City of Portage la Prairie



2022 Residual Biosolids Land Application Program

As per Environment Licence 1907



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

2022 Residual Biosolids Land Application Program

City of Portage la Prairie, Water Pollution Control Facility

Report to Manitoba Sustainable Development

Introduction

The City of Portage la Prairie (the City) owns and operates a wastewater treatment system known as the Water Pollution Control Facility (WPCF). Flows from the McMillan Industrial Park as well as Poplar Bluff Industrial Park are received into and pre-treated in the Low-Rate Anaerobic Reactor (LRAR). This pre-treated wastewater is combined with municipal flows and 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 anaerobic digester to produce Biosolids material that is suitable for land application as a fertilizer. Biosolids are stored throughout the year in the Bulk Volume Fermenter (BVF) or the Biosolids Storage Tanks (BSTs). Solids also accumulate within the LRAR and require removal to ensure adequate capacity and sludge depth within the Reactor. The process of removing the material to inject on agricultural land as a soil enhancement product begins once weather and harvest conditions allow. Injection of material helps to reduce runoff, prevent vector attraction, and minimize odours.

The removal, hauling, analyses and injection of this stored material constitutes the Biosolids Land Application program and is regulated under Environment Act License (EAL) #1907. During the fall of 2022, the City conducted its annual Residual Biosolids Land Application program and applied 630 dry tonnes of material to farmland.

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 met the requirements under EAL 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 and in the Citizen's Info flyer that is distributed to homes. 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 EAL #1907.

Parameter	Depth of Analysis (cm)	
Phosphorous	15	
pН	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. The City of Portage la Prairie contracted an external laboratory 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

For 2022, land sections NE 9-12-6, NW 9-12-6, SE 16-12-6, owned by Allan Watson, were sampled, analyzed, and approved for use. Once a field had been tested and selected for application, prior to application, an agreement with the landowner was signed specifying the restrictions on future growing conditions. Copies of this agreement 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, BVF, and LRAR biosolids were sampled and analyzed in accordance with Clause 1, Appendix A of EAL 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, BSTs and LRAR met the required criteria and were available for land application.

Sludge Handling

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.

Any spillage observed was attributed to material dripping from the hose after a truck was filled. 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.

Low-Rate Anaerobic Reactor

Sludge was withdrawn from the LRAR by means of internal lateral sludge lines that are normally used for sludge recirculation within the LRAR. 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.

Any spillage observed was attributed to material dripping from the hose after a truck was filled. 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 LRAR by a pumping station located at the fill site.

Bulk Volume Fermenter

For 2022, no biosolids were removed from the BVF. This material was sampled but due to the volume within the other two storage areas, it was not necessary to removal any from the BVF. It is not anticipated that this will have any consequences on the operations of the WPCF in 2023.

Biosolids Transportation and Transfer Station

The biosolids was hauled via tanker truck to the field. 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. Copies of these notification letters are included with this report.

Biosolids was transferred from the tanks via a sludge transfer pump to the nurse tank. The nurse tank can hold approximately four tank loads. Cam-lock connections were used for all hose connection mitigating any spillage, which may have occurred during the sludge transfer stage. The nurse tank directly feeds the Drag-Line injection system.

Injection

All biosolids injection was conducted by a Drag-Line injection system which had been modified to allow for 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. Concentration of percent solids and ammonia data was transferred to the field by means of two-way radio. This data was used by the operator of the Drag-Line equipment 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:

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

Where:

S= sludge application rate (dry kg/ha)

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

NO₃-N= nitrate nitrogen content of sludge (kg/kg sludge)

NH₃-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, BVF and LRAR are conducted. One grab sample is collected from every tanker to form a composite sample of five tankers. Each composite is analyzed for solids and ammonia content.

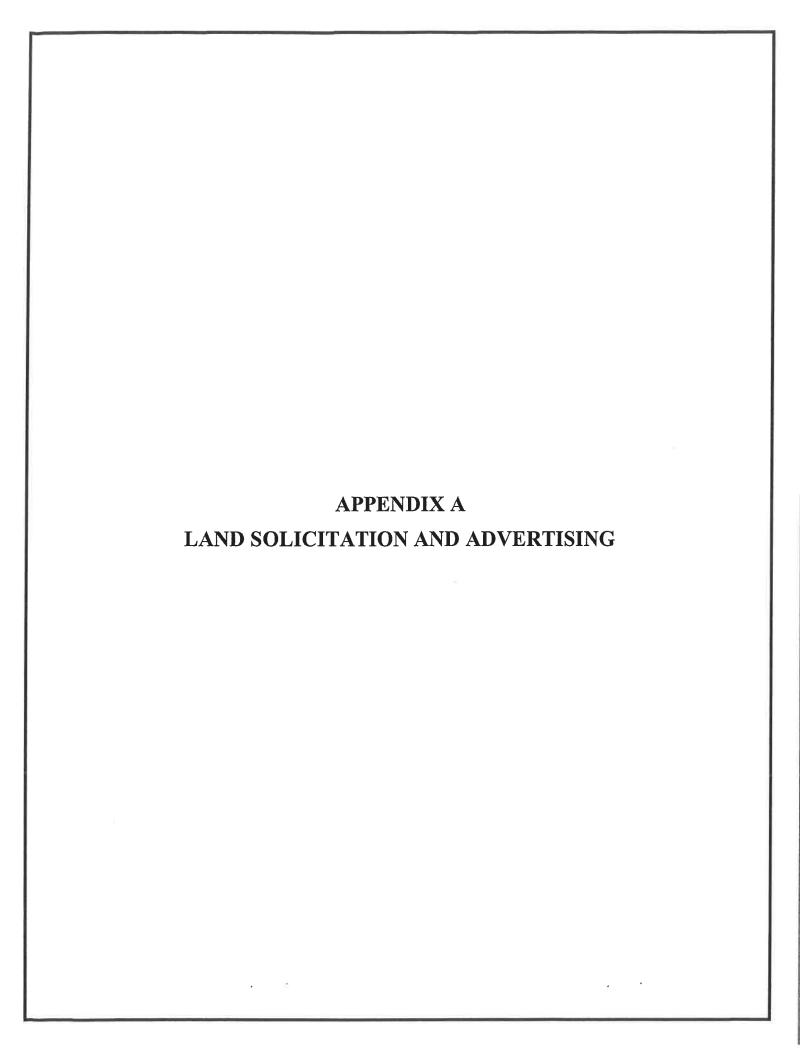
The ammonia and solids testing that occurs during the biosolids hauling process are analyzed inhouse by City of Portage lab techs. Solids are determined using a moisture balance and ammonia is determined via Flow Injection Analysis in accordance with APHA Standard Methods for the Examination of Water and Wastewater 20th Ed, 1998 Method 4500-NH₃ 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.

There were delays and complications at the external lab when completing the testing on the Biosolids and samples had to be resubmitted to confirm and verify. The City began the land injection process based on the information that was available plus using historical data. Once the final results were available, it was noted that the organic Nitrogen in the LRAR was higher than previous years. Adjustments were made to the land application rate to account for the higher concentration and the overall average of the half section was slightly above the limit of 100 kg/ha at 106.5kg/ha.

Summary

Residual solids were removed and transported for land application between September 29, 2022 and October 13, 2022. In total, 630 dry tonnes were removed and injected including 349 tonnes from the LRAR and 281 dry tonnes from the Biosolids Storage Tanks. There were initially some overapplication of Nitrogen from the material from the LRAR, however, the overall average for the field was only slightly above the PA-N application limit. There were no incidents or spills that occurred during the land application process. Follow up with the landowner indicated they were content with the application process and are willing to have residual solids applied in future years.





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

February 18, 2022

Mr. Tyler Kneeshaw Regional Supervisor Manitoba Environment, Climate and Parks 25 Tupper Street North Portage la Prairie, MB R1N 3K1

Re: 2022 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 2022. The following land areas that have been identified as potential application sites and pending soil analysis, biosolids may be applied to the following agricultural lands:

LEGAL LAND DESCRIPTIONS

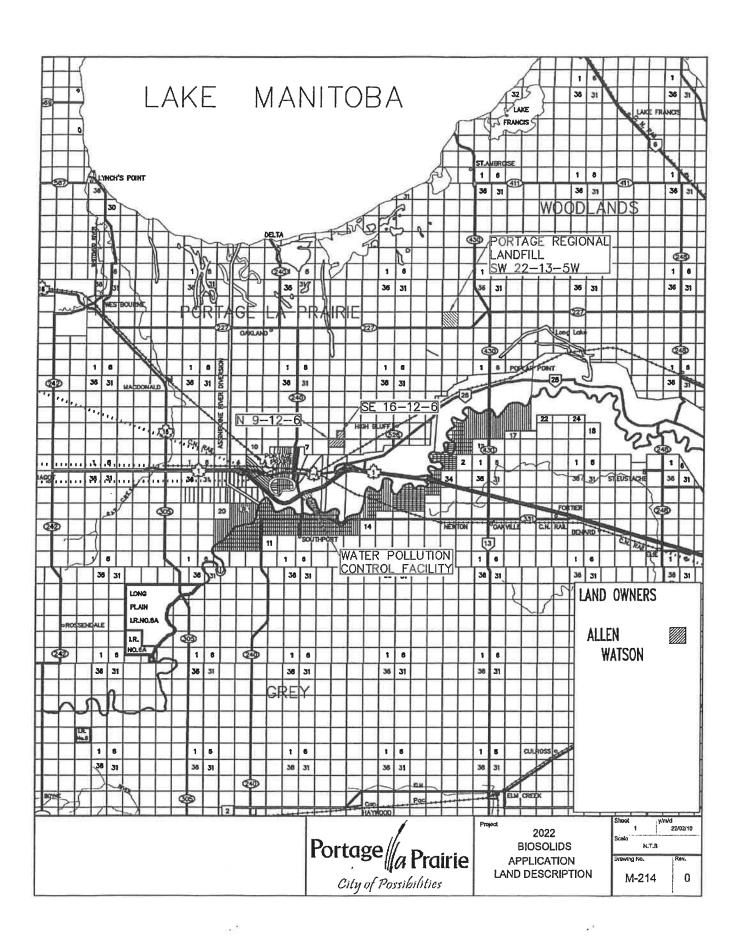
Owner: Allan Watson- N 9-12-6 SE 16-12-6

As required in Environment Act License 1907, Clause 17, notice of intent to land apply to the above noted sites will be printed in the Portage Daily Graphic March 3rd edition. The notice will also be posted to the City website. A copy of the intended routes of transport as well as a confirmation of start date will be sent once they are confirmed by the contractor. Please contact me at 204-239-8359 if you have or receive any concerns regarding the above sites.

A map of the Portage la Prairie region with fields identified has been included with this letter.

Sincerely,

Karly Friesen
Director of Utility





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

February 18, 2022

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: 2022 Residual Biosolids Application Program

Dear Ms. Neudorf,

The City of Portage la Prairie intends to conduct land application of residual biosolids in the fall of 2022. 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

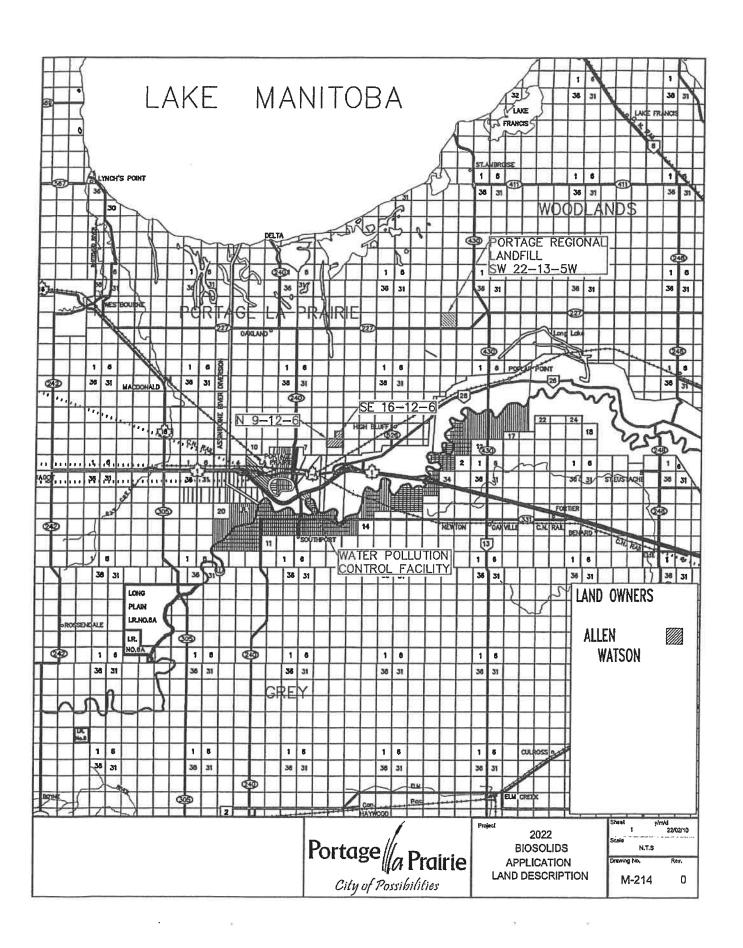
Owner: Allan Watson- N 9-12-6 SE 16-12-6

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A map of the Portage la Prairie region with fields identified has been included with this letter.

Sincerely,

Karly Friesen Director of Utility



The City of Portage la Prairie intends to conduct the Residual Biosolids Land Application Program commencing in the fall of 2022.

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

LEGAL DESCRIPTION SE 16-12-6; N 9-12-6

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

Please contact Karly Friesen, Manager, Director of Utility at 204-239-8359 if you have or receive any concerns regarding the above sites.

APPENDIX B APPLICATION AREA SUMMARY, SOIL TESTING, BIOSOLIDS TESTING AND ANALYTICAL RESULTS FALL

NW 9-12-6

NE 9-12-6

SE 16-12-6



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

September 29, 2022

Mr. Tyler Kneeshaw Regional Supervisor – Environment Officer Manitoba Conservation and Climate 309 – 25 Tupper Street North Portage la Prairie, MB R1N 3K1

Re: Truck Routes for 2022 Residual Biosolids Application Program

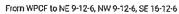
Dear Mr. Kneeshaw:

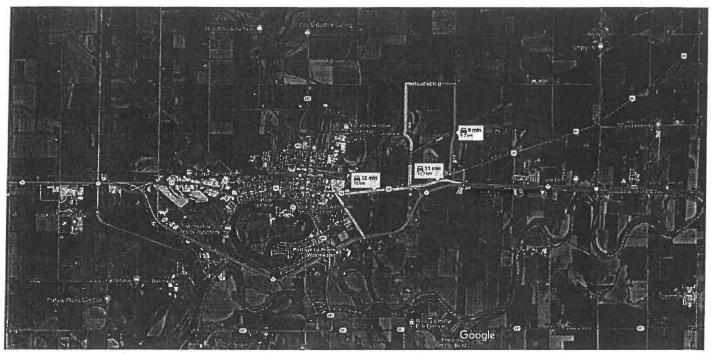
Please find the enclosed route maps for the fall Residual Biosolids Land application for review and comment. The contractor will be applying to fields N 9-12-6 and SE 16-12-6. Transport and application of biosolids is scheduled to begin on Thursday, September 29, 2022, pending dry weather conditions. Should there be any concerns with the routes provided or throughout the hauling process with traffic and/or dust, please contact myself as the contractor is responsible for both items. I can be reached via phone at 204-239-8359 or email at kfriesen@city-plap.com.

Sincerely,

Karly Friesen
Director of Utility

City of Portage la Prairie





Imagery ©2022 CNES / Airbus, Landsat / Copernicus, Maxer Technologies, Southport Aerospace, Map data ©2022 Google 1 km -----

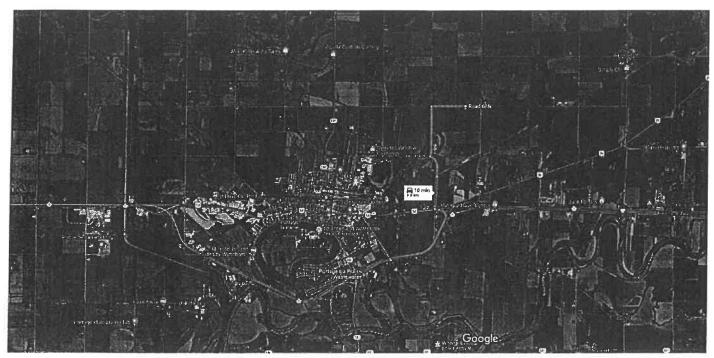
via Trans-Canada Hwy/MB-1 E and 9 min
Rd 33W 9.7 km
Fastest route now due to traffic conditions

via Trans-Canada Hwy/MB-1 E 11 min and Rd 34 W 11.7 km

via Rd 34 W 12 min 10.0 km

Explore Rd 68N

Restaurants Hotels Gas stations Parking Lots More



Imagery ©2022 CNES / Airbus, Landsat / Copernicus, Maxar Technologies, Map data ©2022 Google 1 km \cdots

via Rd 34 W and Trans-Canada Hwy/MB-1 W 9 min without traffic 10 min 8.9 km

Explore Portage La Prairie Wastewater

Restaurants Hotels Gas stations Parking Lots More



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

September 29, 2022

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 2022 Residual Biosolids Application Program

Dear Ms. Neudorf:

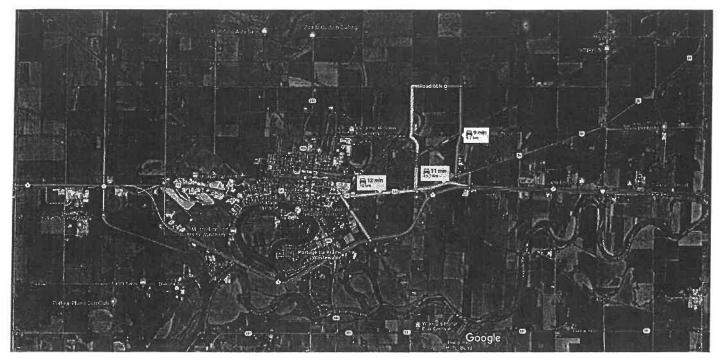
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Sincerely,

Karly Friesen Director of Utility

City of Portage la Prairie

From WPCF to NE 9-12-6, NW 9-12-6, SE 16-12-6



Imagery ©2022 CNES / Airbus, Landsat / Copernicus, Maxar Technologies, Southport Aerospace, Map data ©2022 Google 1 km

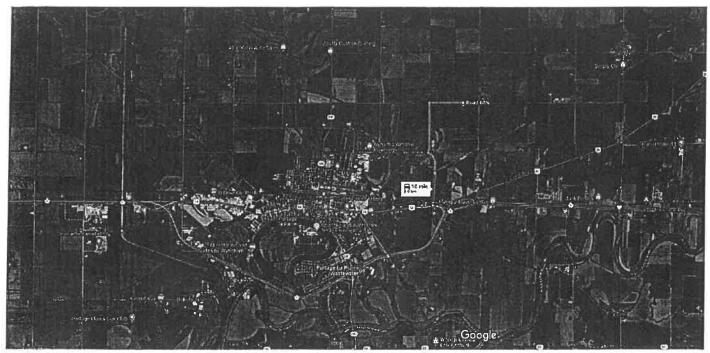
via Trans-Canada Hwy/MB-1 E and	9 min
Rd 33W	9.7 km
Fastest route now due to traffic conditions	

via Trans-Canada Hwy/MB-1 E	11 min
and Rd 34 W	11.7 km

via Rd 34 W	12 min
	10.0 km

Explore Rd 68N

Restaurants Hotels Gas stations Parking Lots More



Imagery ©2022 CNES / Airbus, Landsal / Copernicus, Maxar Technologies, Map data ©2022 Google — 1 km $^\circ$...

via Rd 34 W and Trans-Canada Hwy/MB-1 W 9 min without traffic 10 min 8.9 km

Explore Portage La Prairie Wastewater

Restaurants Hotels Gas stations Parking Lots More

LETTER OF AGREEMENT

Ms. Karly Friesen
Director of Utility
City of Portage la Prairie
97 Saskatchewan Ave. E.
Portage la Prairie, MB
R1N OL8



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 2022 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.
- 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.

City Representative KAMLY CHURCH
31/5/22 Date

	45.45-16.Distance	SKM 1646a/SKM2709					Long	Date		Comments																															99.56 field average
		a is						T	-RAR 10/2022 bs/ac																									0.956	39.03	35.08	16.54	90.00	65.00		98.43
	Reference Sample Soil Material Critoria is	See Appendix Section for Information						Date	LRAR 12/10/2022	0.595		24.3	21.8	10.3	0.0351	23.9	1110	3440	7.6	2.96	170	0.0249	3400	1.30	0.0701	0.000302	0.400	2540	6.99	2710	82.7	64200	22400	1.071	43.745	39.318	18.543	0.063			9.06
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lication Rec		- 1					Lat	Date	BST 12/10/2022	0.595		24.3	21.8	10.3	0.0351	7.55	1110	3440	9.2	96.7	598	0.0152	5080	8.57	0.266	0.498	0.400	1400	7.11	2000	339	24900	7 99	1.071	43.741	39.262	18.541	0.063		- D/ XX	2.54
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	Name of Land Ow	Legal Description	Dist. >300m from	Year Field previou	GPS			Cadmium	Calcium	Chromium	Copper	Lead	Mercury	Vickel		Phosphorus < 60 ug/g	Potassium	Soil Nitrate Nitrogen 0- 60cm<100kg/ha	Zinc	Ammonia Nitrogen	Sadmium	onductivity	Copper	Lead	Mercury	lickel	Organic Nitrogen	hq i see see see	Potassium	otal Nitrogen	otal Phosphorus	Volatile Solids	Zinc	Cadmium < 2.88	Chromium < 216	Copper < 90ु	Lead < 90	lercury < 0.9	litrient Appl Date DA	N<100/kg	Solids <10	inc < 270	Phosphorus Comments
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SRM 1646a/SRM2709				Long	Date																												1									
al Criteria is SF	rmation				П	LRAR 13/10/2022 Ibs/ac																											0.779	34.53	29.45	15.60	0.05	37.90	86.19	6.89	134.22	1105.60
t ple Soil Materi	Section for Info				Date	LRAR 13/10/2022	0.485		21.5	18.3	9.71	0.0307	23.6	‡ J. J	289	2470	6.7	84	170	0.0249	3400	1.30	0.0701	0.000302	0.328	2540	6:39	281	2710	82.7	22400	5.410	0.873	38.704	33.006	17.480	0.055	42.484	96.61	7.72	150.442	1239.217
cation Recording Sheet Reference Sample Soil Material Criteria is	See Appendix Section for Information Watson	SE 16-12-6	Yes Yes		П	BST 13/10/2022 lbs/ac							1																				0.779	34.53	29.41	15.59	0.05	37.90	73.17	2.77	134.15	1104.21
ation Rec					Date	BST 13/10/2022	0.485		21.5	18.3	9.71	0.0307	23.6	202	/89	2470	6.7	84	298	0.0152	5080	8.57	0.266	0.00706	0.400	1400	7.11	249	2000	339	15800	7.99	0.873	38.702	32.967	17.479	0.055	47.407	82.01	3.11	150.358	1237.654
2022 Bio-Solid Applic	Name of Land Owner	Legal Description	Dist. >300m from residences Map Enclosed	Year Field previou	1		Cadmium	Calcium	Chromium	Copper	Lead	Mercury	Nickel		Phosphorus < 60 ug/g	Potassium Soil Nitrato Nitrogga	60cm<100kg/ha	Zinc	Ammonia Nitrogen	Chromium	Conductivity	Copper	Lead	Mercury	Nitrate Nitrogen	Organic Nitrogen	bHHd	Potassium	Total Nitrogen	Total Solids	Volatile Solids	Zinc	Cadmium < 2.88	Chromium < 216	Copper < 90	Lead < 90	Mercury < 0.9	Nutrient Appl. Rate PA.	N<100/kg	Solids <10	inc < 270	Phosphorus

PORTAGE FALL OF 3099. ASSINIBOINE INJECTIONS LTD

ASSINIBOINE INJE	OG 1MD PH: 204-248-2559 FAX: 204-248-2799
BOX 160 177 NOTRE DAME AVE NOTRE DAME, NOT	
DAILY SLUDGE APPLICATION PLAN	
DATE:	
FARMERS NAME:	
FIELD: SECTWPRGE	
APPLICATION TYPE: INJECTION	CM3:
DEPTH: 6" HA:	$\overline{}$ N $\overline{}$ 1
	OCTUBER DOTUBER 19 BST
PST	OCTUBER BST
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	398,657 EALLONS 44.18 ACR
	44.10

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

DETUBER 1
LRAR
DETUBER 3
LRAR
JS 7, 983 GAL
1640 RIRES.

YARD.

LRAR
188,754 GAL.

11.79 RRB

OCTOBER 4, BST. JS1816 AL J9.57 AVE

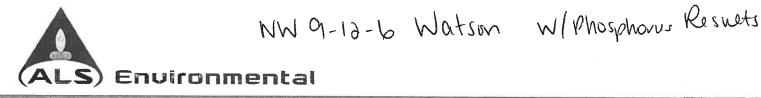
319,867 CALLONS 37.57 ACRES.

> LRAR 217, 785 GAL. 13.87 ACRES

BST
HILLS GALLONS.
44.71 ACRES.

LPAR

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 CM3: _____ DEPTH: __6"____ N DCTOBER 13 BST 90,494 GAL 153,036 GALLONG, 900 ALRES BST BST OSTUBER 19 13.08 ACRES. BST 216,310 GALLERS 29.66 ACRES EL DC LRAR 93,151 GAL 7.76 ACKES



CERTIFICATE OF ANALYSIS

Work Order : WP2203574

Page

: 1 of 3

Amendment : 1

Client

: City of Portage la Prairie

Laboratory

: Winnipeg - Environmental

Contact : Aar

: Aaron Stechesen Account Manager

: Judy Dalmaijer

Address : 97 Saskatchewan Avenue East

Address 1329 I

: 1329 Niakwa Road East, Unit 12 Winnipeg MB Canada R2J 3T4

Portage la Prairie MB Canada R1N 0L8
Telephone : 204 239 8361

Telephone

: +1 204 255 9720

Project : Wastewater

Date Samples Received

: 15-Sep-2022 13:45

PO : W22006

Date Analysis Commenced

: 21-Sep-2022

C-O-C number : --Sampler : ---

IS

Issue Date 26-Sep-2022 17:07

Site : Wastewater
Quote number : Wastewater

No. of samples received : 3
No. of samples analysed : 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN),

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Quality Systems Coordinator	Sask Soils, Saskatoon, Saskatchewan
Greg Pokocky	Supervisor - Inorganic	Metals, Waterloo, Ontario
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Sask Soils, Saskatoon, Saskatchewan
Maria Painchaud	Laboratory Assistant	Inorganics, Saskatoon, Saskatchewan
Nancy Cruse	Laboratory Assistant	Sask Soils, Saskatoon, Saskatchewan

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Client

: City of Portage la Prairie

Project

: Wastewater



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key:

CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances LOR: Limit of Reporting (detection limit).

Unit	Description	
%	percent	
mg/kg	milligrams per kilogram	
pH units	pH units	

<: less than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

Amendment 26-Sept-22: This report has been amended and re-released to allow the reporting of additional analytical data.

>: greater than.

Page

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Work Order

: WP2203574 Amendment 1 : City of Portage la Prairie

Client Project

: Wastewater



Analytical Results

Sub-Matrix: Soil			CI	ient sample ID	22-09-36	22-09-37	22-09-38		
(Matrix: Soil/Solid)									
	Client sampling date / time			15-Sep-2022 11:25	15-Sep-2022 11:25	15-Sep-2022 11:25			
Analyte	CAS Number	Method	LOR	Unit	WP2203574-001	WP2203574-002	WP2203574-003		
					Result	Result	Result		_
Physical Tests	ROLL VERSE								2
Atterberg plastic timit [PL] (moisture)		E199	1.0	-%		_	19.8		
pH (1:2 soil:water)	-	E108	0.10	pH units	7.77				
Atterberg liquid limit [LL] (moisture)		E199	1.0	%			35.0		
Atterberg plasticity index [PI]		E199	1.0	%		_	15.1		_
Anions and Nutrients			- All Parci						
nitrogen, total	7727-37-9	E366	0.020	%	_	0.186	_		
Plant Available Nutrients	10000000000000000000000000000000000000								,
ammonium, available (as N)	14798-03-9	E312A	1.0	mg/kg		<1.0			l —
nitrate + nitrite, available (as N)		E269.N+N	1.0	mg/kg		7.6		****	_
nitrate + nitrite, available (as N)		E269A.N+N	2.0	mg/kg		7.0			
nitrate, available (as N)	14797-55-8	EC269.NO3	2.0	mg/kg		7.6			
nitrite, available (as N)	14797-65-0	E269.NO2	0.40	mg/kg		<0.40			
nitrogen, total available	7727-37-9	EC269A,N	2.2	mg/kg	_	7.0		Britished.	
phosphate, available (as P)	14265-44-2	E385	1.0	mg/kg	20.6				
Metals		第一人员							1
cadmium	7440-43-9	E440	0.020	mg/kg	0.595				ı
chromium	7440-47-3	E440	0.50	mg/kg	24.3			****	
copper	7440-50-8	E440	0.50	mg/kg	21.8				
lead	7439-92-1	E440	0.50	mg/kg	10.3				
mercury	7439-97-6	E510	0.0050	mg/kg	0.0351				
nickel	7440-02-0	E440	0.50	mg/kg	23.9	_			
phosphorus	7723-14-0	E440	50	mg/kg	1110				
potassium	7440-09-7	E440	100	mg/kg	3440				
zinc	7440-66-6	E440	2.0	mg/kg	96.7				

Please refer to the General Comments section for an explanation of any qualifiers detected.



QUALITY CONTROL INTERPRETIVE REPORT

. .

:WP2203574

Page

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Work Order
Amendment

Client

: 1

: City of Portage la Prairie

Laboratory

: Winnipeg - Environmental

Contact

: Aaron Stechesen

Account Manager

: Judy Dalmaijer

Address

: 97 Saskatchewan Avenue East

Portage la Prairie MB Canada R1N 0L8

Address

: 1329 Niakwa Road East, Unit 12

Winnipeg, Manitoba Canada R2J 3T4

Telephone

: 204 239 8361

Project

: Wastewater

Telephone
Date Samples Received

:+1 204 255 9720

PO C-O-C number : W22006

Issue Date

: 15-Sep-2022 13:45 : 26-Sep-2022 17:01

O-O-C Hull

: ----

Sampler Site

: Wastewater

Quote number

: wastewater : Wastewater

No. of samples received

:3

No. of samples analysed :3

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "--" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers: Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

No Reference Material (RM) Sample outliers occur.

Outliers: Analysis Holding Time Compliance (Breaches)

Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers: Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.

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	0	

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Work Order Client ; WP2203574 Amendment 1

Project

: City of Portage la Prairie

: Wastewater



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Soil/Solid

Evaluation: * = Holding time exceedance : < = Within Holding Time

nalyte Group	Method	Sampling Date	Extraction / Preparation					Analysis		
Container / Client Sample ID(s)			Preparation Hold		g Times	Eval	Analysis Date	Holding Times		Eval
			Date	Rec	Actual			Rec	Actual	
nions and Nutrients : Total Nitrogen by Combustion			A SHALL ME AND A SHALL ME			Marie Street	42 174-1			
_DPE bag 22-09-37	E366	15-Sep-2022	21-Sep-2022	_	_		21-Sep-2022	28 days	6 days	✓
etals : Mercury in Soil/Solid by CVAAS			等。并被 (10.3)等等	MESTER!	Balway.	ALCO VILLE	Floring 1			
Glass soil jar/Teflon lined cap 22-09-36	E510	15-Sep-2022	22-Sep-2022	-	_		22-Sep-2022	28 days	7 days	€
etals : Metals in Soil/Solid by CRC ICPMS			THE STATE OF THE				651			
Glass soil jar/Teflon lined cap 22-09-36	E440	15-Sep-2022	22-Sep-2022	-	-		22-Sep-2022	180 days	7 days	✓
nysical Tests : Atterberg Limits				HE FIRST		and the same	To the State of th			
DPE bag 22-09-38	E199	15-Sep-2022	-				21-Sep-2022	180 days	6 days	✓
rysical Tests : pH by Meter (1:2 Soil:Water Extraction)					Ale Til	1	Sugar Sugar			
Glass soll jar/Teflon lined cap 22-09-36	E108	15-Sep-2022	23-Sep-2022	_	-		23-Sep-2022	30 days	8 days	1
ant Available Nutrients : Available Ammonium by Colourimetry (2N Potassium	Chloride Ext.)				PROPERTY.	28		-		-
DPE bag 22-09-37	E312A	15-Sep-2022	22-Sep-2022	_	_		22-Sep-2022	60 days	0 days	✓
ant Available Nutrients : Available Nitrate and Nitrite by Colourimetry (0.01M Ca	lcium Chloride		Sale Asia		Europe S	Pess	ille: etc.		L	
DPE bag 22-09-37	E269.N+N	15-Sep-2022	22-Sep-2022	-	_		22-Sep-2022	3 days	7 days	* EHT

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Work Order

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Client

: City of Portage la Prairie : Wastewater

Project



Matrix: Soil/Solid					Eva	aluation: × =	Holding time exce	edance;	= Within	Holding Tim
Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation	Holding Times		Eval	Analysis Date	Holding Times		Eval
			Date	Rec	Actual			Rec	Actual	
Plant Available Nutrients : Available Nitrate and Nitrite by Colourimetry (2N Potas	sium Chloride					1984 BY	100 to 10			
	¥									
LDPE bag 22-09-37	EGGGA NI-NI	45.0								
22-05-37	E269A.N+N	15-Sep-2022	22-Sep-2022				22-Sep-2022	1 days	0 days	✓
Plant Available Nutrients : Available Nitrite by Colourimetry (0.01M Calcium Chlor LDPE bag	ride Ext.)	South and the same					6 5 S			100
22-09-37	E269.NO2	15-Sep-2022	22 5 2022				00.0 0000			
22-03-01	1209,1402	15-Sep-2022	22-Sep-2022				22-Sep-2022	1 days	0 days	✓
Dignet Averillable Motorington Averillable Discovery	Company of the second	CASH MANAGEMENT		-			1			
Plant Available Nutrients : Available Phosphorus by Colourimetry (Olsen) LDPE bag				W 4 // E			A I I KALL LOUIS IN		,	
22-09-36	E385	15-Sep-2022	04 0 0000				04.0 0000			
££ 00-00	L363	13-3ер-2022	24-Sep-2022				24-Sep-2022		0 days	

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

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Work Order

: WP2203574 Amendment 1

Client

: City of Portage la Prairie

Project : Wastewater



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matelya	Soit/Solid	
IVIPITEIX:	SOLUSOHO	

Evaluation: * = QC frequency outside specification: ✓ = QC frequency within specification.

Quality Control Sample Type		S. 10.	C	ount	Frequency (%)					
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation			
Laboratory Duplicates (DUP)	THE SUMMER PROPERTY.		WAR SALES OF VALUE	Just mark the						
Atterberg Limits	E199	657735	1	1	100.0	5.0	1			
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A	658669	1	8	12.5	5.0				
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269,N+N	658700	1	8	12,5	5.0	1			
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N	658670	1	1	100.0	5.0	1			
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2	658701	1	4	25.0	5.0	1			
Available Phosphorus by Colourimetry (Olsen)	E385	658675	1	4	25.0	5.0				
Mercury in Soil/Solid by CVAAS	E510	659053	1	11	9.0	5.0				
Metals in Soil/Solid by CRC ICPMS	E440	659054	1	17	5.8	5.0				
pH by Meter (1:2 Soil:Water Extraction)	E108	662379	1	1	100.0	5.0				
Total Nitrogen by Combustion	E366	658696	1	6	16.6	5.0	1			
Laboratory Control Samples (LCS)			STREET LARRIED	MARKING LID	Rev III	1				
Atterberg Limits	E199	657735	1	1	100.0	5.0	,			
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A	658669	2	8	25.0	10.0				
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N	658700	2	8	25.0	10.0				
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N	658670	2	1	200.0	10.0	- V			
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2	658701	2	4	50.0	10.0	✓			
Available Phosphorus by Colourimetry (Olsen)	E385	658675	2	4	50.0	10.0	V			
Mercury in Sail/Solid by CVAAS	E510	659053	2	11	18.1	10.0				
Metals in Soil/Solid by CRC ICPMS	E440	659054	2	17	11.7	10.0				
pH by Meter (1:2 Soil:Water Extraction)	E108	662379	2	1	200.0	10.0				
Total Nitrogen by Combustion	E366	658696	2	6	33.3	10.0	1			
Method Blanks (MB)		注与2%的10%。 50%	STORE WELL	Statement Statement of the	180 4-114 4-14	10.0				
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A	658669	1 1	8	12.5	5,0	,			
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269,N+N	658700	1	8	12.5	5.0				
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N	658670	1 1	1	100.0	5,0	√			
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269,NO2	658701	1	4	25.0	5.0	√			
Available Phosphorus by Colourimetry (Olsen)	E385	658675	1 1	4	25.0	5.0				
Mercury in Soil/Solid by CVAAS	E510	659053	1	11	9,0	5.0				
Metals in Soil/Solid by CRC ICPMS	E440	659054	+ +	17						
Total Nitrogen by Combustion	E366	658696	-	6	5.8 16,6	5.0	<u> </u>			

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Work Order

: WP2203574 Amendment 1

Client

: City of Portage la Prairie

Project : Wastewater



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction)	E108 Saskatoon - Environmental	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally 20 ± 5°C), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 °C) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH
Atterberg Limits	E199 Saskatoon - Environmental	Soil/Solid	CSSS Ch. 58 (mod)	Atterberg Limits are measures of physical properties of fine grained soils. Liquid Limit (LL) is the water content where soil behaviour changes from plastic to liquid, and is determined by Casagrande cup. Plastic Limit (PL) is the water content where soil begins to exhibit plastic behaviour, and is measured as the moisture content of a 3 mm diameter thread of soil which begins to crumble when rolled. Plasticity Index (PI) is equal to LL - PL.
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N Saskatoon - Environmental	Soil/Solid	Alberta Agriculture/APHA 4500-NO3 I (mod)	Plant available nitrate and nitrite are analyzed by colourimetry using a flow injection analyzer on a soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaken well and filtered prior to analysis.
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2 Saskatoon - Environmental	Soil/Solid	Alberta Agriculture/APHA 4500-NO3 I (mod)	Plant available nitrite is analyzed by colourimetry using a segmented flow analyzer on a soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaken well and filtered prior to analysis.
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A,N+N Saskatoon - Environmental	Soil/Solid	CSSS (2008) 6.2/APHA 4500-NO3 I (mod)	Plant available nitrate and nitrite is analyzed by colourimetry using a flow injection analyzer on a soil sample extract that has been extracted using 2N potassium chloride, then shaken well and filtered prior to analysis.
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A Saskatoon - Environmental	Soil/Solid	CSSS (2008) 6.2/Comm Soil Sci 19(6) (mod)	Plant available ammonium is analyzed by colourimetry using a segmented flow analyzer on a soil sample extract that has been extracted using 2N Potassium Chloride, then shaken well and filtered prior to analysis.
Total Nitrogen by Combustion	E366 Saskatoon - Environmental	Soil/Solid	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.
Available Phosphorus by Colourimetry (Olsen) .	E385 Saskatoon - Environmental	Soil/Solid	Carter CSSS (2008) 8.3	Plant available phosphorus is extracted from air dried soil using a fixed ratio bicarbonate extraction. Phosphorus is determined by colorimetry.

Work Order

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Client

: City of Portage la Prairie : Wastewater

Project



Analytical Methods	Method / Lab	Matrix	Method Reference	Melhod Descriptions
Metals in Soil/Solid by CRC ICPMS	E440 Waterloo - Environmental	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCI. Dependent on sample matrix, some metals may be only partially recovered, including A Ba, Be, Cr, Sr, Ti, Ti, V, W, and Zr. Silicate minerals are not solubilized. Volatile form of sulfur (including sulfide) may not be captured, as they may be lost during sampling storage, or digestion. This method does not adequately recover elemental sulfur, and it unsuitable for assessment of elemental sulfur standards or guidelines.
Mercury in Soil/Solid by CVAAS	E510 Waterloo - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Analysis is by Collision/Reaction Cell ICPMS. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HC followed by CVAAS analysis.
Available Nitrate by Difference (0.01M Calcium Chloride Ext.)	EC269,NO3 Saskatoon - Environmental	Soil/Solid	Alberta Agriculture/APHA 4500-NO3 I (mod)	Available Nitrate is determined by difference between Nitrate+Nitrite-N and Nitrite-N. soil sample extract that has been extracted using 0.01M Calcium Chloride, then shake well and filtered prior to analysis.
Total Available Nitrogen (Calculation)	EC269A.N Saskatoon - Environmental	Soil/Solid	Calculation	Total available nitrogen is calculated as the sum of NO2-N+NO3-N and NH3-N extracte from soil using 2N potassium chloride solution.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 Saskatoon - Environmental	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Fixed ratio 0.01M Calcium Chloride extraction for plant available nutrients	EP269 Saskatoon - Environmental	Soil/Solid	Alberta Agriculfure	Plant available nutrients (N&S) extracted using 0.01M calcium chloride, then shaken we and filtered prior to analysis.
2N Potassium Chloride extraction for available nutrients	EP269A Saskatoon - Environmental	Soil/Solid	CSSS (2008) 6.2	A soil sample extract is generated by fixed ratio extraction using 2N Potassium Chloride then shaken well and filtered prior to analysis.
Bicarbonate extraction for soil .	EP385 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 8.2	Plant available phosphorus is extracted using fixed ratio sodium bicarbonate solution (Olsen method).
Digestion for Metals and Mercury	EP440 Waterloo - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HC This method is intended to liberate metals that may be environmentally available.

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dry and Grind	EPP442	Soil/Solid	Soil Sampling and	After removal of any coarse fragments and reservation of wet subsamples a portion of
	Saskatoon -		Methods of Analysis, Carter 2008	homogenized sample is set in a tray and dried at less than 60°C until dry. The sample is then particle size reduced with an automated crusher or mortar and pestle, typically to
	Environmental		Carter 2000	<2 mm. Further size reducted with an automated crusher or mortal and pestie, typically to



QUALITY CONTROL REPORT

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Client

Contact

Address

Telephone

: City of Portage la Prairie

only of Fortage in France

: Aaron Stechesen

:97 Saskatchewan Avenue East

Portage la Prairie MB Canada R1N 0L8

: 204 239 8361

Project : Wastewater
PO : W22006

C-O-C number : W2200

Sampler

Site : :Wastewater

Quote number : Wastewater

No. of samples received : 3
No. of samples analysed : 3

age : 1 o

Laboratory

:Winnipeg - Environmental

Account Manager

: Judy Dalmaijer

Address

:1329 Niakwa Road East, Unit 12

Winnipeg, Manitoba Canada R2J 3T4

Telephone

:+1 204 255 9720

Date Samples Received

Date Analysis Commenced

:15-Sep-2022 13:45 :21-Sep-2022

Issue Date

:26-Sep-2022 17:00

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full. This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Colby Bingham	Quality Systems Coordinator	Saskatoon Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Quality Systems Coordinator	Saskatoon Sask Soils, Saskatoon, Saskatchewan
Greg Pokocky	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario
Hedy Lai	Team Leader - Inorganics	Saskatoon Inorganics, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Saskatoon Sask Soils, Saskatoon, Saskatchewan
Maria Painchaud	Laboratory Assistant	Saskatoon Inorganics, Saskatoon, Saskatchewan
Nancy Cruse	Laboratory Assistant	Saskatoon Sask Soils, Saskatoon, Saskatchewan

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: City of Portage la Prairie

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: Wastewater



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include 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 predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Soil/Solid				Laboratory Duplicate (DUP) Report										
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier			
Physical Tests(Q0														
WP2203574-003	22-09-38	Atterberg liquid limit [LL] (moisture)	_	E199	1.0	%	35,0	34.6	0,867%	20%	_			
		Atterberg plastic limit [PL] (moisture)	_	E199	1.0	%	19.8	19.9	0.414%	20%				
Physical Tests (Q0	C Lot: 662379)							S Briefly						
WP2203574-001	22-09-36	pH (1:2 soil:water)	_	E108	0.10	pH units	7.77	7.79	0.257%	10%	. 			
Anions and Nutrier	nts (QC Lot: 658696)					700 YOUR - 100	SERVICE AND EAST	NEW COLUMN						
CG2212653-004	Anonymous	nitrogen, total	7727-37-9	E366	0.020	%	0.082	0.081	0.001	Diff <2x LOR				
Plant Available Nut	rients (QC Lot: 65866	69)	A SWING			A SECTION AND A SECTION		Wilder in the state of the stat						
WP2203574-002	22-09-37	ammonium, available (as N)	14798-03-9	E312A	1.0	mg/kg	<1.0	<1.0	0	Diff <2x LOR				
Plant Available Nut	rients (QC Lot: 65867	70)	A CHOICE			SEASON CONTRACTOR								
WP2203574-002	22-09-37	nitrate + nitrite, available (as N)	_	E269A,N+N	2.0	mg/kg	7.0	7.1	0.04	Diff <2x LOR				
Plant Available Nut	rients (QC Lot: 65867	(5)					DESCRIPTION OF THE PARTY OF THE	Principal and a second	0.510,0		14.55			
WP2203574-001	22-09-36	phosphate, available (as P)	14265-44-2	E385	1.0	mg/kg	20.6	20.2	2.41%	30%	_			
Plant Available Nut	rients (QC Lot: 65870						ASSESSED FOR	DOTE NOT THE	2	00%				
FC2202231-001	Anonymous	nitrate + nitrite, available (as N)		E269.N+N	1.0	mg/kg	<1.0	<1.0] 0	Diff <2x LOR	-			
Plant Available Nut	rients (QC Lot: 65870					Establish Lan	SINTHESE AND A			J. EKCOK				
FC2202231-001	Anonymous	nitrite, available (as N)	14797-65-0	E269.NO2	0.40	mg/kg	<0.40	<0.40	1 0	Diff <2x LOR				
Metals (QC Lot: 65	9053)	4500 - 200 - 400 -	THE STATE OF THE S	STEEN NAME OF THE OWNER.		Green and the second	and the second of the	SANCE- HER LAND		DIII VZX COR				
WT2215065-001	Anonymous	mercury	7439-97-6	E510	0.0050	mg/kg	0.0201	0.0200	0,0001	Diff 49-100				
Metals (QC Lot: 65	9054)	A STATE OF THE STATE OF THE STATE OF			0.0000	myng	0.0201	0.0200	1,000.0	Diff <2x LOR				
WT2215065-001	Anonymous	cadmium	7440-43-9	E440	0,020		0.422	0.400						
		chromium	7440-47-3	E440	1	mg/kg	0,132	0,126	0,006	Diff <2x LOR	_			
			7440-50-8	E440	0.50	mg/kg	25.3	25.4	0.216%	30%				
		copper			0.50	mg/kg	27.7	27.5	0.687%	30%	-			
			7439-92-1	E440	0.50	mg/kg	9.73	9.38	3.65%	40%	-			
		nickel	7440-02-0	E440	0.50	rng/kg	26,4	25,6	2,84%	30%	_			
		phosphorus	7723-14-0	E440	50	mg/kg	802	824	2.74%	30%	-			
020		potassium	7440-09-7	E440	100	mg/kg	2610	2570	1.49%	40%				
		zinc	7440-66-6	E440	2.0	mg/kg	59.8	59,3	0.888%	30%				

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Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 658696	THE PARTY OF THE P			entire -	
nitrogen, total	7727-37-9 E366	0.02	%	<0.020	_
Plant Available Nutrients (QCLot: 658	669)			SENS ENVIOLEN	
ammonium, available (as N)	14798-03-9 E312A	1	mg/kg	<1.0	_
Plant Available Nutrients (QCLot: 658	670)				
itrate + nitrite, available (as N)	— E269A.N+N	2	mg/kg	<2.0	
Plant Available Nutrients (QCLot: 658	675)	Maria de la composición del composición de la composición de la composición del composición de la composición del composición de la composición de la composición de la composición de la composición del composición de la composición de la composición del composición de la composición de la composició			ı
hosphate, available (as P)	14265-44-2 E385	1	mg/kg	<1.0	_
Plant Available Nutrients (QCLot: 658	700)				•
itrate + nitrite, available (as N)	— E269,N+N	1	mg/kg	<1.0	
Plant Available Nutrients (QCLot: 658	701)	(1) 10 K 20 S 20 S 25 X 20 M 20 S 5 A A	Mark Control Service	KWEILE .	
itrite, available (as N)	14797-65-0 E269.NO2	0.4	mg/kg	<0.40	
Metals (QCLot: 659053)					,
nercury	7439-97-6 E510	0.005	mg/kg	<0.0050	
Metals (QCLot: 659054)			100 ST 100 ST 10 ST 10 ST		
admium	7440-43-9 E440	0.02	mg/kg	<0.020	<u> </u>
hromium	7440-47-3 E440	0.5	mg/kg	<0.50	
opper	7440-50-8 E440	0.5	mg/kg	<0.50	
ead	7439-92-1 E440	0.5	mg/kg	<0.50	
ickel	7440-02-0 E440	0.5	mg/kg	<0.50	
hosphorus	7723-14-0 E440	50	mg/kg	<50	
otassium	7440-09-7 E440	100	mg/kg	<100	
inc	7440-66-6 E440	2	mg/kg	<2.0	



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Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Analyte CAS Number Method Physical Tests (QCLot: 662379) pH (1:2 soil:water) — E108 Anions and Nutrients (QCLot: 658696) nitrogen, total 7727-37-9 E366		OR	Unit pH units	Spike Concentration	Recovery (%) LCS	Recovery L Low	imits (%) High	Qualifier
Physical Tests (QCLot: 662379) pH (1:2 soil:water) Anions and Nutrients (QCLot: 658696)					LCS	Low	High	Qualifier
pH (1:2 soil:water) — E108 Anions and Nutrients (QCLot: 658696)			pH units		Control of the Contro		·	
Anions and Nutrients (QCLot: 658696)		T CONTROLLED	pH units		AND ADDRESS OF THE REAL PROPERTY.			
		THE RESERVE	- 1	6.86 pH units	101	97.0	103	
itrogen, total 7727-37-9 E366	0							ăī.
		.02	%	22,37 %	100	90,0	110	
Plant Available Nutrients (QCLot: 658669)								1
		1	mg/kg	10 mg/kg	107	0.08	120	
Plant Available Nutrients (QCLot: 658670) idrate + nitrite, available (as N) —— E269A.			U2/30 (18)					
PASS MANAGEMENT OF MARKET	.N+N	2	mg/kg	40 mg/kg	120	70.0	130	
Plant Available Nutrients (QCLot: 658675)				10				
hosphate, available (as P) 14265-44-2 E385		1	mg/kg	20 mg/kg	103	0.08	120	
Plant Available Nutrients (QCLot: 658700)								
itrate + nitrite, available (as N) — E269.N	I+N	1	mg/kg	40 mg/kg	125	70.0	130	_
Plant Available Nutrients (QCLot: 658701)								
hitrite, available (as N) 14797-65-0 E269.N	NO2 0),4	mg/kg	20 mg/kg	93.5	70.0	130	
Metals (QCLot: 659053)						Wa p.V		i
mercury 7439-97-6 E510	0.0	005	mg/kg	0.1 mg/kg	105	80,0	120	_
Metals (QCLot: 659054)								
admium 7440-43-9 E440		.02	mg/kg	10 mg/kg	101	80.0	120	
hromium 7440-47-3 E440	0	0.5	mg/kg	25 mg/kg	107	0.08	120	
opper 7440-50-8 E440	0).5	mg/kg	25 mg/kg	103	0.08	120	_
ead 7439-92-1 E440	0).5	mg/kg	50 mg/kg	103	80.0	120	_
ickel 7440-02-0 E440	0).5	mg/kg	50 mg/kg	104	0.08	120	_
rhosphorus 7723-14-0 E440	5	50	mg/kg	1000 mg/kg	111	0.08	120	
otassium 7440-09-7 E440	10	00	mg/kg	5000 mg/kg	109	80.0	120	
rinc 7440-66-6 E440		2	mg/kg	50 mg/kg	101	0.08	120	

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: Wastewater



Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:						Referenc	e Material (RM) R	eport	
					RM Target	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
hysical Tests	(QCLot: 657735)				The state of the state of the	Taran Wind Million	E376/0.		
	RM	Atterberg liquid limit [LL] (moisture)	_	E199	33,68 %	101	0.08	120	_
	RM	Atterberg plastic limit [PL] (moisture)	_	E199	20 %	110	0,08	120	
hysical Tests	(QCLot: 662379)					PERIO			1
	RM	pH (1:2 soil:water)	_	E108	8.13 pH units	101	96.0	104	l -
nions and Nu	trients (QCLot: 658696)		RING ME						
	RM	nitrogen, total	7727-37-9	E366	0.11 %	99.1	0.08	120	
lant Available	Nutrients (QCLot: 6586	69)					Blass.		
	RM	ammonium, available (as N)	14798-03-9	E312A	72 mg/kg	98.5	0.08	120	_
lant Available	Nutrients (QCLot: 6586					HERDERA			***************************************
	RM	nitrate + nitrite, available (as N)		E269A,N+N	20.1 mg/kg	74.5	70.0	130	
lant Available	Nutrients (QCLot: 6586	THE RESERVE TO THE RE							
	RM	phosphate, available (as P)	14265-44-2	E385	7 mg/kg	89,2	0,08	120	
lant Available	Nutrients (QCLot: 6587		华洲是农民						40
	RM	nitrate + nitrite, available (as N)		E269.N+N	18.9 mg/kg	77.3	70.0	130	
lant Available	Nutrients (QCLot: 6587		是是為自己						20
tion and a second	RM	nitrite, available (as N)	14797-65-0	E269.NO2	0.17 mg/kg	23.5	0	570	****
letals (QCLot:						disease in the same same			10
	RM	mercury	7439-97-6	E510	0,0585 mg/kg	116	70.0	130	_
letals (QCLot:					HETS-PERSON			7	
	RM	cadmium	7440-43-9	E440	0,91 mg/kg	116	70.0	130	
	RM	chromium	7440-47-3	E440	101 mg/kg	118	70.0	130	
	RM	copper	7440-50-8	E440	123 mg/kg	113	70.0	130	
	RM	lead	7439-92-1	E440	267 mg/kg	105	70.0	130	-
	RM	nickel	7440-02-0	E440	26.7 mg/kg	115	70.0	130	_
•	RM	phosphorus	7723-14-0	E440	752 mg/kg	114	70.0	130	-
	RM	potassium	7440-09-7	E440	1587 mg/kg	118	70.0	130	_
	RM	zinc	7440-66-6	E440	297 mg/kg	112	70,0	130	

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Client Project : City of Portage la Prairie

: Wastewater



Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 1



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Canada Toll Free: 1 800 668 9878

Report To	Contact and co	ompany name	below will appear	on the final report	T	Reports	Recipients		Т		Tui	naroi	und Ti	me (TA	T) Re	quest	ed					_		~~	_
Company:	City of Portage La	Prairie			Select Report F	ormat PDF	D EXCEL D	EDD (DIGITAL)	□ R	outine (f	_	_	_	M-F- I	-	_	_		\dashv						1
Contact:	Aaron Stecheson				_	Reports with CO								M-F - 20				ilnimun	n	.VE	P IA YE	RAPC	ODE LA	eci u	ene I
Phone:	1-204-239-8361				Compare Resi	ultsto Criteria on Repo	ort - provide details be	low if box checked			-			M-F - 2									se only		
	Company address be	elow will app	ear on the final re	port	Select Distribut	ion; 🔲 EMAIL	☐ MAIL ☐	FAX			-			M-F- 5 M-F- 10			_								1
Street:	97 Saskatchewan	Avenue Eas	st		Email 1 or Fax	astechesen@ci	ty-plap.com							LOam M											
City/Province:	Portage La Prairie				Email 2	astechesen@ci	ty-plap.com			A	dditiona	d fees	may a	pply to n	ish red	uests (on wee	kends,	statuto	ry hotida	ays and	for non-	Poutine te	sts.	
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ALS Sample #		Sample Id	entification an	d/or Coordinates		Date	Time	10	NUMB	۱		0	ر _ي ا	ESTA		EC269.NO3.	MOIST-SK	d.	ا ه.ا				5		18
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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.

1. If any water samples are taken from aRegulated Drinking Water (DW) Systemplease submit using an Authorized DW COC form

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 1



www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on t	he final report	Reports / Recipients						_	_				3000	_	_	_							
Company:	City of Portage La Prairie	no nemopor	Salact Danat S			DO (DICTO)		_			-	ne (TA	_	-		_	_		1.7					
Contact:	Aaron Stecheson		1	ormat:					if receive							inimus								-
Phone:	1-204-239-8361		1	itsto Criteria on Repor			-) if rece								- 1	AFF			CODE		L HEF	RE
110110.	Company address below will appear on the final report		Select Distributi	-	MAIL		□ 2 d	ay [P2) if rece	ived by	3pm	M-F - 5	0% ru	sh surc	harge n	ninimu	n I			(ALS	usé on	niy)		
Street:	97 Saskatchewan Avenue East			astechesen@city					If receiv								n							1
City/Province:	Portage La Prairie		Email 2	astechesen@cit			□ 34		(E2) if	_		_		_	_	-	1		holidays and for non-routine tests.					
Postal Code:	R1N 0L8		Email 3	asiechesen@cit	у-рар.сот				_	_	_		Name and Address of the Owner, where	_	on wee	ends,	_	-			_	_		_
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Company: Contact:				astechesen@cit	y-plap.com		2		In	dicate	Filtered	(F). Pi	reserved (P) or Filtered and Prese					rved (F	/P) belo	OW!				9
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ALS Lab Worl	k Order# (ALS use only):		ALS Contact:		Sampler:							EC269A.			×	PREP-DRY/GRIND-SK		-					EXTENDED	SUSPECTED HAZARD
ALS Sample #	Sample Identification and/o	r Coordinates		Date	Time	Samuela Toma	NUMBER			.	ای	E212A	ω	EC269.NO3,	MOIST-SK	2	_	- 1			- 1	탈ㅣ		<u> </u>
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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY, By the use of this form the uses acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report cop

1. If any water samples are taken from aRegulated Drinking Water (DW). Systemplease submit using an Authorized DW COC form



NE 9-12-6 Watson Phosphorus added to metal results

CERTIFICATE OF ANALYSIS

Work Order : WP2203412

Page

: 1 of 3

Amendment : 1

Laboratory

: Winnipeg - Environmental

Contact

: Aaron Stechesen

: City of Portage la Prairie

Account Manager

: Judy Dalmaijer

Address

Client

Telephone

Site

: 97 Saskatchewan Avenue East

Address

: 1329 Niakwa Road East, Unit 12

Portage la Prairie MB Canada R1N 0L8 : 204 239 8361

Telephone

Winnipeg MB Canada R2J 3T4 : +1 204 255 9720

Project : Wastewater **Date Samples Received**

: 12-Sep-2022 11:49

PO : W22006 Date Analysis Commenced

C-O-C number

Issue Date

: 15-Sep-2022

Sampler

: Wastewater

Quote number : Wastewater No. of samples received : 3

No. of samples analysed

26-Sep-2022 16:34

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

: 3

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN),

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

	The state of the s	• • • • • • • • • • • • • • • • • • • •
Signatories	Position	Laboratory Department
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan
Henry Lai	Laboratory Assistant	Inorganics, Saskatoon, Saskatchewan
Jwan Abdalla	Laboratory Analyst	Metals, Saskatoon, Saskatchewan
Jwan Abdalla	Laboratory Analyst	Sask Soils, Saskatoon, Saskatchewan
Nancy Cruse	Laboratory Assistant	Inorganics, Saskatoon, Saskatchewan
Nancy Cruse	Laboratory Assistant	Sask Soils, Saskatoon, Saskatchewan

: 2 of 3

Work Order Client : WP2203412 Amendment 1 : City of Portage la Prairie

Project

: Wastewater



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference. Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS

CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	Description	
%	percent	
mg/kg	milligrams per kilogram	
pH units	pH units	

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

Amendment - 26-Sep-22: This report has been amended and re-released to allow the reporting of additional analytical data.

: 3 of 3

Work Order

: WP2203412 Amendment 1

Client

: City of Portage la Prairie

Project

: Wastewater



Analytical Results

Sub-Matrix: Soil/Solid			CI	lient sample ID	22-09-25	22-09-26	22-09-27	Colinary	азы
(Matrix: Soil/Solid)									
			Client samp	oling date / time	09-Sep-2022 16:00	09-Sep-2022 16:00	09-Sep-2022 16:00	2020	
Analyte	CAS Number	Method	LOR	Unit	WP2203412-001	WP2203412-002	WP2203412-003		
					Result	Result	Result		
Physical Tests									
Atterberg plastic limit [PL] (moisture)		E199	1.0	%		_	24.0		
pH (1:2 soil:water)	-	E108	0.10	pH units	7.77	_			
Atterberg liquid limit [LL] (moisture)		E199	1.0	%		_	44.7		****
Atterberg plasticity index [PI]	_	E199	1.0	%	****	_	20.7		
Plant Available Nutrients								*	
ammonium, available (as N)	14798-03-9	E312A	1.0	mg/kg		2.2		1	
nitrate + nitrite, available (as N)	-	E269.N+N	1.0	mg/kg		5.7			
nitrate + nitrite, available (as N)		E269A.N+N	2.0	mg/kg		5.0			
nitrate, available (as N)	14797-55-8	EC269.NO3	2.0	mg/kg		5.3			
nitrite, available (as N)	14797-65-0	E269,NO2	0.40	mg/kg		0.41			
nitrite, available (as N)	14797-65-0	E269A.NO2	1.0	mg/kg		<1.0			
nitrogen, total available	7727-37-9	EC269A.N	2.2	mg/kg		7.2			
phosphate, available (as P)	14265-44-2	E385	1.0	mg/kg	20.1				-
Metals	DATE DE LA COMPANION DE LA COM	3 5 E S S S S S S S S S S S S S S S S S S						- ·	
cadmium	7440-43-9	E440	0.020	mg/kg	0.543	_		- 1	
chromium	7440-47-3	E440	0.50	mg/kg	21.8	_			Andrews
copper	7440-50-8	E440	0.50	mg/kg	20.8				
lead	7439-92-1	E440	0.50	mg/kg	11.1				
mercury	7439-97-6	E510	0.0050	mg/kg	0.0341				
nickel	7440-02-0	E440	0.50	mg/kg	24.7				
phosphorus	7723-14-0	E440	50	mg/kg	781				
potassium	7440-09-7	E440	100	mg/kg	2800			_	
zinc	7440-66-6	E440	2.0	mg/kg	91.8				

Please refer to the General Comments section for an explanation of any qualifiers detected.



QUALITY CONTROL INTERPRETIVE REPORT

Work Order

:WP2203412

Page

Amendment

Contact

: 1

Client : City of Portage la Prairie

: Aaron Stechesen

Address : 97 Saskatchewan Avenue East

Portage la Prairie MB Canada R1N 0L8

Telephone : 204 239 8361 Project : Wastewater PO : W22006

C-O-C number Sampler

Site : Wastewater Quote number : Wastewater

No. of samples received :3 No. of samples analysed :3

: 1 of 9

Laboratory

: Winnipeg - Environmental

Account Manager : Judy Dalmaijer

: 1329 Niakwa Road East, Unit 12

Winnipeg, Manitoba Canada R2J 3T4

Telephone

Address

: +1 204 255 9720 : 12-Sep-2022 11:49

Date Samples Received Issue Date

: 26-Sep-2022 16:34

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit). RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers: Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Duplicate outliers occur please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers: Analysis Holding Time Compliance (Breaches)

Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers: Frequency of Quality Control Samples

No Quality Control Sample Frequency Outliers occur.

: 3 of 9

Work Order

WP2203412 Amendment 1

Client

: City of Portage la Prairie

Project

Wastewater



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: Soil/Solid

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs						STATE OF STREET	21 Dec. 1	
Metals	Anonymous	Anonymous	copper	7440-50-8	E440	114 % DUP-H	30%	Duplicate RPD does not
								meet the DQO for this test.

Result Qualifiers

Qualifier	Description	
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.	

Page : 4 of 9

Work Order : WP2203412 Amendment 1
Client : City of Portage la Prairie

Project : Wastewater



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

nalyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding Times		Eval
			Date	Rec	Actual		l.	Rec	Actual	
letals : Mercury in Soil/Solid by CVAAS	MINISTER STATE OF THE STATE OF	A STATE OF BUILDING	STORES CONTROL	Sul Silver		801835 VII. 15	Sept Single			
Glass soil jar/Teflon lined cap							T			
22-09-25	E510	09-Sep-2022	16-Sep-2022	_			16-Sep-2022	28 days	7 days	1
etals : Metals in Soil/Solid by CRC ICPMS						Care IV.	with the second			
Glass soil jar/Teflon lined cap										
22-09-25	E440	09-Sep-2022	16-Sep-2022		- 1		16-Sep-2022	180	7 days	✓
								days		
hysical Tests : Atterberg Limits						Salar Property				
LDPE bag 22-09-27	F400									
22-03-21	E199	09-Sep-2022			_		15-Sep-2022	180	6 days	✓
		L		AND LINE TO			V	days		
hysical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap	a service in the service						OFFICE OF THE STATE OF THE STAT			
22-09-25	E108	09-Sep-2022	20-Sep-2022				20-Sep-2022	00.4-		· ·
	2100	09-3ер-2022	20-3ep-2022		_		20-Sep-2022	30 days	11 days	•
lant Available Nutrients : Available Ammonium by Colourimetry (2N Potassi	um Chlorido Ext)			MAIN AND			Paradyrina			
LDPE bag	an onorde Lat.)			e trans-		Chelledelle	Sering 1			
22-09-26	E312A	09-Sep-2022	16-Sep-2022		_ 1		16-Sep-2022	60 days	0 days	1
lant Available Nutrients : Available Nitrate and Nitrite by Colourimetry (0.01	M Calcium Chloride		4 4 4 4 4 4	STATE OF	Elizabeth C					-
						The same of the sa				
LDPE bag							1			
22-09-26	E269.N+N	09-Sep-2022	16-Sep-2022	_	- 1		16-Sep-2022	3 days	7 days	3c
										EHTL
lant Available Nutrients : Available Nitrate and Nitrite by Colourimetry (2N F	otassium Chloride	然后,发生10%					405\G.			
LDPE bag		1 1								
22-09-26	E269A.N+N	09-Sep-2022	16-Sep-2022				16-Sep-2022	1 days	Odour	1
	L2.00/2.14*14	03-06h-2022	10-3ep-2022				10-Sep-2022	1 days	0 days	•

Work Order

: 5 of 9 : WP2203412 Amendment 1

Client

: City of Portage la Prairie : Wastewater

Project



Matrix: Soil/Solid					Eva	aluation: × =	Holding time exce	edance ;	∕ = Within I	Holdina Tin
Analyte Group	Method	Sampling Date	Ext	traction / Pi			1	Analys		
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Plant Available Nutrients : Available Nitrite by Colourimetry (0.01M Calcium Chlor	ide Ext.)		Pide The Oslavia	-ywan e	diploses.	504	West Street			
LDPE bag			The Real Property lies and the least of the	-		Name of the Owner, where			1	
22-09-26	E269.NO2	09-Sep-2022	16-Sep-2022	_			16-Sep-2022	1 days	0 days	✓
							1			
Plant Available Nutrients : Available Nitrite by Colourimetry (2N Potassium Chlori	de Ext.)			Control Con		all the	UXQ			
LDPE bag				V-1-7-110-1	Charles Tolking	Ministra III	I		1	
22-09-26	E269A,NO2	09-Sep-2022	16-Sep-2022		l — i		16-Sep-2022	_	0 days	
							and the second		1	
Plant Available Nutrients : Available Phosphorus by Colourimetry (Olsen)	No. IN CASE		HEX MAN STATE	Pality St.	TENTANIA	AKOT STATE	Us on	1		
LDPE bag		The second secon	District Addition of the last							
22-09-25	E385	09-Sep-2022	16-Sep-2022	-	_		16-Sep-2022		0 days	
			•						,-	

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

: 6 of 9

Work Order

: WP2203412 Amendment 1

Client Project : City of Portage la Prairie

: Wastewater



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Soil/Solid

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type		Co	ount	Frequency (%)			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)			All of the second	Contract The State of		-	
Atterberg Limits	E199	648966	1	1	100.0	5.0	1
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A	648868	1	8	12.5	5.0	
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N	648847	1	7	14,2	5,0	1
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N	648869	1	2	50,0	5.0	√
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269,NO2	648848	1	7	14,2	5,0	1
Available Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.NO2	648870	1	1	100.0	5.0	1
Available Phosphorus by Colourimetry (Olsen)	E385	648899	1	1	100,0	5.0	1
Mercury in Soil/Solid by CVAAS	E510	650237	1	7	14.2	5.0	
Metals in Soil/Solid by CRC ICPMS	E440	650236	1	7	14.2	5.0	1
pH by Meter (1:2 Soil:Water Extraction)	E108	654302	1	13	7.6	5.0	1
Laboratory Control Samples (LCS)		Name of the State	*	ANGERICA CONTRACTOR		1 0.0	
Atterberg Limits	E199	648966	1	1	100.0	5.0	
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A	648868	2	8	25.0	10.0	1
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269,N+N	648847	2	7	28.5	10.0	
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N	648869	2	2	100.0	10.0	1
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269,NO2	648848	2	7	28.5	10.0	
Available Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A,NO2	648870	2	1	200.0	10.0	
Available Phosphorus by Colourimetry (Olsen)	E385	648899	2	1	200.0	10.0	1
Mercury in Soil/Solid by CVAAS	E510	650237	2	7	28.5	10.0	-
Metals in Soil/Solid by CRC ICPMS	E440	650236	2	7	28.5	10.0	
oH by Meter (1:2 Soil:Water Extraction)	E108	654302	2	13	15.3	10.0	1
Method Blanks (MB)	e some state of the sured			SIMPS SELECT	10.0	10.0	
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A	648868	1	8	12.5	5,0	
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269,N+N	648847	1	7	14.2	5.0	
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A,N+N	648869	1 1	2	50.0		
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269,NO2	648848	1	7	14,2	5.0	
Available Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.NO2	648870	1	1			
Available Phosphorus by Colourimetry (Olsen)	E385	648899	1	1	100.0	5.0	√
Mercury in Soil/Solid by CVAAS	E510	650237	1	7	14.2	5.0	1

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Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction) .	E108 Saskatoon - Environmental	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally 20 ± 5°C), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 °C) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Atterberg Limits	E199 Saskatoon - Environmental	Soil/Solid	CSSS Ch. 58 (mod)	Atterberg Limits are measures of physical properties of fine grained soils. Liquid Limit (LL) is the water content where soil behaviour changes from plastic to liquid, and is determined by Casagrande cup. Plastic Limit (PL) is the water content where soil begins to exhibit plastic behaviour, and is measured as the moisture content of a 3 mm diameter thread of soil which begins to crumble when rolled. Plasticity Index (PI) is equal to LL - PL.
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N Saskatoon - Environmental	Soil/Solid	Alberta Agriculture/APHA 4500-NO3 I (mod)	Plant available nitrate and nitrite are analyzed by colourimetry using a flow injection analyzer on a soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaken well and filtered prior to analysis.
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2 Saskatoon - Environmental	Soil/Solid	Alberta Agriculture/APHA 4500-NO3 I (mod)	Plant available nitrite is analyzed by colourimetry using a segmented flow analyzer on a soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaken well and filtered prior to analysis.
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N Saskatoon - Environmental	Soil/Solid	CSSS (2008) 6.2/APHA 4500-NO3 I (mod)	Plant available nitrate and nitrite is analyzed by colourimetry using a flow injection analyzer on a soil sample extract that has been extracted using 2N potassium chloride, then shaken well and filtered prior to analysis.
Available Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.NO2 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 6.2/APHA 4500-NO3 I (mod)	Plant available nitrite is analyzed by colourimetry using a segmented flow analyzer on a soil sample extract that has been extracted using 2N potassium chloride, then shaken well and filtered prior to analysis.
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A Saskatoon - Environmental	Soil/Solid	CSSS (2008) 6.2/Comm Soil Sci 19(6) (mod)	Plant available ammonium is analyzed by colourimetry using a segmented flow analyzer on a soil sample extract that has been extracted using 2N Potassium Chloride, then shaken well and filtered prior to analysis.
Available Phosphorus by Colourimetry (Olsen)	E385 Saskatoon - Environmental	Soil/Solid	Carter CSSS (2008) 8.3	Plant available phosphorus is extracted from air dried soil using a fixed ratio bicarbonate extraction. Phosphorus is determined by colorimetry.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Metals in Soil/Solid by CRC ICPMS	E440 Saskatoon - Environmental	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCI. Dependent on sample matrix, some metals may be only partially recovered, including Al Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines.
Mercury in Soil/Solid by CVAAS	E510 Saskatoon - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Analysis is by Collision/Reaction Cell ICPMS. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl followed by CVAAS analysis.
Available Nitrate by Difference (0.01M Calcium Chloride Ext.)	EC269,NO3 Saskatoon - Environmental	Soil/Solid	Alberta Agriculture/APHA 4500-NO3 I (mod)	Available Nitrate is determined by difference between Nitrate+Nitrite-N and Nitrite-N. A soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaken well and filtered prior to analysis.
Total Available Nitrogen (Calculation)	EC269A.N Saskatoon - Environmental	Soil/Solid	Calculation	Total available nitrogen is calculated as the sum of NO2-N+NO3-N and NH3-N extracted from soil using 2N potassium chloride solution.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 Saskatoon - Environmental	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Fixed ratio 0.01M Calcium Chloride extraction for plant available nutrients	EP269 Saskatoon - Environmental	Soil/Solid	Alberta Agriculture	Plant available nutrients (N&S) extracted using 0.01M calcium chloride, then shaken well and filtered prior to analysis.
2N Potassium Chloride extraction for available nutrients	EP269A Saskatoon - Environmental	Soil/Solid	CSSS (2008) 6.2	A soil sample extract is generated by fixed ratio extraction using 2N Potassium Chloride, then shaken well and filtered prior to analysis.
Bicarbonate extraction for soil	EP385 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 8.2	Plant available phosphorus is extracted using fixed ratio sodium bicarbonate solution (Olsen method).
Digestion for Metals and Mercury	EP440 Saskatoon - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available.

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Proparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dry and Grind	EPP442 Saskatoon - Environmental	Soil/Solid	Soil Sampling and Methods of Analysis, Carter 2008	After removal of any coarse fragments and reservation of wet subsamples a portion of homogenized sample is set in a tray and dried at less than 60°C until dry. The sample is then particle size reduced with an automated crusher or mortar and pestle, typically to <2 mm. Further size reduction may be needed for particular tests.



:WP2203412

QUALITY CONTROL REPORT

Amendment :1

Work Order

Client : City of Portage la Prairie

Contact : Aaron Stechesen

Address : 97 Saskatchewan Avenue East

Portage la Prairie MB Canada R1N 0L8

Telephone : 204 239 8361

Project : Wastewater

PO :W22006

C-O-C number

Sampler .__

Site : Wastewater
Quote number : Wastewater

No. of samples received : 3
No. of samples analysed : 3

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Laboratory

: Winnipeg - Environmental

Account Manager

: Judy Dalmaijer

Address

:1329 Niakwa Road East, Unit 12

Winnipeg, Manitoba Canada R2J 3T4

Telephone

:+1 204 255 9720

Date Samples Received

:12-Sep-2022 11:49

Date Analysis Commenced

:15-Sep-2022

Issue Date

:26-Sep-2022 16:34

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full. This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Colby Bingham	Quality Systems Coordinator	Saskatoon Inorganics, Saskatoon, Saskatchewan
Henry Lai	Laboratory Assistant	Saskatoon Inorganics, Saskatoon, Saskatchewan
Jwan Abdalla	Laboratory Analyst	Saskatoon Metals, Saskatoon, Saskatchewan
Jwan Abdalla	Laboratory Analyst	Saskatoon Sask Soils, Saskatoon, Saskatchewan
Nancy Cruse	Laboratory Assistant	Saskatoon Inorganics, Saskatoon, Saskatchewan
Nancy Cruse	Laboratory Assistant	Saskatoon Sask Soils, Saskatoon, Saskatchewan

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General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include 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 predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "--" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

ub-Matrix: Soil/Solid	· · · · · · · · · · · · · · · · · · ·						Labora	tory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC	CENTRAL PROPERTY OF THE PARTY O	18 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2							a tradition		
WP2203412-003	22-09-27	Atterberg liquid limit [LL] (moisture)	-	E199	1.0	%	44.7	44.9	0.526%	20%	
•		Atterberg plastic limit [PL] (moisture)	-	E199	1.0	%	24.0	24.0	0.0421%	20%	
Physical Tests (QC	Lot: 654302)		AIG STATE		Digital Services		PARTIES.	September 1			
KS2203373-031	Anonymous	pH (1:2 soil:water)	_	E108	0.10	pH units	8.35	8.35	0.00%	10%	_
Plant Available Nutr	rients (QC Lot: 648847)						TELESCO LE	Systematics.			
YL2201441-003	Anonymous	nitrate + nitrite, available (as N)	_	E269.N+N	1.0	mg/kg	<1.0	<1.0	1 0	Diff <2x LOR	
Plant Available Nutr	rients (QC Lot: 648848)		De la		24 - Carlo Car	SILVE THE SELECTION	MATERIAL ST	euros estados			
YL2201441-003	Anonymous	nitrite, available (as N)	14797-65-0	E269,NO2	0.40	mg/kg	<0.40	<0.40	0	Diff <2x LOR	_
Plant Available Nutr	rients (QC Lot: 648868)						Service Constitution	HISTON AND			
WP2203412-002	22-09-26	ammonium, available (as N)	14798-03-9	E312A	1.0	mg/kg	2.2	2.1	0.06	Diff <2x LOR	_
Plant Available Nutr	rients (QC Lot: 648869)			VALUE OF THE PARTY		(ONE CLEVE)	make the	RESULES III			
WP2203412-002	22-09-26	nitrate + nitrite, available (as N)	_	E269A.N+N	2.0	mg/kg	5.0	5.2	0,1	Diff <2x LOR	l _
Plant Available Nutr	rients (QC Lot: 648870)		E LIEN YEAR			ENCOSTA CONTRA	Halling Develop	ICACENGE ET			
WP2203412-002	22-09-26	nitrite, available (as N)	14797-65-0	E269A,NO2	1.0	mg/kg	<1,0	<1.0	1 0	Diff <2x LOR	
Plant Available Nutr	rients (QC Lot: 648899)		A STATE OF THE STA		SUSTEMBLE OF STREET		SEALONE A PER				
WP2203412-001	22-09-25	phosphate, available (as P)	14265-44-2	E385	1.0	mg/kg	20.1	20.2	0.816%	30%	
Metals (QC Lot: 650)236)		ATTERNATION OF			SA SECTION A	Maria San	Editor Sales			
RG2201267-001	Anonymous	cadmium	7440-43-9	E440	0.020	mg/kg	12,0	10.2	16.8%	30%	ļ
		chromium	7440-47-3	E440	0,50	mg/kg	603	594	1,48%	30%	i
		copper	7440-50-8	E440	3.69	mg/kg	3390	930	114%	30%	DUP-H
		lead	7439-92-1	E440	3.69	mg/kg	886	746	17.1%	40%	DUF-H
		nickel	7440-02-0	E440	0.50	mg/kg	299	339	12,4%	30%	
æ		phosphorus	7723-14-0	E440	50	mg/kg	716	819	13,4%	30%	_
		potassium	7440-09-7	E440	100	mg/kg	1890	1960	3,73%	40%	
		zinc	7440-66-6	E440	14.8	mg/kg	2550	2740	7.24%	30%	
Metals (QC Lot: 650	1237)	THE PERSON NAMED IN			1,120	mgmg	ZOGO	2170		30 /6	
RG2201267-001	Anonymous	mercury	7439-97-6	E510	0.0050	mg/kg	0.889	0.894	0.562%	40%	

Qualifiers

Qualitier	Description
DUP-H	Duplicate results

Duplicate results outside ALS DQO, due to sample heterogeneity.

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Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Plant Available Nutrients (QCLot: 64884	7)			NA 62	
itrate + nitrite, available (as N)	E269,N+N	1	mg/kg	<1.0	_
lant Available Nutrients (QCLot: 64884	8)				
itrite, available (as N)	14797-65-0 E269,NO2	0,4	mg/kg	<0.40	_
lant Available Nutrients (QCLot: 64886	8)				
mmonium, available (as N)	14798-03-9 E312A	1	mg/kg	<1.0	
lant Available Nutrients (QCLot: 64886	9)				
trate + nitrite, available (as N)	E269A.N+N	2	mg/kg	<2.0	_
lant Available Nutrients (QCLot: 64887	The second secon				
trite, available (as N)	14797-65-0 E269A.NO2	1	mg/kg	<1.0	_
lant Available Nutrients (QCLot: 64889	9)				
nosphate, available (as P)	14265-44-2 E385	1	mg/kg	<1.0	
letals (QCLot: 650236)				REPUILT	
dmium	7440-43-9 E440	0.02	mg/kg	<0.020	
nromium	7440-47-3 E440	0.5	mg/kg	<0.50	-
ppper	7440-50-8 E440	0,5	mg/kg	<0.50	
ad	7439-92-1 E440	0.5	mg/kg	<0.50	-
ckel	7440-02-0 E440	0.5	mg/kg	<0.50	******
nosphorus	7723-14-0 E440	50	mg/kg	<50	
otassium	7440-09-7 E440	100	mg/kg	<100	
nc	7440-66-6 E440	2	mg/kg	<2.0	
etals (QCLot: 650237)			CARREN CENT	Anna a	
ercury	7439-97-6 E510	0.005	mg/kg	<0.0050	_

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Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

ub-Matrix: Soil/Solid					Laboratory Control Sample (LCS) Report									
					Spike	Recovery (%)	Recovery	Limits (%)						
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifie					
Physical Tests (QCLot: 654302)					Note that the same	Manager 1	STREET.							
H (1:2 soil:water)	_	E108		pH units	6.86 pH units	101	97.0	103	-					
<u>.</u>														
Plant Available Nutrients (QCLot: 648847)									1					
itrate + nitrite, available (as N)	_	E269,N+N	1	mg/kg	40 mg/kg	124	70.0	130	1 -					
lant Available Nutrients (QCLot: 648848)					es Polymer distrates			*****	10					
itrite, available (as N)	14797-65-0	E269.NO2	0.4	mg/kg	20 mg/kg	98.4	70.0	130						
Plant Available Nutrients (QCLot: 648868)		5048118		300					V.					
mmonium, available (as N)	14798-03-9	E312A	1	mg/kg	10 mg/kg	101	80.0	120						
lant Available Nutrients (QCLot: 648869)	55 00 250	10 4 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						7 7 1 1	lii					
itrate + nitrite, available (as N)		E269A,N+N	2	mg/kg	40 mg/kg	126	70,0	130						
lant Available Nutrients (QCLot: 648870)	S INDIVIDUAL DIVID		The same was	Mary Salas		Master Control								
itrite, available (as N)	14797-65-0	E269A,NO2	1	mg/kg	20 mg/kg	99,8	70.0	130						
lant Available Nutrients (QCLot: 648899)														
hosphate, available (as P)	14265-44-2	E385	1	mg/kg	20 mg/kg	103	80.0	120	· _					
				000										
letals (QCLot: 650236)	TOTAL DEVICE			100000000000000000000000000000000000000	AND THE PERMISSION	latora a ser de								
admium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	98.6	80.0	120						
nromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	96,7	80.0	120	_					
opper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	96,3	80.0	120						
ad	7439-92-1	E440	0.5	mg/kg	50 mg/kg	102	80.0	120						
ickel	7440-02-0	E440	0,5	mg/kg	50 mg/kg	95,1	80.0	120						
hosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	102	80.0	120						
otassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	100	80.0	120	_					
inc	7440-66-6	E440	2	mg/kg	50 mg/kg	93.8	80.0	120						
letals (QCLot: 650237)	The state of the s	DUN I S I		and the late of the		Constitution and the constitut								
ercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	97.7	80.0	120						
					S. Inging	19797	24.00	120						

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Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

ub-Matrix:							e Material (RM) R		
					RM Target	Recovery (%)	Recovery	Limits (%)	
boratory mple ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifie
nysical Tests	(QCLot: 648966)						7.4		
	RM	Atterberg liquid limit [LL] (moisture)		E199	33.68 %	102	0.08	120	
	RM	Atterberg plastic limit [PL] (moisture)	_	E199	20 %	96.0	0.08	120	_
ysical Tests	s (QCLot: 654302)								
	RM	pH (1:2 soil:water)		E108	8.13 pH units	100	96.0	104	
ant Available	e Nutrients (QCLot: 648	847)				ANS TRANSPORTED IN			1
	RM	nitrate + nitrite, available (as N)		E269.N+N	18.9 mg/kg	82.5	70.0	130	_
ant Available	e Nutrients (QCLot: 648)	348)				ever in each of			
	RM	nitrite, available (as N)	14797-65-0	E269,NO2	0.17 mg/kg	49.4	0	570	
ant Available	e Nutrients (QCLot: 648	368)			The state of the s		7344		di-
	RM	ammonium, available (as N)	14798-03-9	E312A	72 mg/kg	98.3	0.08	120	_
ant Available	e Nutrients (QCLot: 648)	369)							
	RM	nitrate + nitrite, available (as N)	-	E269A.N+N	20.1 mg/kg	70,8	70.0	130	
ant Available	e Nutrients (QCLot: 648)	370)				die Order			
	RM	nitrite, available (as N)	14797-65-0	E269A.NO2	0.32 mg/kg	36.9	0	725	I -
ant Available	e Nutrients (QCLot: 648	399)						-	-
	RM	phosphate, available (as P)	14265-44-2	E385	7 mg/kg	94.3	0.08	120	
etals (QCLot	:: 650236)		A CHAIR TO A SH						
	RM	cadmium	7440-43-9	E440	0.91 mg/kg	108	70.0	130	_
	RM	chromium	7440-47-3	E440	101 mg/kg	88,6	70.0	130	_
	RM	copper	7440-50-8	E440	123 mg/kg	95.7	70.0	130	_
	RM	lead	7439-92-1	E440	267 mg/kg	99.4	70.0	130	_
•	RM	nickel	7440-02-0	E440	26,7 mg/kg	96.8	70.0	130	_
	RM	phosphorus	7723-14-0	E440	752 mg/kg	102	70.0	130	_
	RM	potassium	7440-09-7	E440	1587 mg/kg	95.7	70.0	130	
	RM	zinc	7440-66-6	E440	297 mg/kg	92.0	70.0	130	_
etals (QCLot	: 650237)	State of the state				West Wilder			1
	RM	mercury	7439-97-6	E510	0.059 mg/kg	93.0	70.0	130	ñ

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 1



Canada Toll Free: 1 800 668 9878

Contact: A Phone: 1. City/Province: P Postal Code: F Invoice To C Company: C Contact: ALS Account # / Job #: PO / AFE: LSD:	City of Portage La Prairie Aaron Stecheson 1-204-239-8361 Company address below will appear on the final 97 Saskatchewan Avenue East Portage La Prairie R1N 0L8 Same as Report To YES Copy of Invoice with Report YES Project Information Project Information Quote # GMPP100 / WP2022 Order # (ALS use only):	NO NO	Merge QC/QCI Compare Result Select Distribution Email 1 or Fax Email 2 Email 3 Select Invoice D Email 1 or Fax Email 2	Reports / format: PDF Reports with COA this to Criteria on Report ion: EMAIL astechesen@city astechesen@city Involce R Distribution: Seastechesen@city astechesen@city	P EXCEL 1 YES 1 YES 1 Provide details be MAIL 2 Plap.com Plap.com Plap.com MAIL MAIL 2 Plap.com	NO NA Show if box checked FAX	44 34 22 15 52	outine [R day [P4] day [P3] day [P2 day [E] ame day A	If receif	eived by eived by eived by vad by receive al fees o	y 3pm 1 3pm 1 y 3pm 1 3pm 1 3pm 1 ed by 1 may ap	MF - 20 MF - 2 MF - 5 F - 10 Dam M- Dily to ru	19 Surd 19% rus 15% rus 19% ru	tharges th surd sh surd sh surd sh surd sh surd po% ru puests reques	apply harge r charge r charge r sh surce sh surce an week	minimu minimu minimu harge. kends, ase co	m in statutory dd-	y holida mmm-	ys and fo	BARCOE ALS use or non-rout mm ami	only) ine tests	
Contact: A Phone: 1. City/Province: P Postal Code: F Invoice To C Company: C Contact: ALS Account # / Job #: PO / AFE: LSD:	Aaron Stecheson 1-204-239-8361 Company address below will appear on the final 97 Saskatchewan Avenue East Portage La Prairie R1N 0L8 Same as Report To	NO NO	Merge QC/QCI Compare Result Select Distribution Email 1 or Fax Email 2 Email 3 Select Invoice D Email 1 or Fax Email 2 AFE/Cost Center: Mejor/Minor Code:	Reports with COA dists to Criteria on Report ion:	- provide details be - provide details be - plap.com	NO NA Show if box checked FAX	4 3 2 1 S	day [P4] day [P3 day [P2 day [E] ame day	if receil if rec	ived by sived by sived by ved by receive al fees o Receive	3pm N 3pm (3pm (3pm N 3pm N d by 1) may ap	MF - 20 MF - 2 MF - 5 F - 10 Dam M- Dily to ru	0% rus 5% rus 60% rus 60% rus 5 - 20 ish req TATS	sh surd sh surd sh surd sh surd sh surd 100% ru juests reques	harge m charge r charge r sh surce on week	minimu minimu minimu harge. kends, ase co	m in statutory dd-	y holida mmm-	ys and fo -yy hh	ALS use or non-roul	only) ine tests	
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ALS Lab Work (Order# (ALS use only):		Location:				능	1				§		ž		P-S-O			1		ON HOLD	STORAGE REQUIRED HAZARD (see notes)
			ALS Contáct:	W W	Sampler:		BER (v			EC296A.NO3,E269A.N+N		03, E269 N+N,		PREP-DRY/GRIND-SK	1				SAMPLES O	EXTENDED STORAGE
ALS Sample #	Sample Identification a	ind/or Coordinates		Date	Time	T	12			_			. 1	EC269.NO3,	MOIST-SK	Ä				18	틸	NI NI
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REFER TO BACK F	PAGE FOR ALS LOCATIONS AND SAMPLING	7072 9:30	<u> </u>	O.A.	ITE - LABORATO	~ <u>/U//</u>	TOM-	499														

implete all portions of this form may delay analysts. 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. ples are taken from aRegulated Drinking Water (DW) Systemplease submit using an Authorized DW COC form

Watson SE 16-12-6 W/Phosphorus



Environmental

CERTIFICATE OF ANALYSIS

Work Order : WP2204062 Page : 1 of 3

Amendment : 1

Address

Client : City of Portage la Prairie : Laboratory : Winnipeg - Environmental

Contact : Aaron Stechesen : Judy Dalmaijer

: 97 Saskatchewan Avenue East Address : 1329 Niakwa Road East, Unit 12

Portage la Prairie MB Canada R1N 0L8 Winnipeg MB Canada R2J 3T4

 Telephone
 : 204 239 8361
 Telephone
 : +1 204 255 9720

 Project
 : Wastewater
 Date Samples Received
 : 04-Oct-2022 14:41

 PO
 : W22006
 Date Analysis Commenced
 : 06-Oct-2022

C-O-C number : --- Issue Date : 14-Oct-2022 10:08

Sampler : ----

Site : Wastewater

Quote number : Wastewater

No. of samples received : 3

No. of samples analysed : 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan
Greg Pokocky	Supervisor - Inorganic	Metals, Waterloo, Ontario
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Sask Soils, Saskatoon, Saskatchewan
Jwan Abdalla	Laboratory Analyst	Sask Soils, Saskatoon, Saskatchewan
Nancy Cruse	Laboratory Assistant	Sask Soils, Saskatoon, Saskatchewan

Page : 2 of 3

Work Order : WP2204062 Amendment 1
Client : City of Portage la Prairie

Project : Wastewater



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference. Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key:

CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit),

Unit	Description	
%	percent	
mg/kg	milligrams per kilogram	
pH units	pH units	

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

Amendment (14-Oct-22): This report has been amended and re-released to allow the reporting of additional analytical data.

Work Order

Client

: 3 of 3 : WP2204062 Amendment 1 : City of Portage la Prairie : Wastewater

Project



Analytical Results

Sub-Matrix: Soil/Solid			C	lient sample ID	22-10-07	22-10-08	22-10-09		oren .
(Matrix: Soil/Solid)									
			Client samı	oling date / time	04-Oct-2022 12:45	04-Oct-2022 12:45	04-Oct-2022 12:45	_	20
Analyte	CAS Number	Method	LOR	Unit	WP2204062-001	WP2204062-002	WP2204062-003		
Be 7 (1) 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2					Result	Result	Result	_	
Physical Tests	TOTAL MALES								
Atterberg plastic limit [PL] (moisture)		E199	1.0	%		S==0	23.5		
pH (1:2 soil:water)		E108	0.10	pH units	7.74	-			
Atterberg liquid limit [LL] (moisture)		E199	1.0	%		3 1	50.6		
Atterberg plasticity index [PI]		E199	1.0	%	****		27.1		
Anions and Nutrients	Sexual Francisco					OVER 1 / SERVICE		yá a	
nitrogen, total	7727-37-9	E366	0.020	%	()	0.127	_	445-01	
Plant Available Nutrients				IN DAY				**	-
ammonium, available (as N)	14798-03-9	E312A	1.0	mg/kg		<1.0	White described about a Care as a service.	_ 1	
nitrate + nitrite, available (as N)		E269,N+N	1.0	mg/kg		6.7			
nitrate + nitrite, available (as N)		E269A.N+N	2.0	mg/kg		6.6			
nitrate, available (as N)	14797-55-8	EC269.NO3	2.0	mg/kg		6.7			
nitrite, available (as N)	14797-65-0	E269.NO2	0.40	mg/kg		<0.40			
nitrite, available (as N)	14797-65-0	E269A.NO2	1.0	mg/kg		<1,0			_
nitrogen, total available	7727-37-9	EC269A.N	2.2	mg/kg		6,6			
phosphate, available (as P)	14265-44-2	E385	1.0	mg/kg	18.4				
nitrate, available (as N)	14797-55-8	EC269A.NO3	2.0	mg/kg		6.6			
Metals			STO SWEET	ing.ng		Manual Commission of the			*******
cadmium	7440-43-9	E440	0.020	mg/kg	0.485			1	
chromium	7440-47-3	E440	0.50	mg/kg	21,5				
copper	7440-50-8	E440	0.50	mg/kg	18.3				Makedang
lead	7439-92-1	E440	0.50	mg/kg	9.71			-	
mercury	7439-97-6	E510	0.0050	mg/kg	0.0307				
nickel	7440-02-0	E440	0.50	mg/kg	23.6				
phosphorus	7723-14-0	E440	50	mg/kg	687				*****
potassium	7440-09-7	E440	100	mg/kg	2470				
zinc	7440-66-6	E440	2.0	mg/kg	83,5				
	7-70-00-0	E-1-10	2.0	mg/kg	03.5				

Please refer to the General Comments section for an explanation of any qualifiers detected.



QUALITY CONTROL INTERPRETIVE REPORT

:WP2204062 Work Order

Page

: 1 of 8

Amendment

. 1

Client : City of Portage la Prairie

: Aaron Stechesen

Contact Address : 97 Saskatchewan Avenue East

Portage la Prairie MB Canada R1N 0L8

Telephone : 204 239 8361 Project : Wastewater

PO : W22006

C-O-C number

Sampler Site

: Wastewater Quote number : Wastewater

No. of samples received :3 No, of samples analysed : 3

Laboratory : Winnipeg - Environmental

Account Manager : Judy Dalmaijer Address

: 1329 Niakwa Road East, Unit 12

Winnipeg, Manitoba Canada R2J 3T4

Telephone

±+1 204 255 9720 : 04-Oct-2022 14:41

Date Samples Received Issue Date

: 14-Oct-2022 10:05

generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other This report is automatically QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot,

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit). RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers: Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

No Analysis Holding Time Outliers exist,

Outliers: Frequency of Quality Control Samples

No Quality Control Sample Frequency Outliers occur.

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*					
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:3 of 8

Work Order

: WP2204062 Amendment 1

Client

: City of Portage la Prairie

Project : Wastewater



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Analyte Group	Method	Sampling Date	Extraction / Preparation				Holding time exceedance; ✓ = Within H Analysis			
Container / Client Sample ID(s)		Jampung Late	Preparation	1	g Times	Eval	Analysis Date	Holding		Eval
		1	Date	Rec	Actual		, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Rec	Actual	270,
Anions and Nutrients : Total Nitrogen by Combustion				ENHANCE.	Stall His o	H0215 L0	WELL			
LDPE bag		1		-		A 24 20 A 2 A 2		-		
22-10-08	E366	04-Oct-2022	07-Oct-2022	_			07-Oct-2022	28 days	3 days	1
				1						
Metals : Mercury in Soil/Solid by CVAAS Glass soil jar/Teflon lined cap										
22-10-07	E510	04-Oct-2022	06-Oct-2022				07-Oct-2022	20 4	0.3	,
	2510	04-001-2022	00-001-2022				07-Oct-2022	28 days	2 days	1
Metals : Metals in Soil/Solid by CRC ICPMS	TO STATE OF THE ST				SECTION S	BSS FILLS		-		
Glass soil jar/Teflon lined cap		AND CONTRACTOR OF THE PARTY OF		CISCO RIVE A	PROBLEM CO.					
22-10-07	E440	04-Oct-2022	06-Oct-2022	-	3. 2		07-Oct-2022	180	2 days	1
								days		
Physical Tests : Atterberg Limits			near the artist			en alla				
LDPE bag										
22-10-09	E199	04-Oct-2022			- 1		06-Oct-2022	180	2 days	√
Western William Was November 1997								days		
Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soll jar/Teflon lined cap						William East	E-154 -			
22-10-07	E108	04-Oct-2022	12-Oct-2022	l			12-Oct-2022	30 days	O dava	1
	2,00	04-001-2022	12-000-2022	_			12-OGI-2022	30 days	8 days	•
Plant Available Nutrients : Available Ammonium by Colourimetry (2N Pota	ssium Chloride Ext \			A SAME OF THE PARTY OF THE PART				l		
LDPE bag			0 0			Mad Arme!				
22-10-08	E312A	04-Oct-2022	07-Oct-2022		_		07-Oct-2022	60 days	0 days	1
Plant Available Nutrients : Available Nitrate and Nitrite by Colourimetry (0.	01M Calcium Chloride				Maria Con					
LDPE bag										
22-10-08	E269.N+N	04-Oct-2022	07-Oct-2022				07.0-1.0000		0.1	,
	L203.1VTN	04=00[=2022	07-OCI-2022				07-Oct-2022	3 days	3 days	✓

Work Order

: 4 of 8 : WP2204062 Amendment 1

Client

: City of Portage la Prairie : Wastewater

Project



nalyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation	n Holding Time			Analysis Date	Holding Times		Eval
			Date	Rec	Actual			Rec	Actual	
lant Available Nutrients : Available Nitrate and Nitrite by Colourimetry (2N	Potassium Chloride					0				
LDPE bag		T T		1	1		1			
22-10-08	E269A.N+N	04-Oct-2022	07-Oct-2022		- 1		07-Oct-2022	1 days	0 days	✓
							1		1	
lant Available Nutrients : Available Nitrite by Colourimetry (0.01M Calcium	Chloride Ext.)			A TAN			His I B	-		
LDPE bag										
22-10-08	E269.NO2	04-Oct-2022	07-Oct-2022				07-Oct-2022	1 days	0 days	✓
	AND EUROPE MA		PENERAL MENULLINA	lancor.		alford a second				
lant Available Nutrients : Available Nitrite by Colourimetry (2N Potassium LDPE bag	Chloride Ext.)				detraction.			_		
22-10-08	E269A.NO2	04-Oct-2022	07-Oct-2022				07-Oct-2022		0 days	
	3							F	o aayo	
lant Available Nutrients : Available Phosphorus by Colourimetry (Olsen)			P ANDRES			Mary 50, 110				
LDPE bag			The state of the s	1		DOM:	T	T		
22-10-07	E385	04-Oct-2022	07-Oct-2022	_			07-Oct-2022		0 days	

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

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Client

Total Nitrogen by Combustion

: City of Portage la Prairie

Project

: Wastewater



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Quality Control Sample Type			C	ount		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
aboratory Duplicates (DUP)	eventakia paklalisy		10.00 M 25.00	Maria de la companya	EMELON .		
Atterberg Limits	E199	683899	1	1	100.0	5.0	1
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A	685289	1	1	100.0	5.0	1
Available Nitrate and Nitrite by Colourimetry (0,01M Calcium Chloride Ext.)	E269.N+N	685285	1	10	10.0	5.0	1
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N	685290	1	. 1	100.0	5.0	1
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2	685287	1	1	100,0	5.0	1
vailable Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.NO2	685291	1	1	100.0	5.0	1
Available Phosphorus by Colourimetry (Olsen)	E385	685292	1	1	100,0	5.0	1
Mercury in Soil/Solid by CVAAS	E510	684881	1	13	7.6	5.0	1
Metals in Soil/Solid by CRC ICPMS	E440	684882	1	13	7.6	5.0	1
H by Meter (1:2 Soil:Water Extraction)	E108	690476	1	1	100.0	5.0	
otal Nitrogen by Combustion	E366	686557	1	1	100.0	5.0	1
aboratory Control Samples (LCS)	E E DEMONISTRATION OF THE		SEATHER OF LE	magnitude and	95/1		
Atterberg Limits	E199	683899	1	1	100.0	5.0	1
wallable Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A	685289	2	1	200.0	10.0	
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269,N+N	685285	2	10	20.0	10.0	
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A,N+N	685290	2	1	200.0	10.0	
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2	685287	2	1	200.0	10.0	
Available Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A,NO2	685291	2	1	200.0	10.0	
Available Phosphorus by Colourimetry (Olsen)	E385	685292	2	1	200.0	10.0	
Mercury in Soil/Solid by CVAAS	E510	684881	2	13	15.3	10.0	1
Metals in Soil/Solid by CRC ICPMS	E440	684882	2	13	15.3	10.0	1
H by Meter (1:2 Soil:Water Extraction)	E108	690476	2	1	200.0	10.0	
Total Nitrogen by Combustion	E366	686557	2	1	200.0	10.0	
Method Blanks (MB)			in the second second		4	1010	
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A	685289		1	100.0	5.0	,
wailable Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269,N+N	685285	1	10	10.0	5,0	
wailable Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N	685290	1	1	100.0	5.0	/
vailable Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2	685287	1	i	100.0	5.0	1
wailable Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.NO2	685291	1	1	100.0	5.0	
vailable Phosphorus by Colourimetry (Olsen)	E385	685292	1	1	100.0	5.0	/
Mercury in Soil/Solid by CVAAS	E510	684881	1	13	7.6	5.0	1
Metals in Soil/Solid by CRC ICPMS	E440	684882	1 1	13	7.6		
The Land Control of the Control of t	E440	004002		13	7.0	5.0	✓

E366

686557

100.0

5.0

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Project : Wastewater



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction)	E108 Saskatoon - Environmental	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally 20 ± 5°C), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 °C) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Atterberg Limits	E199 Saskatoon - Environmental	Soil/Solid	CSSS Ch. 58 (mod)	Atterberg Limits are measures of physical properties of fine grained soils. Liquid Limit (LL) is the water content where soil behaviour changes from plastic to liquid, and is determined by Casagrande cup. Plastic Limit (PL) is the water content where soil begins to exhibit plastic behaviour, and is measured as the moisture content of a 3 mm diameter thread of soil which begins to crumble when rolled. Plasticity Index (PI) is equal to LL - PL.
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N Saskatoon - Environmental	Soil/Solid	Alberta Agriculture/APHA 4500-NO3 I (mod)	Plant available nitrate and nitrite are analyzed by colourimetry using a flow injection analyzer on a soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaken well and filtered prior to analysis.
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2 Saskatoon - Environmental	Soil/Solid	Alberta Agriculture/APHA 4500-NO3 I (mod)	Plant available nitrite is analyzed by colourimetry using a segmented flow analyzer on a soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaken well and filtered prior to analysis.
Available Nitrate and Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.N+N Saskatoon - Environmental	Soil/Solid	CSSS (2008) 6.2/APHA 4500-NO3 I (mod)	Plant available nitrate and nitrite is analyzed by colourimetry using a flow injection analyzer on a soil sample extract that has been extracted using 2N potassium chloride, then shaken well and filtered prior to analysis.
Available Nitrite by Colourimetry (2N Potassium Chloride Ext.)	E269A.NO2 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 6.2/APHA 4500-NO3 I (mod)	Plant available nitrite is analyzed by colourimetry using a segmented flow analyzer on a soil sample extract that has been extracted using 2N potassium chloride, then shaken well and filtered prior to analysis.
Available Ammonium by Colourimetry (2N Potassium Chloride Ext.)	E312A Saskatoon - Environmental	Soil/Solid	CSSS (2008) 6.2/Comm Soil Sci 19(6) (mod)	Plant available ammonium is analyzed by colourimetry using a segmented flow analyzer on a soil sample extract that has been extracted using 2N Potassium Chloride, then shaken well and filtered prior to analysis.
Total Nitrogen by Combustion	E366 Saskatoon - Environmental	Soil/Solid	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.
Available Phosphorus by Colourimetry (Olsen) .	E385 Saskatoon - Environmental	Soil/Solid	Carter CSSS (2008) 8.3	Plant available phosphorus is extracted from air dried soil using a fixed ratio bicarbonate extraction. Phosphorus is determined by colorimetry.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Metals in Soil/Solid by CRC ICPMS	E440 Waterloo - Environmental	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCI. Dependent on sample matrix, some metals may be only partially recovered, including Al Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile form of sulfur (including sulfide) may not be captured, as they may be lost during sampling storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines.
Mercury in Soil/Solid by CVAAS	E510 Waterloo - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Analysis is by Collision/Reaction Cell ICPMS. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HC followed by CVAAS analysis.
Available Nitrate by Difference (0.01M Calcium Chloride Ext.)	EC269,NO3 Saskatoon - Environmental	Soil/Solid	Alberta Agriculture/APHA 4500-NO3 I (mod)	Available Nitrate is determined by difference between Nitrate+Nitrite-N and Nitrite-N. A soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaker well and filtered prior to analysis.
Total Available Nitrogen (Calculation)	EC269A.N Saskatoon - Environmental	Soil/Solid	Calculation	Total available nitrogen is calculated as the sum of NO2-N+NO3-N and NH3-N extracted from soil using 2N potassium chloride solution.
Available Nitrate by Difference (2N Potassium Chloride Ext.)	EC269A.NO3 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 6.2/APHA 4500-NO3 I (mod)	Available Nitrate is determined by difference between Nitrate+Nitrite-N and Nitrite-N. A soil sample extract that has been extracted using 2N Potassium Chloride, then shaker well and filtered prior to analysis.
Proparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 Saskatoon - Environmental	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Fixed ratio 0.01M Calcium Chloride extraction for plant available nutrients	EP269 Saskatoon - Environmental	Soil/Solid	Alberta Agriculture	Plant available nutrients (N&S) extracted using 0.01M calcium chloride, then shaken well and filtered prior to analysis.
2N Potassium Chloride extraction for available nutrients	EP269A Saskatoon - Environmental	Soil/Solid	CSSS (2008) 6.2	A soil sample extract is generated by fixed ratio extraction using 2N Potassium Chloride then shaken well and filtered prior to analysis.
Bicarbonate extraction for soil	EP385 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 8.2	Plant available phosphorus is extracted using fixed ratio sodium bicarbonate solution (Olsen method).

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Metals and Mercury	EP440	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available.
	Waterloo -			
	Environmental			,
Dry and Grind in Soil/Solid <60°C	EPP442	Soil/Solid	Soil Sampling and	After removal of any coarse fragments and reservation of wet subsamples a portion of
			Methods of Analysis,	homogenized sample is set in a tray and dried at less than 60°C until dry. The sample is
	Saskatoon -		Carter 2008	then particle size reduced with an automated crusher or mortar and pestle, typically to
	Environmental			<2 mm. Further size reduction may be needed for particular tests.



QUALITY CONTROL REPORT

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Amendment :1

Client : City of Portage la Prairie : Laboratory : Winnipeg - Environmental Contact : Aaron Stechesen : Account Manager : Judy Dalmaijer

Address :97 Saskatchewan Avenue East Address :1329 Niakwa Road East, Unit 12

Portage la Prairie MB Canada R1N 0L8
Telephone

Portage la Prairie MB Canada R1N 0L8
Telephone

Substitution of the phone Substitution of the phone

Project : Wastewater Date Samples Received :04-Oct-2022 14:41

PO : W22006 : W22006 : 04-Oct-2022 14:4

PO : Date Analysis Commenced : 06-Oct-2022

C-O-C number :--- Issue Date :14-Oct-2022 10:05

Sampler :—
Site :Wastewater

No. of samples analysed : 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives

: Wastewater

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Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

Quote number

No. of samples received

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department	
Colby Bingham	Quality Systems Coordinator	Saskatoon Inorganics, Saskatoon, Saskatchewan	
Greg Pokocky	Supervisor - Inorganic	Waterloo Metals, Waterloo, Ontario	
Hedy Lai	Team Leader - Inorganics	Saskatoon Inorganics, Saskatoon, Saskatchewan	
Hedy Lai	Team Leader - Inorganics	Saskatoon Sask Soils, Saskatoon, Saskatchewan	
Jwan Abdalla	Laboratory Analyst	Saskatoon Sask Soils, Saskatoon, Saskatchewan	
Nancy Cruse	Laboratory Assistant	Saskatoon Sask Soils, Saskatoon, Saskatchewan	

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: City of Portage la Prairie

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: Wastewater



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include 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 predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "--" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Soil/Solid							Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier			
Physical Tests (QC				增加			en de water and	winds I have						
WP2204062-003	22-10-09	Atterberg liquid limit [LL] (moisture)	_	E199	1.0	%	50.6	50.5	0.234%	20%				
		Atterberg plastic limit [PL] (moisture)	_	E199	1.0	%	23,5	23,5	0,0747%	20%				
Physical Tests (QC	Lot: 690476)				Mary Washington			The Port of the Po						
WP2204062-001	22-10-07	pH (1:2 soil:water)	_	E108	0.10	pH units	7.74	7.71	0.388%	10%	_			
	ts (QC Lot: 686557)			发生				TELESCO.						
WP2204062-002	22-10-08	nitrogen, total	7727-37-9	E366	0.020	%	0.127	0.125	0.002	Diff <2x LOR	_			
Plant Available Nut	rients (QC Lot: 68528	5)				Salar Salar	di Kostos							
RG2201406-001	Anonymous	nitrate + nitrite, available (as N)	_	E269.N+N	1.0	mg/kg	1.1	1.0	0.05	Diff <2x LOR	_			
Plant Available Nut	rients (QC Lot: 68528	7)			Section of the Section		Haras Julian	AMASS I VISITE	-					
WP2204062-002	22-10-08	nitrite, available (as N)	14797-65-0	E269.NO2	0,40	mg/kg	<0.40	<0.40	0	Diff <2x LOR				
Plant Available Nut	rients (QC Lot: 68528	9)	NEW STATES				* I HOLD STORY	Married I	-					
WP2204062-002	22-10-08	ammonium, available (as N)	14798-03-9	E312A	1.0	mg/kg	<1.0	<1.0	0	Diff <2x LOR				
Plant Available Nut	rients (QC Lot: 68529	0)				Shirt Religion	Edical English	derest -	4.4					
WP2204062-002	22-10-08	nitrate + nitrite, available (as N)	-	E269A,N+N	2.0	mg/kg	6,6	6,6	0.04	Diff <2x LOR	4			
Plant Available Nut	rients (QC Lot: 68529	1)		7 26 V.		CONTRACTOR OF								
WP2204062-002	22-10-08	nitrite, available (as N)	14797-65-0	E269A.NO2	1.0	mg/kg	<1.0	<1.0	1 0	Diff <2x LOR	\			
Plant Available Nut	rients (QC Lot: 68529	2)	O SIZEUR			65 9 18 12	(#INDEX.SIL	Maria Carlo						
WP2204062-001	22-10-07	phosphate, available (as P)	14265-44-2	E385	1.0	mg/kg	18.4	18.7	1.58%	30%	· —			
Metals (QC Lot: 68	4881)				De la California	Step Step Step Step Step Step Step Step	Maria Santo	M397111 - 11-10	15.4					
WT2216997-001	Anonymous	mercury	7439-97-6	E510	0.0050	mg/kg	0.0102	0.0089	0,0013	Diff <2x LOR	E			
Metals (QC Lot: 68	4882)				The Section of	Sales in the contract	6100 (194	dan sereta da da l	1					
WT2216997-001	Anonymous	cadmium	7440-43-9	E440	0.020	mg/kg	0.022	0.030	0.008	Diff <2x LOR	*****			
		chromium	7440-47-3	E440	0.50	mg/kg	29.1	32.2	10.2%	30%				
		copper	7440-50-8	E440	0.50	mg/kg	28.8	33.0	13.8%	30%	_			
		lead	7439-92-1	E440	0.50	mg/kg	3.34	3.16	5.45%	40%				
		nickel	7440-02-0	E440	0.50	mg/kg	37.4	41.1	9.27%	30%				
		phosphorus	7723-14-0	E440	50	mg/kg	731	824	12.0%	30%	-			
		potassium	7440-09-7	E440	100	mg/kg	3400	4070	17.9%	40%				
160		zinc	7440-66-6	E440	2.0	mg/kg	72,7	81,0	10,9%	30%				

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Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 686557)			The state of the s		
itrogen, total	7727-37-9 E366	0.02	%	<0.020	_
Plant Available Nutrients (QCLot: 685	285)				
itrate + nitrite, available (as N)	E269.N+N	1	mg/kg	<1.0	
lant Available Nutrients (QCLot: 685	287)			1	
trite, available (as N)	14797-65-0 E269.NO2	0.4	mg/kg	<0.40	_
lant Available Nutrients (QCLot: 685	289)				
mmonium, available (as N)	14798-03-9 E312A	1 1	mg/kg	<1.0	
lant Available Nutrients (QCLot: 685	290)			70.00	
trate + nitrite, available (as N)	— E269A.N+N	2	mg/kg	<2.0	
lant Available Nutrients (QCLot: 685	291)				
trite, available (as N)	14797-65-0 E269A,NO2	1	mg/kg	<1,0	
lant Available Nutrients (QCLot: 685)	292)				
hosphate, available (as P)	14265-44-2 E385	1 1	mg/kg	<1.0	
letals (QCLot: 684881)					
ercury	7439-97-6 E510	0.005	mg/kg	<0.0050	
letals (QCLot: 684882)	A RUMBIES TO THE RESIDENCE OF THE STATE OF	A STATE OF THE STA	White state of the second		1.
admium	7440-43-9 E440	0,02	mg/kg	<0.020	
ıromium	7440-47-3 E440	0.5	mg/kg	<0.50	
ppper	7440-50-8 E440	0.5	mg/kg	<0.50	
ad	7439-92-1 E440	0.5	mg/kg	<0.50	
ckel	7440-02-0 E440	0.5	mg/kg	<0.50	
nosphorus	7723-14-0 E440	50	mg/kg	<50	
otassium	7440-09-7 E440	100	mg/kg	<100	
inc	7440-66-6 E440	2	mg/kg	<2.0	

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Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Soil/Solid				Laboratory Control Sample (LCS) Report						
p				Spike	Recovery (%)	Recovery	Limits (%)			
Analyte	CAS Number Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier		
Physical Tests (QCLot: 690476)							-i			
pH (1:2 soil:water)	— E108	3==	pH units	7 pH units	101	97.0	103			
Anions and Nutrients (QCLot: 686557)				have been pro-						
nitrogen, total	7727-37-9 E366	0.02	%	22,37 %	99.1	90,0	110			
Plant Available Nutrients (QCLot: 685285)										
nitrate + nitrite, available (as N)	E269.N+N	1	mg/kg	40 mg/kg	99.1	70.0	130	<u> </u>		
Plant Available Nutrients (QCLot: 685287)	14797-65-0 E269.NO2		AL 200							
	14797-65-0 E269.NO2	0.4	mg/kg	20 mg/kg	97.4	70.0	130	_		
Plant Available Nutrients (QCLot: 685289)										
	14798-03-9 E312A	1	mg/kg	10 mg/kg	101	0.08	120	_		
Plant Available Nutrients (QCLot: 685290) nitrate + nitrite, available (as N)	E269A.N+N							1		
	Control of the second s	2	mg/kg	40 mg/kg	106	70.0	130	-		
Plant Available Nutrients (QCLot: 685291)	14797-65-0 E269A.NO2							,		
	14797-03-0 E209A.NO2	1	mg/kg	20 mg/kg	102	70.0	130	_		
Plant Available Nutrients (QCLot: 685292)	14265-44-2 E385							,		
priospriate, available (as F)	14203-44-2 2303	1	mg/kg	20 mg/kg	94.8	80.0	120			
Metals (QCLot: 684881)	SA, 2015 内容, 经银行 生化 牙							Tanana and and and and and and and and an		
mercury	7439-97-6 E510	0.005	mg/kg	0.1 mg/kg	102	80.0	120	_		
Metals (QCLot: 684882)			TOTAL STREET		Bargion Symposium			5)		
cadmium	7440-43-9 E440	0.02	mg/kg	10 mg/kg	103	80.0	120			
chromium	7440-47-3 E440	0,5	mg/kg	25 mg/kg	105	0.08	120			
copper	7440-50-8 E440	0.5	mg/kg	25 mg/kg	104	0.08	120	_		
lead	7439-92-1 E440	0.5	mg/kg	50 mg/kg	100	0.08	120	· -		
nickel	7440-02-0 E440	0.5	mg/kg	50 mg/kg	105	80.0	120	_		
phosphorus	7723-14-0 E440	50	mg/kg	1000 mg/kg	112	80.0	120			
potassium	7440-09-7 E440	100	mg/kg	5000 mg/kg	101	0.08	120			
zinc	7440-66-6 E440	2	mg/kg	50 mg/kg	102	0.08	120	-		

Work Order

: 6 of 8 : WP2204062 Amendment 1

Client

: City of Portage la Prairie

Project : Wastewater



:7 of 8

Work Order Client

: WP2204062 Amendment 1 : City of Portage la Prairie

Project

: Wastewater



Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:						Referenc	e Material (RM) R	eport	
					RM Target	Recovery (%)	Recovery	Limits (%)	
aboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifie
hysical Tests	s (QCLot: 683899)		和 博都於1882年	digital same tax	BOW AND THE RES	MORE THAN	and desired		
	RM	Atterberg liquid limit [LL] (moisture)	_	E199	33,68 %	101	80.0	120	_
	RM	Atterberg plastic limit [PL] (moisture)	-	E199	20 %	93.0	80,0	120	
hysical Tests	s (QCLot: 690476)				getti etilik maraketi	Mercus Pro			
	RM	pH (1:2 soil:water)	-	E108	8.13 pH units	99.8	96.0	104	
nions and N	utrients (QCLot: 686557)					Standy so		4	
	RM	nitrogen, total	7727-37-9	E366	0.11 %	94.1	80.0	120	1 -
lant Availabl	e Nutrients (QCLot: 685:	285)			The State of the S	CONTACT			
	RM	nitrate + nitrite, available (as N)	15	E269.N+N	18.9 mg/kg	90.6	70.0	130	1
lant Available	e Nutrients (QCLot: 685	287)							
	RM	nitrite, available (as N)	14797-65-0	E269.NO2	0.17 mg/kg	66,6	0	570	
lant Available	e Nutrients (QCLot: 685	289)							
	RM	ammonium, available (as N)	14798-03-9	E312A	72 mg/kg	98.2	0,08	120	
lant Available	e Nutrients (QCLot: 685)			September 1)-60.		
	RM	nitrate + nitrite, available (as N)		E269A.N+N	20.1 mg/kg	89.5	70.0	130	_
lant Available	e Nutrients (QCLot: 685)						12-1	-	
	RM	nitrite, available (as N)	14797-65-0	E269A.NO2	0.32 mg/kg	49.9	0	725	
lant Available	e Nutrients (QCLot: 685)	292)				M Fr			-
	RM	phosphate, available (as P)	14265-44-2	E385	7 mg/kg	94,8	80.0	120	_
letals (QCLot		《美国大学》							
	RM	mercury	7439-97-6	E510	0.0585 mg/kg	99.1	70.0	130	
letals (QCLot							57		•
	RM	cadmium	7440-43-9	E440	0.91 mg/kg	102	70,0	130	_
	RM	chromium	7440-47-3	E440	101 mg/kg	96.0	70,0	130	
	RM	copper	7440-50-8	E440	123 mg/kg	94.5	70.0	130	_
	RM	lead	7439-92-1	E440	267 mg/kg	95.2	70.0	130	_
	RM	nickel	7440-02-0	E440	26.7 mg/kg	97.1	70.0	130	_
	RM	phosphorus	7723-14-0	E440	752 mg/kg	101	70.0	130	
•	RM	potassium	7440-09-7	E440	1587 mg/kg	92.9	70.0	130	
	RM	zinc	7440-66-6	E440	297 mg/kg	93.0	70.0	130	

Work Order Client

: 8 of 8 : WP2204062 Amendment 1

Project

: City of Portage la Prairie

: Wastewater



Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 1



www.aisglobal.com

Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report		Reports / R	teciplents		$\overline{}$		Tu	maro	and Th	me (T	AT) Re	quest	led		\neg						
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Phone:	1-204-239-8361	Compare Resu	its to Otteria on Report	- provide details bek	ow if box checked	_		-				25% ru		_			~			se only)		
	Company address below will appear on the final report	Select Distributi	ion: EMAIL	MAIL [FAX							50% ru .00% ru		-								
Street:	97 Saskatchewan Avenue East	Email 1 or Fax	astechesen@city-	-plap.com								1-S - 20				"		• 7	-			- 3
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ALS Lab Worl	k Order # (ALS use only):	ALS Contact:		Sampler:	-	BER					ECZ69A.NO3.		EC269.NO3, E2	×	PREP-DRY/GRIND-SK					SAMPLES		SUSPECTED HAZARD (see notes)
ALS Sample #	Sample Identification and/or Coordinates		Date	Time	Ta	12		ا ا		10		₆₀	667	MOIST-SK	O-	_	1	- 1	- 1	\frac{1}{2}	E	l g
(ALS use only)	(This description will appear on the report)	E 30	(dd-mmm-yy)	(hh:mm)	Sample Type	Įź	E 28	E510	E440	E385	E312A.	E366	Say	Ş Q	PRE	E199		- 1	1	S	X	120
	22-10-07		4-Oct-22	12:45	Soil	1	P3	РЗ	P3	Р3				Р3	Р3							
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REFER TO BAC	T3:1 KPAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION	<u> </u>	NAM.	ITE - LABORATO	L CUCC	LOW-			OV	-	-			_		_						
Failure to complete	Ball portions of this form may delay analysis. Please fill in this form LECTRI Y	ly the use of this form	the user acknowledges	s and agrees with th	ne Terms and Condit	ions as	specifi	ed on t	ne bad	k page	of the	white -	report	CDOV.							FEB	2022 FROM
1. If any water san	ngles are taken from a legulated Drinking Water (DW) Systemplease submit	using anAuthorized	DW COC form	2 3,,,,						,-4												



CERTIFICATE OF ANALYSIS

Work Order : WP2203966

: 1

Client : City of Portage la Prairie

Contact : Aaron Stechesen

Address : 97 Saskatchewan Avenue East

Portage la Prairie MB Canada R1N 0L8

Telephone : 204 239 8361

Project : Wastewater
PO : W22006

C-O-C number

Sampler : ---

Site : Wastewater
Quote number : Wastewater

No. of samples received : 3
No. of samples analysed : 3

Page : 1 of 4

Laboratory : Winnipeg - Environmental

Account Manager : Judy Dalmaiier

Address : 1329 Niakwa Road East, Unit 12

Winnipeg MB Canada R2J 3T4

Telephone : +1 204 255 9720

Date Samples Received : 30-Sep-2022 08:41

Date Analysis Commenced : 30-Sep-2022

Issue Date : 12-Oct-2022 11:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

Amendment

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories Position Laboratory Department

Christine Mason
Lee McTavish
Oleksandr Busel
Oleksandr Busel
Oleksandr Busel

Chemistry
Inorganics, Winnipeg, Manitoba
Inorganics, Winnipeg, Manitoba
Inorganics, Winnipeg, Manitoba
Metals, Winnipeg, Manitoba

Page : 2 of 4

Work Order : WP2203966 Amendment 1
Client : City of Portage la Prairie

Project : Wastewater



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key:

CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit),

Description	
Microsiemens per centimetre	*
milligrams per litre	
pH units	
	Microsiemens per centimetre milligrams per litre

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference,
	colour, turbidity).

Work Order

: 3 of 4 : WP2203966 Amendment 1

Client

: City of Portage la Prairie : Wastewater



Analytical Results					BST	BUF	WEAR		
Sub-Matrix: Sludge			CI	lient sample ID [22-09-62	22-09-63	22-09-64		****
(Matrix: Water)									5
			Client samp	oling date / time	29-Sep-2022 11:00	29-Sep-2022 11:00	29-Sep-2022 11:00	_	
Analyte	CAS Number	Method	LOR	Unit	WP2203966-001	WP2203966-002	WP2203966-003		
					Result	Result	Result		
Physical Tests			AVI WEST	9				N	
conductivity		E100	2.0	µS/cm	5080	3180	3400	- 1	
pH		E108	0.10	pH units	7.11	6.69	6.99		
solids, fixed suspended [FSS]		E170	3.0	mg/L	6620	9580	17000		
solids, total [TS]		E157	10	mg/L	24900	29300	64200		
solids, total suspended [TSS]		E160	3.0	mg/L	22400	24100	39400		
solids, volatile suspended [VSS]		EC167	3.0	mg/L	15800	14500	22400		
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E303	0.010	mg/L	598	169	170	_	
(jeldahl nitrogen, total [TKN]		E319	0.15	mg/L	2000	1540	2710		_
nitrite (as N)	14797-65-0	E235,NO2	0.010	mg/L	<0.200 DLM	<0.010	<0.200 DLM		_
nitrogen, total organic		EC363	0.050	mg/L	1400	1370	2540		_
phosphorus, total	7723-14-0	E372	0.020	mg/L	265	305	314		***
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	<0.400 ^{DLM}	<0.400 DLM	<0.400 DLM		_
nitrate + nitrite (as N)		EC235.N+N	0.0200	mg/L	<0.447	<0.400	<0.447		
Total Metals							and the state of t		
aluminum, total	7429-90-5	E420	0.0030	mg/L	44.6	76.2	52.6	- N	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.0202	0.0162	0.00379		-
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.121	0.111	0.0386		_
barium, total	7440-39-3	E420	0.00010	mg/L	10,6	10.6	1.17		
peryllium, total	7440-41-7	E420	0.000020	mg/L	0.00285	0.00484	0,00333		
bismuth, total	7440-69-9	E420	0.000050	mg/L	0.415	0.322	0.00852		
boron, total	7440-42-8	E420	0.010	mg/L	2.31	1.17	0.312		
admium, total	7440-43-9	E420	0.0000050	mg/L	0.0152	0.0934	0.0249		
ealcium, total	7440-70-2	E420	0.050	mg/L	718	618	160		
esium, total	7440-46-2	E420	0.000010	mg/L	0.00611	0.00978	0.00637		
chromium, total	7440-47-3	E420	0,00050	mg/L	0.498	0.484			
cobalt, total	7440-48-4	E420	0.00010	1	0.141		0.203		****
copper, total	7440-50-8	E420	0.00010	mg/L		0.178	0.0506		_
iron, total	· ·	E420		mg/L	8.57	6.63	1.30		
lead, total	7439-89-6		0.010	mg/L	107	211	105		800
1000, 60101	7439-92-1	E420	0.000050	mg/L	0.266	0.269	0.0701		

Work Order

: 4 of 4 : WP2203966 Amendment 1

Client Project : City of Portage la Prairie

: Wastewater



Analytical Results

Sub-Matrix: Sludge			CI	ient sample ID	22-09-62	22-09-63	22-09-64		
(Matrix: Water)									
			Client samp	ling date / time	29-Sep-2022 11:00	29-Sep-2022 11:00	29-Sep-2022 11:00		_
Analyte	CAS Number	Method	LOR	Unit	WP2203966-001	WP2203966-002	WP2203966-003	********	
					Result	Result	Result		_
Total Metals									
lithium, total	7439-93-2	E420	0.0010	mg/L	0.104	0.110	0.0940		
magnesium, total	7439-95-4	E420	0.0050	mg/L	218	199	82.0		
manganese, total	7439-96-5	E420	0.00010	mg/L	37.5	26.6	1.86		
mercury, total	7439-97-6	E508	0.0000050	mg/L	0.00706	0.00689	0.000302		
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.462	0.448	0.411		
nickel, total	7440-02-0	E420	0.00050	mg/L	0.498	0.648	0.328		
phosphorus, total	7723-14-0	E420	0.050	mg/L	339	211	82.7		*****
potassium, total	7440-09-7	E420	0.050	mg/L	249	242	281		
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.159	0.209	0.183		
selenium, total	7782-49-2	E420	0.000050	mg/L	0.107	0.0932	0.0204		
silicon, total	7440-21-3	E420	0.10	mg/L	86.8	146	110		
silver, total	7440-22-4	E420	0.000010	mg/L,	0.0164	0.0155	0,00175		
sodium, total	7440-23-5	E420	0.050	mg/L	168	137	317	-	
strontium, total	7440-24-6	E420	0.00020	mg/L	2.80	1.99	0.462		
sulfur, total	7704-34-9	E420	0.50	mg/L	264	231	96.8		
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00200 OLM	<0.00200 DLM	<0.00200 DLM		
thallium, total	7440-28-0	E420	0.000010	mg/L	0.00168	0.00412	0.00363		
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00100 DLM	<0.00100 DLM	0.00351	****	<u>. </u>
tin, total	7440-31-5	E420	0.00010	mg/L	0.00899	0.0102	0.00194		
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0974	0.299	0.662		
tungsten, total	7440-33-7	E420	0.00010	mg/L	0,00919	0,00831	0,00689		
uranium, total	7440-61-1	E420	0.000010	mg/L	0.146	0.186	0.0175		
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.176	0.254	0,178		
zinc, total	7440-66-6	E420	0.0030	mg/L	7.99	9.48	5,41		
zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00440	0.00644	0.0109		

Please refer to the General Comments section for an explanation of any qualifiers detected.



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : WP2203966 Page : 1 of 12

Amendment :1

Client : City of Portage la Prairie Laboratory : Winnipeg - Environmental

Contact : Aaron Stechesen Account Manager : Judy Dalmaijer

Address : 97 Saskatchewan Avenue Fast Address : 4330 Nietwe Bood Fast Unit 43

ess : 97 Saskatchewan Avenue East Address : 1329 Niakwa Road East, Unit 12
Portage la Prairie MB Canada R1N 0L8 Winnipeg, Manitoba Canada R2J 3T4

 Telephone
 : 204 239 8361
 Telephone
 : +1 204 255 9720

 Project
 : Wastewater
 Date Samples Received
 : 30-Sep-2022 08:41

PO : W22006 | Issue Date : 12-Oct-2022 11:55

Site : Wastewater
Quote number : Wastewater

No. of samples received :3
No. of samples analysed :3

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Sampler

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers: Frequency of Quality Control Samples

	<i>y</i> -		

Work Order

: 3 of 12 : WP2203966 Amendment 1

Client

: City of Portage la Prairie : Wastewater

Project



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: Water

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Red	coveries	Lind Hole College State			SATE BUSINESS	Mad Davis visited	m'i,	
Total Metals	QC-MRG2-6745380		silicon, total	7440-21-3	E420	121 % MES	80.0-120%	Recovery greater than
	02							upper control limit

Result Qualifiers

Qualifier	Description
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).

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Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matr	ix:	Water
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Evaluation: * = Holding time exceedance : < = Within Holding Time

Analyte Group	Method	Sampling Date	Ex	traction / Pi	reparation			Analys	iis	
Container / Client Sample ID(s)			Preparation Date			Eval	Analysis Date	Holding Times Rec Actual		Eva
nions and Nutrients : Ammonia in Water by Colour		NEAS MAINTEANINGS	Date	STEETHERS	Actual	Special Control		Nec	Actual	_
Amber glass total (sulfuric acid)		A SHARE THE SHAR				BATTLE SALE	36-1/2/II =/II			
22-09-62	E303	29-Sep-2022	02-Oct-2022	-	-		02-Oct-2022	28 days	3 days	1
nions and Nutrients : Ammonia in Water by Colour										
Amber glass total (sulfuric acid) 22-09-63	E303	29-Sep-2022	02-Oct-2022	_	-		02-Oct-2022	28 days	3 days	✓
nions and Nutrients : Ammonia in Water by Colour								1		
Amber glass total (sulfuric acid) 22-09-64	E303	29-Sep-2022	02-Oct-2022		-		02-Oct-2022	28 days	3 days	1
nions and Nutrients : Nitrate in Water by IC										
HDPE 22-09-62	E235.NO3	29-Sep-2022	04-Oct-2022	_	-	¢	04-Oct-2022	3 days	5 days	× EH1
nions and Nutrients : Nitrate in Water by IC					2000		MILIT	1		
HDPE 22-09-63	E235.NO3	29-Sep-2022	04-Oct-2022	_	_		04-Oct-2022	3 days	5 days	× EHT
nions and Nutrients : Nitrate in Water by IC IDPE			MI WAS IN	PANETE.						
22-09-64	E235.NO3	29-Sep-2022	04-Oct-2022	_			04-Oct-2022	3 days	5 days	EH1
nions and Nutrients : Nitrite in Water by IC					Nake will be	appropriation.	ESCHE LINE			
22-09-62	E235,NO2	29-Sep-2022	04-Oct-2022	_	_		04-Oct-2022	3 days	5 days	* EHT

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nalyte Group	Method	Sampling Date	Ex	traction / Pi	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holdine	7 Times	Eval
			Date	Rec	Actual			Rec	Actual	
nions and Nutrients : Nitrite in Water by IC			HIS ON COME	A Chick	W-184	ALCOHOL:	100		-	
HDPE							Y	1		ne ner menere ware i an
22-09-63	E235.NO2	29-Sep-2022	04-Oct-2022	-	-		04-Oct-2022	3 days	5 days	± EH1
nions and Nutrients : Nitrite in Water by IC		Thought to the		Section 1		A SECTION				
HDPE						AND AND COMPANY OF	in could be built in in in			
22-09-64	E235,NO2	29-Sep-2022	04-Oct-2022	_	-		04-Oct-2022	3 days	5 days	⊅: EH1
nions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry				dini No	Balle (A)			-1		
Amber glass total (sulfuric acid) 22-09-62	E319	29-Sep-2022	03-Oct-2022		_		04-Oct-2022	28 days	5 days	1
nions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry		Control of the Control	Assessment and	Marion Fest	Greate voi		L	1		
Amber glass total (sulfuric acid)				STEED STATE	anistary:	pe / 10 0	和臣(60)			
22-09-63	E319	29-Sep-2022	03-Oct-2022		-		04-Oct-2022	28 days	5 days	✓
nions and Nutrients : Total Kjeldahl Nitrogen by Colourimetry	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)				ALL SECTION OF THE SE		No. of the last			
Amber glass total (sulfuric acid)			M. Carlotte	AND SOUTH			T	T		
22-09-64	E319	29-Sep-2022	03-Oct-2022		-		04-Oct-2022	28 days	5 days	1
nions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg.	/L)	ARTHUR SALES				Sugar Second	10 10 m	-		
Amber glass total (sulfuric acid)	Contract of the latest and the lates			PER CONTRACTOR				1		
22-09-62	E372	29-Sep-2022	30-Sep-2022	_	-		03-Oct-2022	28 days	4 days	✓
nions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg.	/L)	1000	CONTRACTOR AND ADDRESS OF THE PARTY AND ADDRES		SIE IS COL		ELECTRIC TO	-		
Amber glass total (sulfuric acid)				12-12-12-12						
22-09-63	E372	29-Sep-2022	30-Sep-2022		-		03-Oct-2022	28 days	4 days	1
nions and Nutrients : Total Phosphorus by Colourimetry (0.02 mg.	/L)		能到此系统的		L Avelya	18574 × 1, + 1	I dig diga consti	1		
Amber glass total (sulfuric acid)				1	308-7			1		
22-09-64	E372	29-Sep-2022	30-Sep-2022		-		03-Oct-2022	28 days	4 days	1
hysical Tests : Conductivity in Water				0.5	100000000000000000000000000000000000000	Mary Ton	No. of the last			-
IDPE				The second second						-
22-09-62	E100	29-Sep-2022	03-Oct-2022	_	_]		03-Oct-2022	28 days	4 days	1

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Analyte Group	Method	Sampling Date	Ex	traction / P	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
hysical Tests : Conductivity in Water					55 (2) FE #1.15	Andrew St				-
HDPE				-	National Control of the Control of t	militarios man				Ē
22-09-63	E100	29-Sep-2022	03-Oct-2022		-		03-Oct-2022	28 days	4 days	✓
hysical Tests : Conductivity in Water	经验机关 的					Nita Vice	1/4			
22-09-64	E100	29-Sep-2022	03-Oct-2022				03-Oct-2022	28 days	4 days	1
hysical Tests : FSS by Gravimetry				The St						
HDPE 22-09-62	E170	29-Sep-2022		_	-		01-Oct-2022	7 days	2 days	1
hysical Tests : FSS by Gravimetry	Local Maria Company		(中国) 以他对				Self-region 1	1		
HDPE 22-09-63	E170	29-Sep-2022	***		-		01-Oct-2022	7 days	2 days	1
Physical Tests : FSS by Gravimetry					Nation 1					
22-09-64	E170	29-Sep-2022	_	_	-		01-Oct-2022	7 days	2 days	✓,
hysical Tests : pH by Meter HDPE		Silmon More Plans		3000	DESCRIPTION OF THE PROPERTY OF		81,11			
22-09-62	E108	29-Sep-2022	03-Oct-2022	_	_		03-Oct-2022	0.25 hrs	0.26 hrs	.∞ EHTR-f
hysical Tests : pH by Meter							Attack - I was	1		
HDPE 22-09-63	E108	29-Sep-2022	03-Oct-2022		-		03-Oct-2022	0.25 hrs	0.26 hrs	. ± EHTR-F
Physical Tests : pH by Meter					isabilitativa			1		
HDPE 22-09-64	E108	29-Sep-2022	03-Oct-2022		_		03-Oct-2022	0.25 hrs	0.26 hrs	# EHTR-I
hysical Tests : TS by Gravimetry										
HDPE 22-09-62	E157	29-Sep-2022		_	_		30-Sep-2022	7 days	1 days	√

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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation	Holdin	g Times	Eval	Analysis Date	Holding Times		Eval
			Date	Rec	Actual			Rec	Actual	
hysical Tests: TS by Gravimetry	特别多为是特别的						Sec. L			
IDPE						Mark Mark Control				
22-09-63	E157	29-Sep-2022	_	-	-		30-Sep-2022	7 days	1 days	√
hysical Tests : TS by Gravimetry			100mm 超新型							
IDPE							1		1 1	
22-09-64	E157	29-Sep-2022		-	-		30-Sep-2022	7 days	1 days	✓
nysical Tests: TSS by Gravimetry				00 30 30	Sellies in	lace to a			1	
IDPE		I					1			
22-09-62	E160	29-Sep-2022			-		01-Oct-2022	7 days	2 days	1
nysical Tests: TSS by Gravimetry										
IDPE										
22-09-63	E160	29-Sep-2022	1.	-	-		01-Oct-2022	7 days	2 days	✓
hysical Tests : TSS by Gravimetry						a de la colo				
IDPE				1						
22-09-64	E160	29-Sep-2022	1-1		-		01-Oct-2022	7 days	2 days	✓
otal Metals : Total Mercury in Water by CVAAS								1	1	
Glass vial total (hydrochloric acid)										
22-09-62	E508	29-Sep-2022	04-Oct-2022	_	-		04-Oct-2022	28 days	5 days	1
otal Metals : Total Mercury in Water by CVAAS						Maria II				
Blass vial total (hydrochloric acid)										
22-09-63	E508	29-Sep-2022	04-Oct-2022	-	-		04-Oct-2022	28 days	5 days	√
otal Metals : Total Mercury in Water by CVAAS				A MODELLA	A TOTAL S					
Glass vial total (hydrochloric acid)										
22-09-64	E508	29-Sep-2022	04-Oct-2022	_	-		04-Oct-2022	28 days	5 days	√
otal Metals : Total metals in Water by CRC ICPMS										
IDPE total (nitric acid)										
22-09-62	E420	29-Sep-2022	30-Sep-2022	-	- 1		04-Oct-2022	180	5 days	✓
		1		1			1	days	1 1	

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Matrix: Water Evaluation: * = Holding time exceedance; < = Within Holding Time Analyte Group Method Sampling Date Extraction / Preparation Analysis Container / Client Sample (D(s) Holding Times Eval Preparation Analysis Date Holding Times Eval Rec Actual Date Rec Actual Total Metals : Total metals in Water by CRC ICPMS HDPE total (nitric acid) 22-09-63 E420 29-Sep-2022 30-Sep-2022 04-Oct-2022 180 5 days ✓ days Total Metals : Total metals in Water by CRC ICPMS HDPE total (nitric acid) 22-09-64 E420 29-Sep-2022 30-Sep-2022 04-Oct-2022 180 5 days days

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

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Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Quality Control Sample Type		Arrests -	C	ount			
Analytical Methods	Method	QC Lot#	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)	The State of the S	10-10-12 to 10-18-90					
Ammonia in Water by Colour	E303	676491	1	17	5.8	5.0	1
Conductivity in Water	E100	677252	1	4	25.0	5.0	1
FSS by Gravimetry	E170	679559	1	3	33,3	5.0	1
Nitrate in Water by IC	E235.NO3	674920	0	3	0.0	5.0	3c
Nitrite in Water by IC	E235.NO2	674921	0	3	0.0	5,0	30
pH by Meter	E108	677251	1	7	14.2	5.0	1
Total Kjeldahl Nitrogen by Colourimetry	E319	677193	1	14	7.1	5.0	1
Total Mercury in Water by CVAAS	E508	679862	1	5	20.0	5.0	1
Total metals in Water by CRC ICPMS	E420	674539	1	4	25.0	5.0	1
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	674429	1	9	11.1	5.0	
TS by Gravimetry	E157	674949	1	3	33.3	5.0	
rss by Gravimetry	E160	675775	1	12	8.3	5.0	1
Laboratory Control Samples (LCS)			TO STREET OF STREET	A PROPERTY OF			
Ammonia in Water by Colour	E303	676491	1	17	5.8	5.0	1
Conductivity in Water	E100	677252	1	4	25.0	5.0	
Nitrate in Water by IC	E235,NO3	674920	1	3	33.3	5.0	1
Nitrite in Water by IC	E235,NO2	674921	1	3	33,3	5,0	√
pH by Meter	E108	677251	1	7	14.2	5,0	1
Total Kjeldahl Nitrogen by Colourimetry	E319	677193	1	14	7.1	5.0	√
Total Mercury in Water by CVAAS	E508	679862	1	5	20.0	5.0	1
Total metals in Water by CRC ICPMS	E420	674539	1	4	25.0	5.0	<u> </u>
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	674429	1	9	11.1	5.0	
TS by Gravimetry	E157	674949	1	3	33.3	5.0	
TSS by Gravimetry	E160	675775	1	12	8.3	5.0	
Method Blanks (MB)		College Care of Alberta	Edition of the	Stevents and			
Ammonia in Water by Colour	E303	676491	1 1	17	5.8	5.0	,
Conductivity in Water	E100	677252	1	4	25.0	5.0	- J
SS by Gravimetry	E170	679559	1 1	3	33,3	5,0	1
Nitrate in Water by IC	E235.NO3	674920	1	3	33.3	5.0	
Nitrite in Water by IC	E235.NO2	674921	1 1	3	33,3	5.0	√
Total Kjeldahl Nitrogen by Colourimetry	E319	677193	1	14	7.1	5.0	
otal Mercury in Water by CVAAS	E508	679862	1	5	20.0	5.0	
otal metals in Water by CRC ICPMS	E420	674539	1	4	25.0	5.0	
Total Phosphorus by Colourimetry (0.02 mg/L)	E372	674429	+	9	11.1	5.0	-
TS by Gravimetry	E157	674949	1 1	3	33,3	5.0	-
TSS by Gravimetry	E160	675775	 i	12	8.3	5.0	
Matrix Spikes (MS)		5,5,10		14	0.5	5.0	

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11.1

5,0

Matrix: Water Evaluation: * = QC frequency outside specification; < = QC frequency within specification. Quality Control Sample Type William Street Count Frequency (%) Analytical Methods QC Method QC Lot# Regular Actual Expected Evaluation Matrix Spikes (MS) - Continued Ammonia in Water by Colour E303 676491 17 1 5.8 5.0 Nitrate in Water by IC 674920 0 E235.NO3 0.0 5.0 30 Nitrite in Water by IC 674921 E235.NO2 0 3 0.0 5.0 SC Total Kjeldahl Nitrogen by Colourimetry 677193 E319 1 14 7.1 5.0 1 Total Mercury in Water by CVAAS E508 679862 1 5 20.0 5.0 1 Total metals in Water by CRC ICPMS E420 674539 1 25.0 4 5.0 Total Phosphorus by Colourimetry (0.02 mg/L) E372 674429

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Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Winnipeg - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Winnipeg - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally $20 \pm 5^{\circ}$ C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TS by Gravimetry	E157 Winnipeg - Environmental	Water	APHA 2540 B (mod)	Total Solids (TS) are determined by drying an aliquot of a well-mixed sample in a pre-weighed dish to constant weight in an oven at 104 ± 1°C. The final weight minus the empty dish represents the total sollds.
TSS by Gravimetry	E160 Winnipeg - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
FSS by Gravimetry	E170 Winnipeg - Environmental	Water	APHA 2540 E (mod)	Fixed Suspended Solids (FSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. This residue is ignited to constant weight at 550°C. The remaining solids represent the Fixed Suspended Solids (FSS), while the weight lost on ignition represents the Volatile Suspended Solids (VSS). Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Nitrite in Water by IC	E235.NO2 Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Winnipeg - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Ammonia in Water by Colour	E303 Winnipeg - Environmental	Water	APHA 4500 NH3-NITROGEN (AMMONIA)	This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the automated phenate colourimetric method.
Total Kjeldahl Nitrogen by Colourimetry	E319 Winnipeg - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by colourimetric analysis.

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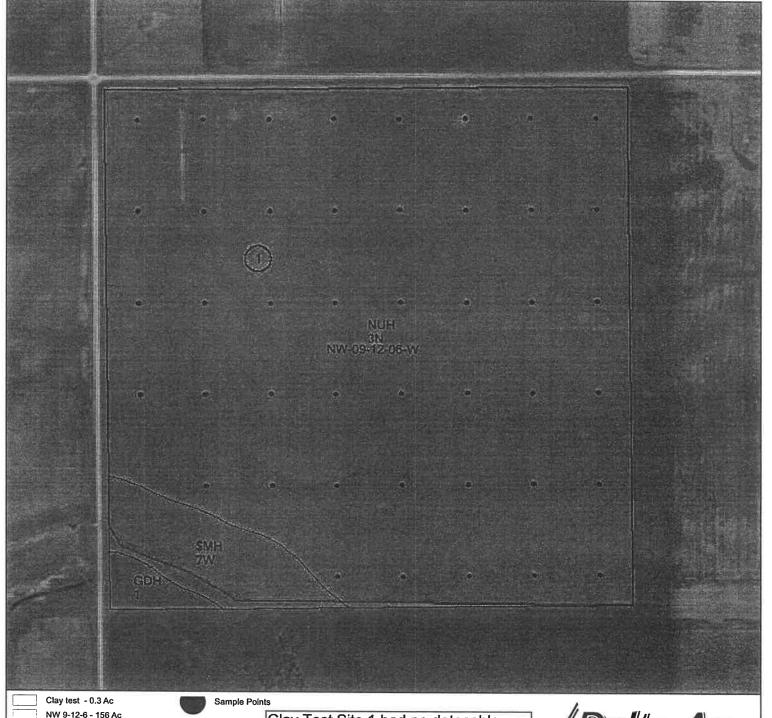
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Analytical Methods	Method / Lab	Matrix	Method Reference	Melriod Descriptions
Total Phosphorus by Colourimetry (0.02 mg/L)	E372 Winnipeg -	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
T-f-1f-1 - W-f1 - ODG IODMG	Environmental			
Total metals in Water by CRC ICPMS	E420 Winnipeg - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 Winnipeg - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
VSS by Gravimetry	EC167 Winnipeg - Environmental	Water	APHA 2540 E (mod)	Volatile Suspended Solids (VSS) are determined by filtering a well-mixed sample through a weighed standard glass-fiber filter and the residue retained on the filter is dried to a constant weight at 104 ± 1°C. This residue is ignited to constant weight at 550°C. The remaining solids represent the fixed suspended solids while the weight lost on ignition is the volatile suspended solids.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N Winnipeg - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).
Total Organic Nitrogen (Calculation)	EC363 Winnipeg - Environmental	Water	APHA 4500-NORG (TKN)/NH3-NITROGEN (NH3)	Total Organic Nitrogen is a calculated parameter. Total Organic Nitrogen = Total Kjeldah Nitrogen - Ammonia.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
A DESCRIPTION OF THE PROPERTY OF THE PARTY O			Method Reference	SWARANES MENTALEMENT OF THE STATE OF THE STA
Preparation for Ammonia	EP298 Winnipeg - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Winnipeg - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Digestion for Total Phosphorus in water	EP372 Winnipeg -	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

Delta Ag Services City of Portage Watson NW 9-12-6



NW 9-12-6 - 156 Ac

Portage Soils-Clip - 160.1 Ac

Clay Test Site 1 had no detecable water table at the 1.5 m depth.



Delta Ag Services City of Portage Watson NE 9-12-6



Boundary - 153.2 Ac
Clay Test - 0.9 Ac
Portage Soils-Clip - 160.3 Ac

SamplePoints

Clay Test Sites 1 & 2 had no detectable water table at the 1.5 m depth



Delta Ag Services City of Portage Watson SE 16-12-6



SE 16-12-06 - 160.5 Ac QuickMark2-10-4-2022_EDW

water table at the 1.5 m depth

