-20	R5203887

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ETL-N-TOT-AVAIL-SK	Soil	Available Ammonium-N - Calculation	Soil Methods of Analysis (1993) CSSS
HG-200.2-CVAA-WP	Soil	Mercury in Soil	EPA 200.2/1631E (mod)
Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.			
MET-200.2-MS-WP	Soil	Metals	EPA 200.2/6020B (mod)
Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.			
Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.			
N-TOT-KJ-COL-SK	Soil	Total Kjeldahl Nitrogen	CSSS (2008) 22.2.3
The soil is digested with sulfuric acid in the presence of CuSO4 and K2SO4 catalysts. Ammonia in the soil extract is determined colrimetrically at 660 nm.			
N2/N3-AVAIL-KCL-SK	Soil	Nitrate, Nitrite & Nitrate+Nitrite-N(KCL	CSSS (2008) 6.2-6.3
Plant available nitrate and nitrite are extracted from the sample with 2N KCl. Nitrate and Nitrite in the filtered extract are determined colorimetrically by Technicon auto-analyzer or flow injection analyzer at 520 nm.			
NH4-AVAIL-SK	Soil	Available Ammonium-N	CSSS Carter 6.2 / Comm Soil Sci 19(6)
Ammonium (NH4-N) is extracted from the soil using 2 N KCl. Ammonium in the extract is mixed with hypochlorite and salicylate to form indophenol blue, which is determined colorimetrically by auto analysis at 660 nm.			
NO3-AVAIL-SK	Soil	Available Nitrate-N	Alberta Ag / APHA 4500 NO3F
Available Nitrate and Nitrite are extracted from the soil using a dilute calcium chloride solution. Nitrate is quantitatively reduced to nitrite by passing of the sample through a copperized cadmium column. The nitrite (reduced nitrate plus original nitrite) is then determined by diazotizing with sulfanilamide followed by coupling with N-(1-naphthyl) ethylenediamine dihydrochloride. The resulting water soluble dye has a magenta color which is measured at colorimetrically at 520nm.			
PO4-AVAIL-OLSEN-SK	Soil	Available Phosphate-P by Olsen	CSSS (2008) 8
Plant available phosphorus is extracted from air dried soil using a fixed ratio bicarbonate extraction. Phosphorus is determined by colorimetry.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

Quality Control Report

Workorder: L2493372 Report Date: 04-SEP-20

Client: City of Portage la Prairie - Wastewater
97 Saskatchewan Avenue East
Portage la Prairie MB R1N 0L8
Contact: AARON STECHESEN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-200.2-CVAA-WP	Soil							
Batch R5206020								
WG3395127-4 CRM		**CANMET TILL-1**						
Mercury (Hg)			71.6		%		70-130	28-AUG-20
WG3395129-4 CRM		**CANMET TILL-1**						
Mercury (Hg)			86.8		%		70-130	28-AUG-20
WG3395129-5 DUP		**L2493372-2**						
Mercury (Hg)		0.290	0.326		mg/kg	12	40	28-AUG-20
WG3395127-2 LCS								
Mercury (Hg)			91.5		%		80-120	28-AUG-20
WG3395129-2 LCS								
Mercury (Hg)			92.5		%		80-120	28-AUG-20
WG3395127-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	28-AUG-20
WG3395129-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	28-AUG-20
MET-200.2-MS-WP	Soil							
Batch R5202770								
WG3391881-4 CRM		**CANMET TILL-1**						
Aluminum (Al)			115.0		%		70-130	26-AUG-20
Antimony (Sb)			103.7		%		70-130	26-AUG-20
Arsenic (As)			100.1		%		70-130	26-AUG-20
Barium (Ba)			102.6		%		70-130	26-AUG-20
Beryllium (Be)			109.9		%		70-130	26-AUG-20
Bismuth (Bi)			99.6		%		70-130	26-AUG-20
Boron (B)			4		mg/kg		0-8	26-AUG-20
Cadmium (Cd)			104.6		%		70-130	26-AUG-20
Calcium (Ca)			104.1		%		70-130	26-AUG-20
Chromium (Cr)			106.7		%		70-130	26-AUG-20
Cobalt (Co)			103.4		%		70-130	26-AUG-20
Copper (Cu)			105.7		%		70-130	26-AUG-20
Iron (Fe)			105.0		%		70-130	26-AUG-20
Lead (Pb)			101.1		%		70-130	26-AUG-20
Magnesium (Mg)			114.1		%		70-130	26-AUG-20
Manganese (Mn)			109.9		%		70-130	26-AUG-20
Molybdenum (Mo)			107.1		%		70-130	26-AUG-20
Nickel (Ni)			103.2		%		70-130	26-AUG-20
Phosphorus (P)			97.7		%		70-130	26-AUG-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-MS-WP	Soil							
Batch R5202770								
WG3391881-4 CRM		**CANMET TILL-1**						
Potassium (K)			100.0		%		70-130	26-AUG-20
Selenium (Se)			97.6		%		70-130	26-AUG-20
Silver (Ag)			116.2		%		70-130	26-AUG-20
Sodium (Na)			100.2		%		70-130	26-AUG-20
Strontium (Sr)			105.9		%		70-130	26-AUG-20
Thallium (Tl)			0.13		mg/kg		0.03-0.23	26-AUG-20
Tin (Sn)			1.0		mg/kg		0-3.1	26-AUG-20
Titanium (Ti)			82.6		%		70-130	26-AUG-20
Uranium (U)			102.0		%		70-130	26-AUG-20
Vanadium (V)			103.0		%		70-130	26-AUG-20
Zinc (Zn)			106.7		%		70-130	26-AUG-20
WG3391881-2 LCS								
Aluminum (Al)			113.1		%		80-120	26-AUG-20
Antimony (Sb)			118.4		%		80-120	26-AUG-20
Arsenic (As)			110.9		%		80-120	26-AUG-20
Barium (Ba)			110.0		%		80-120	26-AUG-20
Beryllium (Be)			114.4		%		80-120	26-AUG-20
Bismuth (Bi)			105.4		%		80-120	26-AUG-20
Boron (B)			112.5		%		80-120	26-AUG-20
Cadmium (Cd)			109.2		%		80-120	26-AUG-20
Calcium (Ca)			107.6		%		80-120	26-AUG-20
Chromium (Cr)			111.2		%		80-120	26-AUG-20
Cobalt (Co)			108.5		%		80-120	26-AUG-20
Copper (Cu)			109.4		%		80-120	26-AUG-20
Iron (Fe)			103.3		%		80-120	26-AUG-20
Lead (Pb)			107.0		%		80-120	26-AUG-20
Magnesium (Mg)			123.2	MES	%		80-120	26-AUG-20
Manganese (Mn)			111.0		%		80-120	26-AUG-20
Molybdenum (Mo)			114.0		%		80-120	26-AUG-20
Nickel (Ni)			108.4		%		80-120	26-AUG-20
Phosphorus (P)			116.3		%		80-120	26-AUG-20
Potassium (K)			113.0		%		80-120	26-AUG-20
Selenium (Se)			105.2		%		80-120	26-AUG-20
Silver (Ag)			111.3		%		80-120	26-AUG-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-MS-WP	Soil							
Batch R5202770								
WG3391881-2 LCS								
Sodium (Na)			110.0		%		80-120	26-AUG-20
Strontium (Sr)			110.5		%		80-120	26-AUG-20
Thallium (Tl)			107.7		%		80-120	26-AUG-20
Tin (Sn)			110.8		%		80-120	26-AUG-20
Titanium (Ti)			109.6		%		80-120	26-AUG-20
Uranium (U)			105.7		%		80-120	26-AUG-20
Vanadium (V)			112.1		%		80-120	26-AUG-20
Zinc (Zn)			108.8		%		80-120	26-AUG-20
WG3391881-1 MB								
Aluminum (Al)			<5.0		mg/kg		5	26-AUG-20
Antimony (Sb)			<0.10		mg/kg		0.1	26-AUG-20
Arsenic (As)			0.10		mg/kg		0.1	26-AUG-20
Barium (Ba)			<0.50		mg/kg		0.5	26-AUG-20
Beryllium (Be)			<0.10		mg/kg		0.1	26-AUG-20
Bismuth (Bi)			<0.020		mg/kg		0.02	26-AUG-20
Boron (B)			<10		mg/kg		10	26-AUG-20
Cadmium (Cd)			<0.020		mg/kg		0.02	26-AUG-20
Calcium (Ca)			<100		mg/kg		100	26-AUG-20
Chromium (Cr)			<1.0		mg/kg		1	26-AUG-20
Cobalt (Co)			<0.020		mg/kg		0.02	26-AUG-20
Copper (Cu)			<1.0		mg/kg		1	26-AUG-20
Iron (Fe)			<25		mg/kg		25	26-AUG-20
Lead (Pb)			<0.20		mg/kg		0.2	26-AUG-20
Magnesium (Mg)			<10		mg/kg		10	26-AUG-20
Manganese (Mn)			<0.50		mg/kg		0.5	26-AUG-20
Molybdenum (Mo)			<0.10		mg/kg		0.1	26-AUG-20
Nickel (Ni)			<0.50		mg/kg		0.5	26-AUG-20
Phosphorus (P)			<100		mg/kg		100	26-AUG-20
Potassium (K)			<25		mg/kg		25	26-AUG-20
Selenium (Se)			<0.50		mg/kg		0.5	26-AUG-20
Silver (Ag)			<0.10		mg/kg		0.1	26-AUG-20
Sodium (Na)			<10		mg/kg		10	26-AUG-20
Strontium (Sr)			<0.10		mg/kg		0.1	26-AUG-20
Thallium (Tl)			<0.10		mg/kg		0.1	26-AUG-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-MS-WP	Soil							
Batch R5202770								
WG3391881-1 MB								
Tin (Sn)			<5.0		mg/kg		5	26-AUG-20
Titanium (Ti)			<0.50		mg/kg		0.5	26-AUG-20
Uranium (U)			<0.020		mg/kg		0.02	26-AUG-20
Vanadium (V)			<0.50		mg/kg		0.5	26-AUG-20
Zinc (Zn)			<10		mg/kg		10	26-AUG-20
Batch R5203404								
WG3392701-4 CRM		**CANMET TILL-1**						
Aluminum (Al)			103.3		%		70-130	27-AUG-20
Antimony (Sb)			93.1		%		70-130	27-AUG-20
Arsenic (As)			93.8		%		70-130	27-AUG-20
Barium (Ba)			96.8		%		70-130	27-AUG-20
Beryllium (Be)			98.7		%		70-130	27-AUG-20
Bismuth (Bi)			90.2		%		70-130	27-AUG-20
Boron (B)			4		mg/kg		0-8	27-AUG-20
Cadmium (Cd)			84.2		%		70-130	27-AUG-20
Calcium (Ca)			95.3		%		70-130	27-AUG-20
Chromium (Cr)			99.1		%		70-130	27-AUG-20
Cobalt (Co)			94.2		%		70-130	27-AUG-20
Copper (Cu)			96.3		%		70-130	27-AUG-20
Iron (Fe)			96.4		%		70-130	27-AUG-20
Lead (Pb)			89.6		%		70-130	27-AUG-20
Magnesium (Mg)			102.0		%		70-130	27-AUG-20
Manganese (Mn)			101.6		%		70-130	27-AUG-20
Molybdenum (Mo)			92.3		%		70-130	27-AUG-20
Nickel (Ni)			94.4		%		70-130	27-AUG-20
Phosphorus (P)			92.5		%		70-130	27-AUG-20
Potassium (K)			91.8		%		70-130	27-AUG-20
Selenium (Se)			77.9		%		70-130	27-AUG-20
Silver (Ag)			100.3		%		70-130	27-AUG-20
Sodium (Na)			67.3	MES	%		70-130	27-AUG-20
Strontium (Sr)			91.6		%		70-130	27-AUG-20
Thallium (Tl)			0.12		mg/kg		0.03-0.23	27-AUG-20
Tin (Sn)			0.9		mg/kg		0-3.1	27-AUG-20
Titanium (Ti)			81.2		%		70-130	27-AUG-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-MS-WP	Soil							
Batch R5203404								
WG3392701-4 CRM		CANMET TILL-1						
Uranium (U)			89.8		%		70-130	27-AUG-20
Vanadium (V)			94.8		%		70-130	27-AUG-20
Zinc (Zn)			100.3		%		70-130	27-AUG-20
WG3392701-5 DUP		L2493372-2						
Aluminum (Al)		4700	3960		mg/kg	17	40	27-AUG-20
Antimony (Sb)		0.83	0.81		mg/kg	2.3	30	27-AUG-20
Arsenic (As)		4.22	3.73		mg/kg	12	30	27-AUG-20
Barium (Ba)		239	261		mg/kg	8.9	40	27-AUG-20
Beryllium (Be)		0.20	0.20		mg/kg	1.6	30	27-AUG-20
Bismuth (Bi)		7.17	7.13		mg/kg	0.6	30	27-AUG-20
Boron (B)		40	39		mg/kg	3.4	30	27-AUG-20
Cadmium (Cd)		2.15	1.75		mg/kg	20	30	27-AUG-20
Calcium (Ca)		23400	22400		mg/kg	4.1	30	27-AUG-20
Chromium (Cr)		28.7	25.4		mg/kg	12	30	27-AUG-20
Cobalt (Co)		9.86	8.82		mg/kg	11	30	27-AUG-20
Copper (Cu)		209	193		mg/kg	7.9	30	27-AUG-20
Iron (Fe)		8940	7820		mg/kg	13	30	27-AUG-20
Lead (Pb)		8.44	9.85		mg/kg	16	40	27-AUG-20
Magnesium (Mg)		8520	7410		mg/kg	14	30	27-AUG-20
Manganese (Mn)		778	662		mg/kg	16	30	27-AUG-20
Molybdenum (Mo)		14.0	13.3		mg/kg	5.4	40	27-AUG-20
Nickel (Ni)		28.1	24.2		mg/kg	15	30	27-AUG-20
Phosphorus (P)		13100	11200		mg/kg	15	30	27-AUG-20
Potassium (K)		9280	7880		mg/kg	16	40	27-AUG-20
Selenium (Se)		3.90	4.03		mg/kg	3.4	30	27-AUG-20
Silver (Ag)		0.60	0.55		mg/kg	8.3	40	27-AUG-20
Sodium (Na)		4860	4270		mg/kg	13	40	27-AUG-20
Strontium (Sr)		87.4	86.9		mg/kg	0.5	40	27-AUG-20
Thallium (Tl)		0.17	0.17		mg/kg	1.5	30	27-AUG-20
Tin (Sn)		6.3	5.5		mg/kg	14	40	27-AUG-20
Titanium (Ti)		41.0	31.3		mg/kg	27	40	27-AUG-20
Uranium (U)		7.88	7.49		mg/kg	5.0	30	27-AUG-20
Vanadium (V)		14.4	12.2		mg/kg	16	30	27-AUG-20
Zinc (Zn)		432	360		mg/kg	18	30	27-AUG-20
WG3392701-2 LCS								

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-MS-WP	Soil							
Batch R5203404								
WG3392701-2 LCS								
Aluminum (Al)			97.8		%		80-120	27-AUG-20
Antimony (Sb)			95.4		%		80-120	27-AUG-20
Arsenic (As)			97.0		%		80-120	27-AUG-20
Barium (Ba)			95.6		%		80-120	27-AUG-20
Beryllium (Be)			93.1		%		80-120	27-AUG-20
Bismuth (Bi)			88.0		%		80-120	27-AUG-20
Boron (B)			91.7		%		80-120	27-AUG-20
Cadmium (Cd)			95.6		%		80-120	27-AUG-20
Calcium (Ca)			90.1		%		80-120	27-AUG-20
Chromium (Cr)			96.2		%		80-120	27-AUG-20
Cobalt (Co)			93.8		%		80-120	27-AUG-20
Copper (Cu)			94.1		%		80-120	27-AUG-20
Iron (Fe)			92.8		%		80-120	27-AUG-20
Lead (Pb)			89.7		%		80-120	27-AUG-20
Magnesium (Mg)			104.4		%		80-120	27-AUG-20
Manganese (Mn)			96.3		%		80-120	27-AUG-20
Molybdenum (Mo)			92.4		%		80-120	27-AUG-20
Nickel (Ni)			93.7		%		80-120	27-AUG-20
Phosphorus (P)			100.5		%		80-120	27-AUG-20
Potassium (K)			97.3		%		80-120	27-AUG-20
Selenium (Se)			98.0		%		80-120	27-AUG-20
Silver (Ag)			91.2		%		80-120	27-AUG-20
Sodium (Na)			96.5		%		80-120	27-AUG-20
Strontium (Sr)			89.7		%		80-120	27-AUG-20
Thallium (Tl)			89.0		%		80-120	27-AUG-20
Tin (Sn)			90.5		%		80-120	27-AUG-20
Titanium (Ti)			96.7		%		80-120	27-AUG-20
Uranium (U)			89.1		%		80-120	27-AUG-20
Vanadium (V)			96.8		%		80-120	27-AUG-20
Zinc (Zn)			99.1		%		80-120	27-AUG-20
WG3392701-1 MB								
Aluminum (Al)			<5.0		mg/kg		5	27-AUG-20
Antimony (Sb)			<0.10		mg/kg		0.1	27-AUG-20
Arsenic (As)			<0.10		mg/kg		0.1	27-AUG-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-MS-WP	Soil							
Batch R5203404								
WG3392701-1 MB								
Barium (Ba)			<0.50		mg/kg		0.5	27-AUG-20
Beryllium (Be)			<0.10		mg/kg		0.1	27-AUG-20
Bismuth (Bi)			<0.020		mg/kg		0.02	27-AUG-20
Boron (B)			<10		mg/kg		10	27-AUG-20
Cadmium (Cd)			<0.020		mg/kg		0.02	27-AUG-20
Calcium (Ca)			<100		mg/kg		100	27-AUG-20
Chromium (Cr)			<1.0		mg/kg		1	27-AUG-20
Cobalt (Co)			<0.020		mg/kg		0.02	27-AUG-20
Copper (Cu)			<1.0		mg/kg		1	27-AUG-20
Iron (Fe)			<25		mg/kg		25	27-AUG-20
Lead (Pb)			<0.20		mg/kg		0.2	27-AUG-20
Magnesium (Mg)			<10	B	mg/kg		10	27-AUG-20
Manganese (Mn)			<0.50		mg/kg		0.5	27-AUG-20
Molybdenum (Mo)			<0.10		mg/kg		0.1	27-AUG-20
Nickel (Ni)			<0.50		mg/kg		0.5	27-AUG-20
Phosphorus (P)			<100		mg/kg		100	27-AUG-20
Potassium (K)			<25		mg/kg		25	27-AUG-20
Selenium (Se)			<0.50		mg/kg		0.5	27-AUG-20
Silver (Ag)			<0.10		mg/kg		0.1	27-AUG-20
Sodium (Na)			<10	B	mg/kg		10	27-AUG-20
Strontium (Sr)			<0.10	B	mg/kg		0.1	27-AUG-20
Thallium (Tl)			<0.10		mg/kg		0.1	27-AUG-20
Tin (Sn)			<5.0		mg/kg		5	27-AUG-20
Titanium (Ti)			<0.50		mg/kg		0.5	27-AUG-20
Uranium (U)			<0.020		mg/kg		0.02	27-AUG-20
Vanadium (V)			<0.50		mg/kg		0.5	27-AUG-20
Zinc (Zn)			<10		mg/kg		10	27-AUG-20
N-TOTKJ-COL-SK	Soil							
Batch R5208393								
WG3393892-2 IRM		08-109_SOIL						
Total Kjeldahl Nitrogen			101.9		%		80-120	01-SEP-20
WG3393892-3 LCS								
Total Kjeldahl Nitrogen			100.8		%		80-120	01-SEP-20
WG3393892-4 MB								
Total Kjeldahl Nitrogen			<0.020		%		0.02	01-SEP-20

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
N2/N3-AVAIL-KCL-SK	Soil							
Batch R5203887								
WG3393381-3 IRM		**ALS SAL 2019**						
Nitrite-N			0.1		mg/kg		0-2.1	28-AUG-20
Nitrate+Nitrite-N			80.6		%		70-130	28-AUG-20
WG3393381-4 LCS								
Nitrite-N			85.0		%		70-130	28-AUG-20
Nitrate+Nitrite-N			90.6		%		70-130	28-AUG-20
WG3393381-2 MB								
Nitrite-N			<1.0		mg/kg		1	28-AUG-20
Nitrate+Nitrite-N			<2.0		mg/kg		2	28-AUG-20
NH4-AVAIL-SK	Soil							
Batch R5203892								
WG3393383-4 LCS								
Available Ammonium-N			90.3		%		80-120	28-AUG-20
WG3393383-2 MB								
Available Ammonium-N			<1.0		mg/kg		1	28-AUG-20
NO3-AVAIL-SK	Soil							
Batch R5208346								
WG3394768-3 IRM		**ALS SAL 2019**						
Available Nitrate-N			71.5		%		70-130	31-AUG-20
WG3394768-4 LCS								
Available Nitrate-N			82.8		%		70-130	31-AUG-20
WG3394768-2 MB								
Available Nitrate-N			<1.0		mg/kg		1	31-AUG-20
PO4-AVAIL-OLSEN-SK	Soil							
Batch R5210379								
WG3396585-1 DUP		**L2493372-1**						
Available Phosphate-P		335	330		mg/kg	1.5	30	04-SEP-20
WG3396585-3 IRM		**FARM2005**						
Available Phosphate-P			102.9		%		80-120	04-SEP-20
WG3396585-4 LCS								
Available Phosphate-P			107.2		%		80-120	04-SEP-20
WG3396585-2 MB								
Available Phosphate-P			<1.0		mg/kg		1	04-SEP-20

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

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Canada T
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L2493372-COFC

COC # L2493372

Page 1 of 1

Report to:		Report For	Service Requested: (rush - subject to availability)	
Company:	City of Portage la Prairie	Standard: X Other:	X	Regular (Default)
Contact:	Aaron Stechesen	Select: PDF X Excel Digital		Priority (2-3 Business Days) - 50% Surcharge
Address:	97 Saskatchewan Ave. E.	Email 1: astechesen@city-plap.com		Emergency (1 Business Day) - 100% Surcharge
	Portage la Prairie, MB R1N 0L8	Email 2:		For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	204-239-8361 Fax: 204-239-8364		Analysis Request	
Invoice To:	Same as Report ? Yes / No ?	Client / Project Information:	(Indicate Filtered or Preserved, F/P)	
Company:	City of Portage la Prairie	Job #:		
Contact:	Accounts Payable	PO / AFE: W02593		
Address:	97 Saskatchewan Ave. E.	Legal Site Description:		
	Portage la Prairie, MB R1N 0L8			
Phone:	204-239-8357 Fax:	Quote #:		
Lab Work Order # (lab use only)		ALS Contact: Judy Dalmeijer	Sampler:	

Sample #	Sample Identification (This description will appear on the report)	Date	Time	Sample Type	NO3-AVAIL-SK	N-TOTKJ-COL-SK	PO4-AVAIL-DISEN-SK	HG-200.2-CVAF-WP	MET-200.2-MS-WP	N-TOT-AVAIL-SK	SAMPLE-DISPOSAL-WP	Number of Containers
1	20-08-63	24-Aug-20	8:30	Sludge	✓	✓	✓	✓	✓	✓	✓	1
2	20-08-64	24-Aug-20	8:30	Sludge	✓	✓	✓	✓	✓	✓	✓	1

Special Instructions / Regulations / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)		
Released by:	Date & Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date & Time:	Observations: Yes / No ? If Yes attach SIF
	Aug 24/20 11:30am		Aug 24	4:30PM	14.2°C			

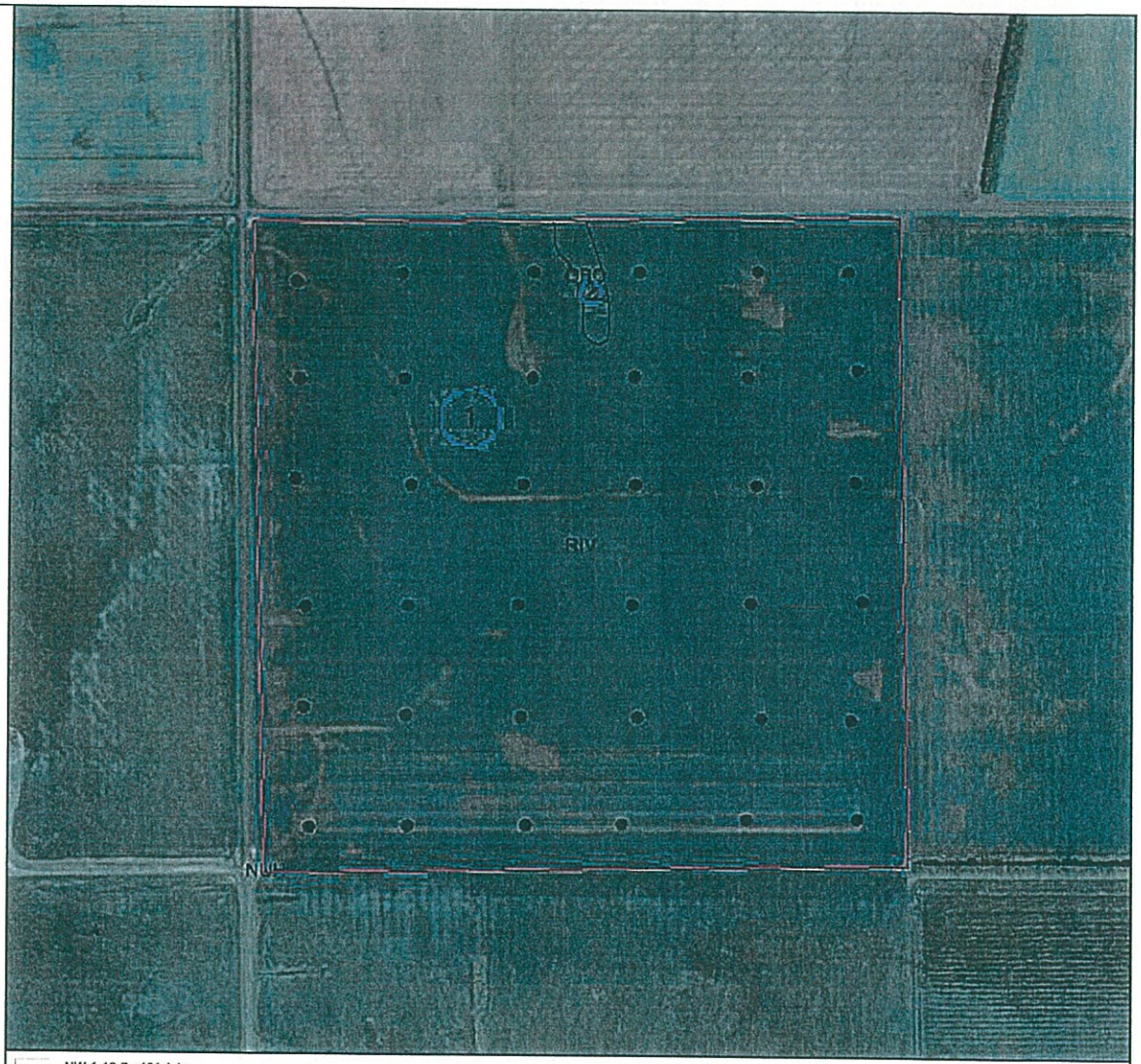
REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF 18.00 Front

Delta Ag Services
City of Portage
McDonald NW 01-13-07

Test Date: August 26, 2020



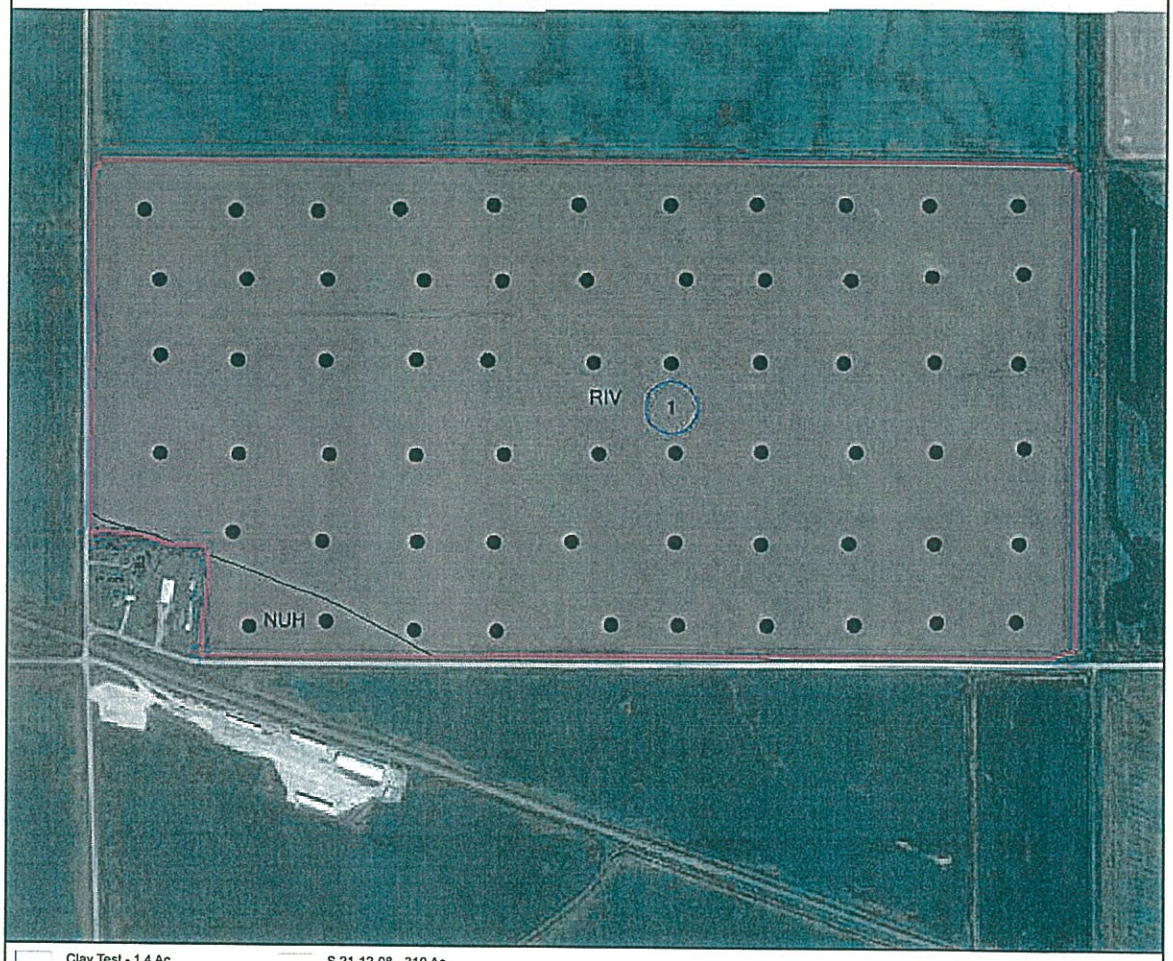
NW 1-13-7 - 161.1 Ac
Portage Soils-Clip - 161.1 Ac
2020 SamplePointsrw
Clay Water test - 1.2 Ac

Clay Test sites 1 and 2 had no detectable water table at the 1.5 m depth

Delta Ag SERVICES

Delta Ag Services
City of Portage
Brooks S 21-12-08

Test Date: September 2. 2020



Clay Test - 1.4 Ac

S 21-12-08 - 310 Ac

QuickMark2-2020

Portage Soils-Clip - 310 Ac

Clay Test Sites 1 had no detectable water table at the 1.5 m depth

Delta Ag SERVICES