



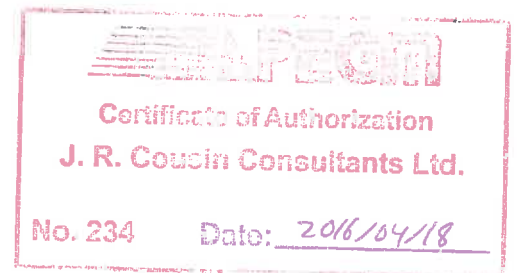
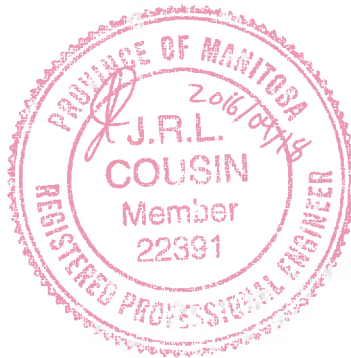
P&R 8.257 JRCC

P-118.07

**Rural Municipality of Pipestone
Environment Act Proposal
for the
Wastewater Forcemain Installation**

Prepared by:

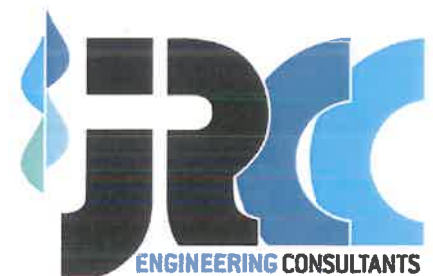
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Senior Municipal Engineer

April 2016



ACKNOWLEDGMENTS

To prepare this report various sources of information were investigated and researched. JR Cousin Consultants Ltd. (JRCC) wishes to thank the RM of Pipestone and the Manitoba Water Services Board (MWSB) who contributed to the data and content of this study. In addition, we wish to commend the RM of Pipestone and the Manitoba Water Services Board for their fortitude in addressing the need for a long-term solution to wastewater treatment for the Community of Pipestone.

REMARKS

JR Cousin Consultants Ltd. has conducted this environment act proposal in accordance with generally accepted professional engineering principles and practices for the purpose of identifying conditions that may have an environmental impact on the site. The findings and recommendations reached in this report are based on information made available to JRCC during the investigation and conditions at the time of the site investigation. Conclusions derived in this report are intended to reduce, but not wholly eliminate the uncertainty regarding potential environmental concerns on the site, and recognizes reasonable limitations with regards to time, accuracy, work scope and cost. It is possible that environmental conditions may change from the date of this report. If conditions appear different from those encountered and expressed in this report, JRCC should be informed so that mitigation recommendations can be reviewed and adjusted as required. Historical data and information obtained from personal communication used in this report, are assumed to be correct, however JRCC has not conducted further investigations into the accuracy of this data. JRCC has produced this report for the use of the client, and takes no responsibility for any third party decisions or actions based on information contained in this report.

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Appendix A

Table 1: Reston Lagoon Population, Hydraulic, and Organic Loading Projections to Design Year 20

Manitoba Conservation and Water Stewardship - Wildlife and Ecosystem Protection Branch, March 7, 2016 Email Correspondence

Driller's Well Log Reports

Appendix B

Title Page

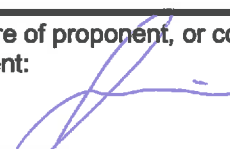
Plan 1: Proposed Forcemain Alignment

Plan 2: Reston Lagoon Layout Plan

Plan 3: Silt Fence and Pipe Trench Detail

Environment Act Proposal Form



Name of the development: Pipestone Wastewater Forcemain	
Type of development per Classes of Development Regulation (Manitoba Regulation 164/88): Class 2	
Legal name of the applicant: Rural Municipality of Pipestone	
Mailing address of the applicant: Box 99, 401 - 3rd Avenue	
Contact Person: Ms. Michelle Halls	
City: Reston	Province: Manitoba Postal Code: R0M 1X0
Phone Number: (204) 877-3327	Fax: (204) 877-3999 email: admin@rmofpipestone.com
Location of the development: Rural Municipality of Pipestone	
Contact Person: Ms. Michelle Halls	
Street Address:	
Legal Description: NE, SE 9-7-26 WPM; NE, NW 4-7-26 WPM; NE, NW 5-7-26 WPM; NE 5-7-27 WPM; NE, NW 4-7-27 WPM	
City/Town: RM of Pipestone	Province: Manitoba Postal Code: R0M 1X0
Phone Number: (204) 877-3327	Fax: (204) 877-3999 email: admin@rmofpipestone.com
Name of proponent contact person for purposes of the environmental assessment: Jason Cousin, JR Cousin Consultants Ltd.	
Phone: 204-489-0474 Fax: 204-489-0487	Mailing address: 91 A Scurfield Blvd Winnipeg, Manitoba R3Y1G4
Email address: jrccousin@jrcc.ca	
Webpage address: www.jrcc.ca	
Date: Apr 18/16	Signature of proponent, or corporate principal of corporate proponent:  Printed name:

EXECUTIVE SUMMARY

General

The RM of Pipestone has requested assistance from the Manitoba Water Services Board (MWSB) to install a new lift station and approximately 13.9 km of forcemain from the lift station to the expanded Reston wastewater treatment lagoon. An Environment Act Licence will be required from Manitoba Conservation for the installation and operation of the proposed forcemain. JR Cousin Consultants Ltd. (JRCC) was retained for the engineering services.

Description

The existing Pipestone wastewater treatment lagoon is in need of replacement due to structural concerns and potential leakage problems. Therefore MWSB and the RM proposed abandonment of the existing Pipestone lagoon with piping of the wastewater to the neighboring Reston lagoon. As the Reston lagoon is to be expanded in the near future, this was determined to be the most cost effective solution. The forcemain is proposed to be, installed from the proposed lift station in Pipestone, south along Municipal Road 153W and west along Municipal Road 37N to the Reston lagoon primary cell. The lift station and forcemain will be installed within the municipal road right-of-ways.

Population Contributing Effluent

The projected year 20 population considered for sizing the proposed forcemain included residents within Pipestone. The expanded Reston lagoon will service the communities of Reston, Pipestone, the Canupawakpa Dakota Nation (CDN), and rural residents in the RM of Pipestone. The table below summarizes the current and project year 20 populations.

Contributing Population	Current Population	Year 20 Population	Piped or Truck Hauled
Reston	586	1,042	Piped
Pipestone	161	221	Piped
Canupawakpa Dakota Nation	324	364	Truck Hauled
Rural Population	743	803	Truck Hauled

The populations in Reston and Pipestone utilize piped collection systems, while the rural residents and the CDN utilize septic systems and truck hauling for septage disposal. Therefore, the total projected year 20 population estimated to the piped collection system is 1,263 people and the projected year 20 population utilizing truck hauling is 1,167 people.

Lagoon Loading

The total projected year 20 organic loading to the lagoon primary cell would be approximately 122.7 kg BOD₅/day (peak day), which considers average daily loading from the piped communities and a peak daily load of septage hauling from the CDN and surrounding rural residents.

Based on a per capita hydraulic loading rate of 371 L/person/day for Reston and 288 L/person/day for Pipestone, the projected year 20 hydraulic load to the lagoon would be approximately 450 m³/day, which was utilized in determining the hydraulic capacity of the expanded Reston lagoon.

Lagoon Capacity

Based on a review of the existing Reston lagoon “as constructed” drawings, and the expansion design, the lagoon expanded primary cell would have an organic loading capacity of 147.6 kg BOD₅/day which would be more than sufficient for the projected organic loadings in year 20. The expanded lagoon would have a total hydraulic storage capacity of 89,089 m³, which would be sufficient for a 230 day storage period in design year 14, based on the projected hydraulic loadings.

Design Considerations

The forcemain is proposed to be 150 mm HDPE piping, and the lift station is proposed to be a fibreglass tank with a capacity of 50,000 L. The lift station will have a duplex pumping system to allow for peak flows and redundancy. A heated lift station building will be constructed next to the tank to house the pumps and electrical panel. Cleanouts will be installed along the length of the forcemain to permit pipe flushing as maintenance. Air release chambers will also be installed along the length of the forcemain, based on the changes in elevation. The forcemain pipe will be trenched to a minimum depth of 2.5 m for frost protection. As the piping will be HDPE, there is not concern for cathodic protection from the surrounding soils.

Potential Concerns and Mitigation Measures

The potential concerns identified with the forcemain and lift station installation, and associated mitigation measures include:

Potential Concern	Mitigation Measure
Emissions from construction equipment	The construction contractor will maintain heavy equipment to meet provincial and local emission standards.
Dust generation in residential areas	Dust suppression will be utilized if dry and windy conditions are a nuisance to nearby residents.
Contamination of surface and groundwater from leaks in forcemain and lift station	The forcemain pipe will be pressure tested and the lift station tank will be inspected prior to commissioning.
Spills or leaks during installation/construction works	Contractor to have emergency spill kit on site. Hazardous materials and fuel to be handled in accordance with all federal and provincial regulations.
Noise Impacts	Construction works will be limited to daylight hours only and neighboring residents will be informed of the proposed construction schedule.

Potential Concern	Mitigation Measure
Traffic Impacts	Detours will be provided by the contractor if road closures are required. Speed reduction signs will be provided in areas of installation/construction works adjacent to roadways.
Health and safety	Construction workers will be required to adhere to the safety program which will include utilizing personal protective equipment while on site. Any open pits or trenches will be clearly marked and covered if temporarily left unattended by construction crew.

Schedule and Approvals

The forcemain and lift station installation works are scheduled to begin in the spring of 2017. Approval will be required from Manitoba Infrastructure and Transportation (MIT) for the forcemain crossing PTH 83. Approval will also be required from Manitoba Hydro for crossing an overhead transmission line corridor. An Environment Act Licence is required from Manitoba Conservation for the forcemain installation.

1.0 INTRODUCTION AND BACKGROUND

The development described herein is for the installation of a wastewater forcemain from the community of Pipestone to the expanded wastewater treatment lagoon in the community of Reston, in the RM of Pipestone, Manitoba.

1.1 Introduction

The RM of Pipestone and the Manitoba Water Services Board (MWSB) are proposing to construct a new lift station in the community of Pipestone and to install a wastewater forcemain from this lift station, approximately 13.9 km to the expanded wastewater treatment lagoon currently servicing the community of Reston, Manitoba. Due to concerns with the existing wastewater treatment lagoon servicing the community of Pipestone, and the proposed expansion to occur at the Reston wastewater treatment lagoon, the RM of Pipestone and MWSB decided that the most feasible option was to combine service areas and treat all wastewater at the Reston lagoon, after expansion of the lagoon is completed. Due to the length of the forcemain pipe proposed, an Environment Act Licence is required from Manitoba Conservation for the piping installation. JR Cousin Consultants Ltd. (JRCC) was retained for the related engineering services.

1.2 Contact Information

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Unit #1A
Brandon, Manitoba
R7B 4E7
Phone: (204) 726-6080, Fax (204) 726-7196

1.3 Background Information

Pipestone is located approximately 77 km southeast of Brandon, Manitoba along PTH 2. The existing lagoon site is located at SW 15-7-26 WPM, in the RM of Pipestone. The service population utilizing the Pipestone lagoon includes residential and commercial populations within Pipestone, the surrounding rural residents in the RM of Pipestone and residents in the Canupawakpa Dakota Nation (CDN). The residents within the community are serviced via a low pressure sewer system, while the surrounding rural residents and the CDN utilize truck hauling of septage to the lagoon.

The Pipestone lagoon was constructed in 1984 as a two-cell lagoon, with one primary cell and one storage cell. From conversations with the RM personnel, the intercell pipe between the lagoon cells has been damaged and is no longer operating, therefore liquid is being pumped from the primary cell to the storage cell by the lagoon operator, when required. In addition, the lagoon primary and storage cell do not require discharge, therefore it is suspected that liquid is infiltrating into the underlying soil. Based on a planned residential development within the community, the wastewater treatment lagoon would require replacement to increase organic and hydraulic capacity and meet requirements of Manitoba Conservation for lagoon construction.

Reston is located approximately 10 km west of the community of Pipestone, Manitoba, along PTH 2, in the RM of Pipestone. The existing lagoon site is located at NE 5-7-27 WPM, to the southwest of the residential centre of Reston. The service population currently utilizing the Reston lagoon includes residential and commercial populations within Reston, bussed-in students at the public school, and surrounding rural residents. The residents within Reston are currently serviced with a gravity sewer collection system, while the surrounding rural residents utilize septic systems with truck hauling of septage to the lagoon.

The Reston wastewater treatment lagoon was constructed in 2002 with a primary cell and two storage cells of compacted clay soils. The lagoon is currently being operated under a recently issued Environmental Licence No. 2564 R, issued in February 2016. This licence was issued for the proposed expansion of the lagoon to include another two storage cells and expansion of the primary cell. The expansion of organic and hydraulic capacity in the lagoon was based on planned residential development within Reston. This lagoon currently discharges to a low lying wetland area to the east of the lagoon cells.

1.4 Description of Previous Studies

A total of six previous reports for both Reston and Pipestone lagoons were reviewed. The *RM of Pipestone Feasibility Study for the Pipestone Lagoon Upgrade and Expansion*, prepared by JR Cousin Consultants Ltd. (2015) included a site and soils investigation of the existing lagoon and described the option of constructing a new primary and secondary cell at the location of the existing lagoon.

The 2015 *RM of Pipestone Feasibility Study for Reston Lagoon Upgrade*, prepared by JR Cousin Consultants Ltd., discusses the various options for lagoon expansion and upgrading, complete with cost estimates for the recommended options.

Lagoon Capacity Review Reports, for both the Pipestone and Reston Lagoons was prepared by Genivar Consultants Ltd. in November 2012. These reports assessed the condition of the existing lagoons along with the hydraulic and organic capacities and projected hydraulic and organic loadings.

Stantec Consulting Ltd. prepared a 2002 report entitled *Reston Wastewater Lagoon Feasibility Study*. This report discussed the water and wastewater demands from the community, the contributing population and the existing lagoon capacity. This report was written prior to the 2002 lagoon expansion.

JR Cousin Consultants Ltd. prepared a report entitled *RM of Pipestone Sites Soil Report for Reston Wastewater Lagoon*, in June 2000. This report reviewed potential lagoon locations and soils for the potential lagoon sites.

The Stantec “As Constructed” plans of the Reston lagoon construction (2002) were also reviewed to assess the current organic and hydraulic capacity of the lagoon, and to review the construction details.

2.0 DESCRIPTION OF THE DEVELOPMENT

For each heading there is an information request from the Environment Act Proposal Form. These requests are repeated herein in italics followed by the pertaining response.

2.1 Land Title/Location

Certificate of Title showing the owner(s) and legal description of the land upon which the development will be constructed; or, in the case of highways, rail lines, electrical transmission lines, or pipelines, a map or maps at a scale no less than 1:50,000 showing the location of the proposed development:

The proposed lift station will be located at NE 9-7-26 WPM, in the residential centre of Pipestone. The forcemain piping will be located in:

- NE, SE 9-7-26 WPM
- NE, NW 4-7-26 WPM
- NE, NW 5-7-26 WPM
- NE, NW 6-7-26 WPM
- NE, NW 1-7-27 WPM
- NE, NW 2-7-27 WPM
- NE, NW 3-7-27 WPM
- NE, NW 4-7-27 WPM
- NE 5-7-27 WPM.

The existing Reston lagoon is located in NE 5-7-27 WPM. The lift station and forcemain will be located within Municipal Road right-of-ways, which are all owned by the RM of Pipestone. The location of the proposed lift station, forcemain and expanded lagoon layout is included on Plan 1 in Appendix D.

2.2 Owner of Land and Mineral Rights

Owner of land upon which the development is intended to be constructed, and of mineral rights beneath the land, if different from surface owner:

As land titles for the entire length of the forcemain were not obtained, Crown Land and Property Agency could not provide comment on the ownership of mineral rights along the forcemain route. From discussion with Manitoba Conservation, as the land utilized for the forcemain route is all owned by the RM of Pipestone mineral rights are not likely to be a concern during installation.

2.3 Existing Land Use

Existing land use on the site and on land adjoining it, as well as changes that will be made in such land use for the purposes of the development:

The proposed lift station will be installed in right-of-way of Fourth Street and Third Avenue in the residential centre of Pipestone. The forcemain will be installed along the Fourth Street right-of-way and First Avenue right-of-way, through residential areas of Pipestone. From there, the forcemain will be installed along the Municipal Road 153W right-of-way and the Municipal Road 37N right-of-way to the Reston lagoon. The road right-of-ways consist of municipal ditches. The majority of the adjacent lands along the forcemain route are agricultural fields, with the exception of some rural residences outside of the community of Pipestone. Residential properties are located adjacent to the road right-of-ways in the residential centre of Pipestone.

Soil would be excavated in the area of the proposed lift station and along the forcemain route, for installation of the lift station and forcemain. The forcemain installation will require road crossings of First Avenue, Municipal Road 37N, Municipal Road 156W, Municipal Road 152W, Government Road E, Municipal Road 160W, PTH 83, and an unmarked municipal road. There is also a Manitoba Hydro overhead transmission corridor just east of the Reston lagoon that will require crossing.

2.4 Land Use Designation/Zoning Designation

Land use designation for the site and adjoining land as identified in a development plan adopted under The Planning Act or The City of Winnipeg Act, and the zoning designation as identified in a zoning by-law, if applicable:

The RM indicated that the forcemain route along Fourth Street and First Avenue was designated as General Development, while the forcemain route along Municipal Road 53W and 37N are zoned as Agricultural General, based on zoning designations in the RM of Pipestone. Both of these zoning designations have conditional uses for utilities.

2.5 Description of Development

Description of proposed development and schedule for stages of the development, including proposed dates for planning, design, construction, commissioning, operation, and decommissioning and/or termination of operation (if known), identifying major components and activities of the development as applicable (e.g. access road, airstrip, processing facility, waste disposal area, etc.).

2.5.1 Project Schedule

The proposed forcemain installation is scheduled to begin in the spring of 2017. The initial Reston lagoon expansion cell is scheduled to be constructed in the fall of 2016, and the second expansion cell for the Reston lagoon is scheduled to be constructed in the spring of 2017. Commissioning of the forcemain would occur on completion of the pipe installation. The decommissioning of the Pipestone lagoon would begin after the forcemain has been commissioned.

2.5.2 Population Contributing Effluent

Population data for the combined service areas was obtained from the Reston and Pipestone lagoon feasibility studies completed in 2015, as this information was determined to be reliable

for determining the lagoon capacity and pipe sizing. The service populations utilizing the Reston lagoon include residents within the communities of Reston, Pipestone, the Canupawakpa Dakota Nation (CDN) and the surrounding rural residents.

2.5.2.1 Reston

Reston consists of residential and commercial populations. The feasibility study indicated a 2015 service population of 550 people and a year 20 population of 1,000 people, considering an annual growth rate of 3.04%. The commercial population was estimated to have an equivalent population of 5 people in 2015, and an equivalent population of 8 people in 2035. The bussed-in students from the surrounding rural residences were estimated to have an equivalent population of 31 people in 2015, and an equivalent population of 34 people in 2035, corresponding to a 0.4% growth rate in the rural population. The total population contributing to the lagoon from the piped collection system in Reston is estimated to be 1,042 people in design year 20.

2.5.2.2 Pipestone

Pipestone consists of residential and commercial populations. The feasibility study indicated a 2015 service population of 154 people and a year 20 population of 217 people, considering an annual growth rate of 1.65%. The commercial population was estimated to have an equivalent population of two people in 2015, and an equivalent population of four people in 2035. The total population contributing to the lagoon from the piped collection system in Pipestone is estimated to be 221 people in design year 20.

2.5.2.3 Rural Population

Additional wastewater loading from the surrounding rural residents in the RM of Pipestone was also considered in the Feasibility Studies. The rural population in the RM of Pipestone was estimated to be 743 people in 2015, and 803 people in design year 20, considering a 0.4% growth rate. This population would be considered for truck hauling of septage to the lagoon from the surrounding rural community.

2.5.2.4 Canupawakpa Dakota Nation

The RM of Pipestone has entered into a servicing agreement with the CDN to allow septic tank cleanouts on the Reserve land to be hauled to the Pipestone lagoon. From the Feasibility Study, the 2015 on-reserve population was estimated to be 324 people and the year 20 on-reserve population was estimated to be 364 people, which corresponds to a 0.63% growth rate. This population would be considered for truck hauling of septage to the lagoon.

2.5.2.5 Population Summary Table

The current and projected populations for the service area have been included in the summary table below and in Table 1 of Appendix A.

Table A: Summary of Population for the Service Area

Contributing Population	Current Population	Year 20 Population
Reston	586	1,042
Pipestone	161	221
Canupawakpa Dakota Nation	324	364
Rural Population	743	803

The populations in the communities of Reston and Pipestone utilize piped collection systems, while the rural residents and the CDN utilize septic systems and truck hauling for septage disposal. Therefore, the total projected year 20 population estimated to the piped collection system is 1,263 people and the projected year 20 population utilizing truck hauling is 1,167 people.

2.5.3 Wastewater Production

Reston currently utilizes a gravity sewer collection system for the collection of residential wastewater, and utilizes a lift station to pump influent to the lagoon primary cell. Pipestone utilizes a low pressure sewer system for the collection of residential wastewater with discharge into the Pipestone lagoon. Truck haul dumping of septage also occurs in the lagoon primary cell from the surrounding rural residents and CDN residents. The expanded wastewater treatment lagoon will service the population described in Section 2.5.2 above, to design year 14 hydraulically and 20 year organically.

2.5.3.1 Organic Loading

The organic loading calculation is based upon the organics in typical residential wastewater and septage. A typical value of 0.076 kg BOD₅/person/day was utilized to estimate the organic loading from the residents within Reston and Pipestone, through the piped collection systems. Based on the projected year 20 population of 1,263 people on the piped collection system, an organic load of 95.7 kg BOD₅/day will be generated.

Truck hauled septage from surrounding rural and CDN septic tanks also needs to be considered as additional organic loading to the lagoon, as it will typically impact the peak daily BOD loading. The rural housing population density of 2.4 people/household and the CDN housing population density of 2.96 people/household, was assumed, along with a volume of 4,500 L per septic tank and annual pump outs. Based on these assumptions, each septic tank from the rural residents would generate 4.15 kg BOD₅, while the CDN septic tanks would generate 5.18 kg BOD₅.

Septage is permitted to be hauled to the lagoon over the time period of 135 days, as specified by Manitoba Conservation in the Environment Act Licence. Within the 135 day hauling period, it is likely the majority of the hauling will occur during the normal Monday to Friday work week resulting in only 96 days effluent is hauled to the

lagoon. Based on the rural and CDN populations, housing densities and 96 hauling days, an average of six tanks would need to be pumped out daily in design year 20. The organic load, based on six septic tank pump outs daily, would be 27 kg BOD₅/day.

The RM of Pipestone will be responsible for limiting truck haul dumping to the lagoon from septic tanks. The estimated organic loading in the expanded lagoon is based on six tank loads per day. Based on the size of a typical septic hauling truck, this would be the equivalent of two truckloads of septage per day. One of the concerns from Manitoba Conservation with truck hauling and septage dumping are the odours generated at the lagoon during disposal and therefore, this is accounted for in the primary cell sizing.

The current total daily organic loading from piped sources and from truck haul loading of septage (considered peak day loading), is approximately 84.9 kg BOD₅/day. The daily loading is expected to increase to 122.7 kg BOD₅/day (peak day) in design year 20, due to the projected increase in population. Table 1, in Appendix A, shows the current and projected year 20 organic loadings to the lagoon.

2.5.3.2 Hydraulic Loading

The hydraulic loading to the wastewater treatment lagoon is comprised of three waste streams: water usage, water treatment plant backwash water and infiltration. Manitoba Conservation requires a facultative lagoon to have sufficient storage for a 230 day period over the winter and spring months (November 1 to June 15).

Estimates of water usage for Reston were based on historical water usage, backwash water and lift station hour meters between December 2011 and August 2013. As Pipestone is serviced with private wells and a low pressure sewer system, there is no historical metering system on the water usage. Therefore, the water usage was considered to be similar to that estimated for the nearby Community of Reston. The water usage recorded in the Community of Reston was 254 L/person/day, and a water usage of 250 L/person/day was assumed for the Community of Pipestone.

Based on lift station records from Reston, the average per capita hydraulic flow between November 1 and June 15 (i.e. hydraulic storage period) was 371 L/person/day. During the same period, the average water usage at the water treatment plant was 254 L/person/day and the backwash was 18 L/person/day. Therefore, the balance of wastewater flow of 99 L/person/day was considered to be infiltration.

The summer flows to the lagoon are significantly higher, however since the lagoon can be discharged multiple times during the period from June 15 to November 1 as hydraulics require, the higher summer flows are not included in the lagoon sizing.

Pipestone is expected to have similar rainfall events as Reston, however the collection system in Reston is a gravity sewer collection system, whereas Pipestone has low pressure sewer collection system. Low pressure sewer systems typically have less infiltration than gravity sewer collection systems. A typical infiltration rate of 15% or 38 litres/person/day has been assumed for infiltration, which is typical for similar communities with low pressure sewer (LPS) systems. Based on this infiltration rate the average per capita hydraulic flow was estimated to be 288 L/person/day in Pipestone.

Based on the above per capita wastewater production rates of the 371 L/person/day (Reston) and 288 L/person/day (Pipestone), the current hydraulic loading to the lagoon from the piped collection system would be approximately 270 m³/day during the storage period. The projected hydraulic loading to the lagoon in design year 20 from the piped collection system would be approximately 450 m³/day. Table 1, in Appendix A, shows the current and projected hydraulic loadings to the lagoon.

The additional volume of wastewater from truck hauled septage has not been included as the septage is not permitted to be hauled to the lagoon during the majority of the 230 day storage period.

2.5.4 Lagoon Capacity

The organic and hydraulic storage capacity of the expanded Reston lagoon was determined from a review of the 2015 *Reston Lagoon Upgrade and Expansion Environment Act Proposal* by JRCC. The requirements for lagoon loading and sizing were based on the Manitoba Conservation *Design Objectives for Standard Sewage Lagoons* (July 1985) and the Manitoba Conservation *Information Bulletin – Design Objectives for Wastewater Treatment Lagoons* (September 2014).

2.5.4.1 Organic Treatment Capacity

Provincial guidelines stipulate that the organic loading rate of a lagoon must not exceed 56 kg BOD₅/ha/day in the primary cell. The effluent surface area at a 0.75 m depth in the primary cell is used to determine the treatment surface area. The expanded primary cell will have a surface area at a height of 0.75 m from the cell floor of approximately 26,354 m². This surface area will be capable of treating approximately 147.6 kg BOD₅/day, based on the organic treatment rate required by Manitoba Conservation. This organic treatment capacity would be sufficient for the projected year 20 organic loadings to the lagoon.

2.5.4.2 Hydraulic Storage Capacity

Provincial guidelines stipulate that the hydraulic storage capacity of a lagoon is determined from the volume of the top half of the primary cell and the storage cell(s) volume, between the discharge pipe invert and the maximum liquid level (1.5 m depth). The expanded lagoon primary and storage cells are estimated to have a total

hydraulic storage capacity of 88,089 m³. This total storage volume would be sufficient to design year 14, over the 230 day storage period.

2.5.5 Topography and Geotechnical Investigation

Topographic surveys and geotechnical investigations were conducted at the Pipestone and Reston lagoons on September 18, 2013 (Pipestone) and September 19, 2013 and August 14, 2014 (Reston) to determine the site elevations and soil conditions.

2.5.5.1 Topography

The elevation difference between the community of Pipestone and the operating level of the Reston lagoon, to determine static head loss, was based on available topographic survey data. The existing ground elevation within the community of Pipestone is approximately 439.0 m and the top of dike elevation at the Reston lagoon is 468.4 m. A detailed topographic survey of the lift station site and forcemain route will be conducted during the detailed design phase of the project.

2.5.5.2 Past Geotechnical Data

Based on the most recent test holes conducted adjacent to the Pipestone lagoon, on native agricultural land, the general soil profile consisted of:

- Surficial topsoil – 0.0 m to 0.3 m
- Organic clay – 0.3 m to 0.7 m
- High plastic silty clay – 0.7 m to 2.8 m
- Silty and medium plastic clay – 2.8 m to 3.6 m.

Based on the most recent test holes conducted adjacent to the Reston lagoon, also on native agricultural land, the general soil profile consisted of:

- Surficial topsoil – 0.0 m to 0.3 m
- Sandy clay – 0.3 m to 1.8 m
- Medium plastic silty clay – 1.8 m to 3.5 m.

Standing water was recorded at depths ranging from 1.2 to 4.3 m below the surface. Refusal or bedrock was not encountered in the test holes.

Past test holes conducted to the east of the Reston lagoon by JRCC in 2000, which would be in the forcemain route indicated a general soil profile of:

- Surficial topsoil – 0.0 m to 0.3 m
- Low plastic silt till – 0.3 m – 1.2 m
- Medium plastic clay till – 1.2 m to 6.0 m

Driller's well log reports for the quarter sections along the forcemain route were reviewed for background soils and groundwater information (attached in Appendix A). These well logs indicated that the subsoil profile generally consists of surficial sand and gravel, down to approximately 6.0 m below the surface. The groundwater level was recorded at depths of 3.0 m to 4.0 m below the surface.

2.5.6 Design Guidelines

Manitoba Conservation and Water Stewardship guidelines for wastewater collection piping follows the *Recommended Standards for Water Works, 2012* [i.e. Ten State Standards], which require that a wastewater forcemain must maintain a horizontal separation distance of 3.0 m from a water main pipe. In addition, where pipe crossings are required, a minimum vertical separation of 0.45 m must be maintained.

2.5.7 Lift Station and Forcemain Design and Construction

As discussed above, the population in the community of Pipestone is anticipated to be 221 people in the year 2035. Based on an estimated wastewater production of 288 L/person/day, the average daily flow is 44.2 L/min. Using the Harmon Peaking Factor, which is a population based method used to determine peaking factor, the peaking factor is 4.13. Thus, the peak wastewater flow is estimated to be 182.55 L/min (3.04 L/sec).

The proposed lift station will be located within the community of Pipestone and will be connected to the existing low pressure sewer system. The low pressure sewer will discharge into the lift station and will then be pumped to the Reston lagoon. Since there are concerns with highly concentrated wastewater corroding the concrete lift station barrel, a fibreglass storage tank is proposed. A 2.4 m diameter fibre glass tank will be used with a storage capacity of 50,000 L to provide sufficient storage capacity and the floats within the tank will be positioned such that the pumps will run a maximum of 6 - 8 times per hour. A duplex suction pump system will be used to pump sewage to the Reston lagoon and will be located within a heated building constructed beside the storage tank. Pumps will be sized so that one pump is in service while the other is in standby, however in event of high flows both pumps can operate. In event of failure of one pump, the other pump can temporarily provide service by itself.

Approximately 13.9 km of forcemain piping is required to be installed between the community of Pipestone and the Reston lagoon. The forcemain will be 150 mm high density polyethylene (HDPE) DR 17 piping, based on friction and head loss between Pipestone and the Reston lagoon. Cleanouts will be installed along the length of the forcemain to permit pipe flushing. As the piping will be HDPE, there is not concern for cathodic protection from the surrounding soils.

The proposed piping will be installed south through the community of Pipestone for approximately 900 m, south from the Community of Pipestone along Municipal Road 53W for approximately 800 m and then west along Municipal Road 37N for approximately 12.2 km to the Reston lagoon. Plan 1 in Appendix B, shows the proposed forcemain alignment. The proposed forcemain piping will be discharged directly into the Reston lagoon primary cell so flows from the

Community of Pipestone will not affect the forcemain flows from the Community of Reston. During the design phase of the project a detailed topographic survey of the piping route would be required to confirm the number of air release chambers needed along the piping route, based on the changes in elevation.

The forcemain pipe will be installed with a minimum soil cover of 2.5 m below the surface for frost protection. The trench will be backfilled with excavated soil material and compacted. Any large stones or boulders will not be placed in the trench backfill, to prevent damage to the pipe. Conceptual design plans for the forcemain are provided in Appendix B.

2.5.7.1 Summary of Selected Design Criteria

A summary of the design parameters pertinent to the Pipestone forcemain and lift station installation is provided below:

- The lift station and forcemain servicing the population in Pipestone.
- A 50,000 L fiberglass lift station with a duplex pumping system.
- A 150 mm HDPE forcemain installed from the proposed Pipestone lift station 13.9 km to the expanded Reston lagoon primary cell.
- A combined equivalent population of 1,263 people from the piped collection systems in Reston and Pipestone.
- A combined population of 1,167 people from rural residents in the RM and CDN utilizing truck hauling to the lagoon.
- An expanded Reston lagoon with an organic treatment capacity of 147.6 kg BOD₅/day.
- A projected daily organic loading rate of 122.7 kg BOD₅/day in design year 20, including piped wastewater and truck hauled septage.
- An expanded Reston lagoon with a hydraulic storage capacity of 88,968 m³, suitable for a daily hydraulic load of 387 m³/day.
- A projected daily hydraulic loading rate of 383 m³/day in design year 14, including piped wastewater.
- A minimum pipe burial depth of 2.5 m for frost protection.
- Re-seeding ground surface in disturbed areas of construction.
- Installing silt fencing in roadside ditches on either end of the piping route.
- Maintaining minimum separation distance between forcemain pipe and any water distribution piping.

2.5.8 Decommissioning

The existing lagoon cells in Pipestone will be decommissioned upon commissioning of the proposed wastewater forcemain to the Reston lagoon. A detailed decommissioning plan will be

provided to Manitoba Conservation describing the decommissioning process for the Pipestone Lagoon.

3.0 POTENTIAL ENVIRONMENTAL IMPACTS

The biophysical and socioeconomic environment as related to the development, and potential impacts of the development on the environment.

3.1 Releases to Air, Water, Land

3.1.1 Air

In general, nuisance odours are not expected from the proposed lift station or forcemain, as both will be contained and will not allow wastewater to sit for any extended periods of time. Odours can be produced at the lagoon primary cell from higher organic loads with increased organic loading and septage dumping.

There is a potential for greenhouse gas emissions during installation works from heavy equipment and transport vehicles. There is also a potential for dust generation and nuisance conditions in the residential areas of Pipestone adjacent to the forcemain route.

3.1.2 Water

Pollutants that have the potential to be released into surface and ground water from the wastewater collection system in Pipestone include: coliforms, organic wastes, suspended solids, nutrients and other materials that are typically found in residential wastewater. Wastewater could be released if the forcemain or lift station experienced a leak.

Pollutants that have a potential to be released into the surface or ground water during the forcemain or lift station installation, include: petroleum hydrocarbons (PHCs) from heavy equipment leaks or fuel spills, and sediments from soil erosion.

3.1.3 Land

The landscape would not be altered significantly by the proposed forcemain and lift station installation, as the majority of the infrastructure would be buried below the surface. The lift station building will change the landscape at the site of the lift station. Areas disturbed by the construction can be impacted through soil erosion if not covered or re-vegetated.

Pollutants that may be released to the land are typically petroleum hydrocarbons (PHCs), which could be released during the installation activities. Equipment leaks or re-fuelling incidences could result in an impact to the land during installation.

3.2 Wildlife

The proposed lift station site and forcemain route are located in the “Aspen Parkland” Ecoregion of Canada. Characteristic wildlife includes white-tailed deer, coyote, snowshoe hare, cottontail, red fox, northern pocket gopher, and ground squirrel. Bird species include waterfowl, sharp-tailed grouse and black-billed magpie.

The typical concern on any construction project is that wildlife species would be displaced through the construction works. However, from the location of the forcemain route within the road right-of-way, it is unlikely that the installation works will have any significant impact on wildlife in the area. In addition, the Manitoba Conservation Wildlife and Ecosystem Protection Branch was contacted regarding the proposed lagoon upgrade project and they indicated that there were no occurrences of species at risk at the proposed site in the database. Refer to the March 7, 2016 email correspondence, attached in Appendix A.

3.3 Fisheries

The typical concerns for impacts to fish and fish habitat would be from sediments released during construction and from untreated wastewater effluent leaking into surface water utilized by fish species. These impacts could include the reduction of water quality or physical disturbances which would create an unfavorable environment for fish or fish eggs.

However, impacts to fish species are unlikely as the forcemain pipe and lift station will be contained and pressure tested for leaks prior to being commissioned. In addition, the nearest body of surface water with fish species is Stony Creek, and it is located approximately 10 km from the forcemain route.

3.4 Forestry

There are no potential impacts to forestry as the area of the forcemain route has been previously cleared and no potential forestry areas would be impacted.

3.5 Vegetation

Characteristic vegetation in the “Aspen Parkland” Ecoregion is classified as being a transitional grassland ecoclimate, with a significant degree of farmland. The native landscape is characterized by trembling aspen, oak groves and mixed tall shrubs and intermittent fescue grasslands.

The only removal of vegetation will be grasses along the road right-of-ways during pipe trenching. Manitoba Conservation Wildlife and Ecosystem Protection Branch were contacted regarding occurrences of rare or endangered vegetative species in their database in the area of the proposed forcemain route. The Branch indicated that there were no occurrences of any species at risk at the proposed site in the provincial database. Refer to Manitoba Conservation Wildlife and Ecosystem Protection Branch email correspondence dated March 7, 2016, attached in Appendix A.

3.6 Noise Impacts

There is a potential for noise impacts in the immediate area of the installation works due to the heavy equipment utilized during installation. The operation of the lift station, is not likely to have the potential for noise impacts to nearby residents.

3.7 Health and Safety

There is a potential for impacts to the health and safety of workers and the public during the installation works, as heavy equipment will be utilized on site and pits/trenches will be excavated.

3.8 Heritage Resources

The RM of Pipestone was not aware of any historic or heritage resources located along the proposed forcemain route. The Manitoba Historic Resources Branch was contacted regarding the proposed site, however did not provide a comment on the potential for impacts to significant heritage resources.

3.9 Socio-Economic Implications

The forcemain installation may have impacts on local traffic, if roads need to be temporarily closed during pipe crossings, or speed reductions in areas of active construction. Construction related economic activity should have a positive economic impact on the Communities of Pipestone and Reston. In addition, the Community of Pipestone will have increased wastewater treatment capacity, which will encourage continued growth in the community.

3.10 Aesthetics

The forcemain and lift station installation is not expected to have adverse impacts on the general aesthetics of the area, as the majority of the infrastructure will be buried below grade and the surface restored by re-seeding with grass. The lift station building will be constructed to match the aesthetics of the surrounding residential neighborhood.

4.0 MANAGEMENT PRACTICE

Proposed environmental management practices to be employed to prevent or mitigate adverse implications from the impacts identified above.

4.1 Mitigation of Impacts to Air

To reduce the potential for odour nuisance from the lagoon, the primary cell will be sized greater than the requirements for projected year 20 organic loadings from the service population. This takes into consideration the maximum allowable organic loading rate of 56 kg BOD₅/ha/day into the lagoon primary cell, which impacts the odours generated from a wastewater treatment lagoon peak day organic loading during septic truck dumping. Therefore, nuisance odours as a result of organic over-loading are not expected.

Emissions from construction equipment and transport vehicles will be controlled through regular maintenance by the contractor, and will meet all provincial and local standards. Dust suppression methods (i.e. water spraying) will be utilized at the construction site if dry conditions create excessive dust through excavation and trenching activities and transport of materials, and becomes a nuisance to nearby residents.

4.2 Mitigation of Impacts to Water

The forcemain will be pressure tested prior to commissioning, to ensure there are no leaks. All joints in the lift station will be inspected prior to commissioning to ensure proper sealing.

Silt fencing will be utilized on drainage outlets from the municipal road ditch along the forcemain route, to prevent siltation from affecting down gradient water bodies. Disturbance of the soils adjacent to the installation works would be minimized during construction.

To minimize impacts from construction equipment on surface and ground waters, the construction specifications should outline to the contractor the requirements for handling and storage of fuels and hazardous materials during construction, as per federal and provincial regulations. The specification should state wording similar to the following:

- Diesel or gasoline should be stored in double walled tanks or have containment dikes around fuel containers for volumes greater than 68.2 L (15 gallons) or in compliance with provincial regulations.
- Clean up material should be available at the site, consisting of a minimum of 25 kg of suitable commercial sorbent, 30 m² of 6 mil PVC, and an empty fuel barrel for spill collection and disposal.
- Fuel storage and hazardous material areas established for project construction should be located a minimum of 100 m from a water body, and comply with provincial regulations.
- Waste hazardous materials from construction activities and equipment must be properly collected and disposed of in compliance with provincial regulations.
- Hazardous material handling and storage are to follow all provincial and federal regulations including WHMIS and spill containment requirements.

- In the event of spills or leaks of fuels and hazardous materials, the contractor or operator should notify the project engineer and provincial authorities.

The specifications should state that when working near water with construction equipment:

- Construction equipment is to be properly maintained to prevent leaks and spills of fuels, lubricants, hydraulic fluids or coolants.
- There can be no re-fueling or servicing of construction equipment within 100 m of a water body.

There would be no impacts to navigation as a result of the forcemain and lift station installation, as the affected area is not near a navigable body of water. Overland flooding around the affected area would be unlikely as there are no significant bodies of water in the vicinity of the works.

4.3 Mitigation of Impacts to Land

To minimize the potential for the release of Petroleum Hydrocarbon (PHC) pollutants into the soil, the mitigation measures described in Section 4.2 above outlining fuel handling procedures should be followed.

To minimize the potential for soil erosion, the disturbed soil areas would be re-seeded with grass.

4.4 Mitigation of Noise Impacts

To minimize the potential for noise impacts, construction equipment and transport vehicles should have mufflers working properly, and construction activities should be limited to daylight hours only. Residents living nearby the construction works will be informed of the works and construction schedule, prior to the contractor beginning installation.

4.5 Mitigation of Impacts to Health and Safety

To minimize impacts to health and safety of workers and the public, the construction specifications should state that the contractor have a safety program in place, in accordance with all federal and provincial health and safety regulations. During construction, site access will be limited to the construction crew only and personal protective equipment will be worn by all of the contractor's employees in accordance with the contractor's safety program. Safety notices will be placed along the side of municipal roads during installation works to warn passing motorists of the works. Any open pits/trenches will be temporarily covered when left by the construction crew, and these areas will be marked off with reflective tape to prevent a falling hazard.

4.6 Mitigation of Impacts to Heritage Resources

If any significant historic or heritage resources are discovered in the course of excavation or construction, the specifications should identify that works are to temporarily cease and an investigation of the site is to be conducted by the RM, Manitoba Historic Resources Branch and any other authority as may be required.

4.7 Mitigation of Impacts to Socio-Economics

Traffic impacts will be mitigated by providing detours in areas where the pipe crosses roadways and road closures are required. In addition, speed reduction signage will be placed along the side of the road in areas of active construction alongside the roads.

5.0 RESIDUAL AND CUMULATIVE EFFECTS

Residual environmental effects remaining after the application of mitigation measures, to the extent possible expressed in quantitative terms relative to baseline conditions

No negative residual effects are anticipated through the construction and operation of the expanded and upgraded wastewater treatment lagoon, due to the mitigation measures described above. Positive residual effects are expected from the use of a properly lined and sized wastewater treatment lagoon in Reston, which will allow for expansion of the service area in the future.

Cumulative effects are anticipated from the construction of the second expansion cell at the Reston lagoon occurring at the same time as the forcemain installation works. The results of these simultaneous construction projects are expected to be more heavy traffic along Road 37N.

6.0 MONITORING AND FOLLOW-UP

Proposed follow-up activities that will be required at any stage of development (eg. Monitoring, inspection, surveillance, audit, etc.)

Monitoring and maintenance of the lift station pumps will occur by the RM staff on a regular basis. The RM will be responsible for forcemain piping maintenance. If there are any leaks detected in the forcemain pipe the RM staff will repair immediately. The construction contractor is to ensure that grass growth occurs on areas disturbed by the installation works, after the installation is complete.

7.0 FUNDING AND APPROVALS

Name and address of any Government Agency or program (federal, provincial or otherwise) from which a grant or loan of capital funds have been requested (where applicable). Other federal, provincial or municipal approvals, licences, permits, authorizations, etc. known to be required for the proposed development, and the status of the project's application or approval.

Partial funding for the project works are being sought from the Manitoba Water Services Board. Approval will be required from Manitoba Infrastructure and Transportation (MIT) for crossing PTH 83 with the forcemain. Approval from Manitoba Hydro will also be required for installing the forcemain through the overhead transmission line corridor. Office of Drinking Water was contacted, however as no water mains will be altered through the proposed works, an additional application for the works through the Manitoba Conservation Office of Drinking Water will not be required. No additional approvals, licences or permits are anticipated for the pipe and lift station installation.

8.0 PUBLIC CONSULTATION

Results of any public consultations undertaken or to be undertaken in conjunction with project planning.

Public consultation by the RM of Pipestone has not been conducted to date for the residents of Pipestone and Reston. Public notices for residents in the area of construction would be distributed prior to construction beginning. Public comments will be received by Manitoba Conservation through the public registry during the Environmental Act Proposal review period.

9.0 CONCLUSION

Based on the design of the project and the implementation of the mitigation measures identified in Section 4.0 above, no significant negative environmental impacts are anticipated.

The proponent would like to complete the requirements of the Environment Act Proposal as soon as possible so that the design and construction works can begin in a timely fashion.

JR Cousin Consultants Ltd. requests that a draft copy of the Environment Act Licence be forwarded for review prior to issuing the final Environment Act Licence.

APPENDIX

Appendix A

Table 1: Reston Lagoon Population, Hydraulic, and Organic Loading Projections to Design Year 20

Manitoba Conservation and Water Stewardship - Wildlife and Ecosystem Protection Branch,
March 7, 2016 Email Correspondence

Driller's Well Log Reports

Appendix B

Title Page

Plan 1: Proposed Forcemain Alignment

Plan 2: Reston Lagoon Layout Plan

Plan 3: Silt Fence and Pipe Trench Detail

Appendix A

Table 1: Reston Lagoon Population, Hydraulic, and Organic Loading Projections to Design Year 20

Manitoba Conservation and Water Stewardship - Wildlife and Ecosystem Protection Branch,
March 7, 2016 Email Correspondence

Driller's Well Log Reports

Table 1: Reston Lagoon Population, Hydraulic, and Organic Loading Projections to Design Year 20

**TABLE 1
RESTON LAGOON
POPULATION, HYDRAULIC, AND ORGANIC LOADING PROJECTIONS TO DESIGN YEAR 20**

TIMELINE		POPULATION						ORGANIC LOADING					HYDRAULIC LOADING				
CALENDAR YEAR	DESIGN YEAR	RESTON POPULATION	PIPESTONE POPULATION	RURAL POPULATION	CANUPAWAKPA DAKOTA NATION	RURAL SEPTIC TANK PUMP OUTS PER DAY	CDN SEPTIC TANK PUMP OUTS PER DAY	DAILY PER CAPITA BOD LOAD	DAILY BOD PRODUCTION (Piped Collection Systems)	DAILY BOD PRODUCTION (Rural Truck Haul Septage)	DAILY BOD PRODUCTION (CDN Truck Haul Septage)	DAILY BOD PRODUCTION	PRIMARY CELL Area Req'd at 0.75m (@56kg BOD/ha/day)	PER CAPITA WASTEWATER PRODUCTION (Reston) (Includes Infiltration)	PER CAPITA WASTEWATER PRODUCTION (Pipestone) (Includes Infiltration)	TOTAL DAILY WASTEWATER PRODUCTION (cu. m.)	WASTEWATER VOLUME REQUIRED DURING STORAGE PERIOD For 230 Days (cu. m.)
				0.4% annual growth	0.6% annual growth	Residents/Home 2.4	Residents/Home 3.0	(kg)	(kg)	4.15 kg BOD/tank	5.18 kg BOD/tank	(kg)	(sq. m.)	L/person/day	L/person/day		
2015	0	586	156	743	324	4	2	0.076	56.4	16.6	10.4	83.4	14,889	371	292	263	60,509
2016	1	603	160	746	326	4	2	0.076	58.0	16.6	10.4	84.9	15,165	371	292	270	62,181
2017	2	621	162	749	328	4	2	0.076	59.6	16.6	10.4	86.5	15,448	371	292	278	63,917
2018	3	639	165	752	330	4	2	0.076	61.1	16.6	10.4	88.1	15,726	371	292	285	65,615
2019	4	658	168	755	332	4	2	0.076	62.8	16.6	10.4	89.7	16,025	371	292	293	67,429
2020	5	678	171	758	334	4	2	0.076	64.5	16.6	10.4	91.5	16,332	371	292	301	69,312
2021	6	697	174	761	336	4	2	0.076	66.2	16.6	10.4	93.2	16,634	371	292	309	71,160
2022	7	717	177	764	338	4	2	0.076	67.9	16.6	10.4	94.9	16,945	371	292	318	73,063
2023	8	739	179	767	340	4	2	0.076	69.8	16.6	10.4	96.8	17,278	371	292	327	75,105
2024	9	760	182	770	342	4	2	0.076	71.6	16.6	10.4	98.6	17,606	371	292	335	77,119
2025	10	782	185	773	344	4	2	0.076	73.5	16.6	10.4	100.5	17,944	371	292	344	79,190
2026	11	805	188	776	346	4	2	0.076	75.5	16.6	10.4	102.4	18,292	371	292	354	81,322
2027	12	828	191	779	348	4	2	0.076	77.5	16.6	10.4	104.4	18,650	371	292	363	83,515
2028	13	852	194	782	350	4	2	0.076	79.5	16.6	10.4	106.5	19,017	371	292	373	85,771
2029	14	877	197	785	352	4	2	0.076	81.7	16.6	10.4	108.6	19,396	371	292	383	88,093
2030	15	903	201	788	354	4	2	0.076	83.8	16.6	10.4	110.8	19,785	371	292	393	90,482
2031	16	929	204	791	356	4	2	0.076	86.1	16.6	10.4	113.0	20,185	371	292	404	92,940
2032	17	956	207	794	358	4	2	0.076	88.4	16.6	10.4	115.3	20,597	371	292	415	95,470
2033	18	984	210	797	360	4	2	0.076	90.8	16.6	10.4	117.7	21,020	371	292	426	98,073
2034	19	1,012	214	800	362	4	2	0.076	93.2	16.6	10.4	120.2	21,456	371	292	438	100,752
2035	20	1042	217	803	364	4	2	0.076	95.7	16.6	10.4	122.7	21,905	371	292	450	103,508

Manitoba Conservation and Water Stewardship - Wildlife and Ecosystem Protection Branch,
March 7, 2016 Email Correspondence

Oswald Wohlgemut

From: Friesen, Chris (CWS) [Chris.Friesen@gov.mb.ca]
Sent: Monday, March 07, 2016 8:38 AM
To: 'Oswald Wohlgemut'
Subject: RE: Pipestone Forcemain Installation - Species at Risk

Oswald

Thank you for your information request. I completed a search of the Manitoba Conservation Data Centre's rare species database and found no occurrences at this time for your area of interest (ie: the rights-of-way indicated below).

The information provided in this letter is based on existing data known to the Manitoba Conservation Data Centre at the time of the request. These data are dependent on the research and observations of CDC staff and others who have shared their data, and reflect our current state of knowledge. **An absence of data in any particular geographic area does not necessarily mean that species or ecological communities of concern are not present;** in many areas, comprehensive surveys have never been completed. Therefore, this information should be regarded neither as a final statement on the occurrence of any species of concern, nor as a substitute for on-site surveys for species as part of environmental assessments.

Because the Manitoba CDC's Biotics database is continually updated and because information requests are evaluated by type of action, any given response is only appropriate for its respective request. Please contact the Manitoba CDC for an update on this natural heritage information if more than six months pass before it is utilized.

Third party requests for products wholly or partially derived from Biotics must be approved by the Manitoba CDC before information is released. Once approved, the primary user will identify the Manitoba CDC as data contributors on any map or publication using Biotics data, as follows as: Data developed by the Manitoba Conservation Data Centre; Wildlife Branch, Manitoba Conservation and Water Stewardship.

This letter is for information purposes only - it does not constitute consent or approval of the proposed project or activity, nor does it negate the need for any permits or approvals required by the Province of Manitoba.

We would be interested in receiving a copy of the results of any field surveys that you may undertake, to update our database with the most current knowledge of the area.

If you have any questions or require further information please contact me directly at (204) 945-7747.

Chris Friesen
Coordinator
Manitoba Conservation Data Centre
204-945-7747
chris.friesen@gov.mb.ca
<http://www.gov.mb.ca/conservation/cdc/>

From: Oswald Wohlgemut [<mailto:owohlgemut@jrcc.ca>]
Sent: March-01-16 9:10 AM
To: Friesen, Chris (CWS)
Subject: Pipestone Forcemain Installation - Species at Risk

Hello Chris,

J.R. Cousin Consultants is preparing an Environment Act Proposal on behalf of the Municipality of Pipestone for the installation of a forcemain between the community of Pipestone and the Reston wastewater lagoon. The construction works will occur on the following land sections:

- NE, SE 9-7-26 WPM
- NE, NW 4-7-26 WPM

- NE, NW 5-7-26 WPM
- NE, NW 6-7-26 WPM
- NE, NW 1-7-27 WPM
- NE, NW 2-7-27 WPM
- NE, NW 3-7-27 WPM
- NE, NW 4-7-27 WPM
- NE 5-7-27 WPM.

The forcemain route will be located with the Municipal Road right-of-ways, which are cleared ditches. Therefore tree removal will not be required. The route is surrounded by agricultural land and residential properties. Works will include pipe trenching and lift station installation.

Please provide information on any at risk wildlife and plant species that are known to exist in the locations outlined above, as well as any registered habitat areas, or known migrating bird species as we would like to include that information in the EAP.

Please let us know if you have any questions.

Thank you,

Oswald Wohlgemut, M.Sc.
Environmental Scientist

J.R. Cousin Consultants Ltd.
Phone: (204) 489-0474
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www.jrcc.ca

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Driller's Well Log Reports

Location: SE9-7-26W

Well_PID: 108349

Owner: DEN HEMUSET

Driller: Ransom Drilling td.

Well Name:

Well Use: PRODUCTION

Water Use: Livestock

UTMX: 359215.591

UTMY: 5490611.49

Accuracy XY:

UTMZ:

Accuracy Z:

Date Completed: 1998 Jul 24

WELL LOG

From To Log
(ft.) (ft.)

0 21.0 YELLOW AND BROWN SAND AND GRAVEL

21.0 31.0 COARSE GREY SAND AND GRAVEL

31.0 32.0 SILTY GREY CLAY

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	24.6	CASING	5.00			INSERT	PVC
24.6	30.2	PERFORATIONS		4.00	0.018		WIRE WOUND S. S.
20.0	31.0	GRAVEL PACK					SILICA S.

Top of Casing: 2.400 ft. above ground

PUMPING TEST

Date: 1998 Jul 24

Pumping Rate: 21.003 Imp. gallons/minute

Water level before pumping: 11.9 ft. below ground

Pumping level at end of test: ?? ft. below ground

Test duration: ??? hours, ?? minutes

Water temperature: ?? degrees F

REMARKS

A 2 INCH PVC WASHDOWN VALVE IS IN A 4X2 REDUCER IN BOTTOM OF SCREEN,

A 5X4 PVC ADAPTER IS ON TOP OF SCREEN IN A 5 INCH PVC COUPLER ON
BOTTOM OF CASING

Location: NE9-7-26W

Well_PID: 176020

Owner: BRIAN NIXON

Driller: Paddock Drilling Ltd.

Well Name:

Well Use: PRODUCTION

Water Use: Domestic

UTMX: 359373

UTMY: 5491364

Accuracy XY: 1 EXACT [<5M] [GPS]

UTMZ: 442

Accuracy Z: 4 FAIR - Shuttle at Centroid

Date Completed: 2012 Jun 15

WELL LOG

From To Log

(ft.) (ft.)

0 6.0 SANDY TOPSOIL
6.0 8.0 COARSE BROWN SAND
8.0 9.0 GRAVEL LAYER
9.0 19.0 COARSE SAND AND GRAVEL, VERY CLEAN
19.0 20.0 VERY FINE GREY SAND

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	9.0	CASING	30.00				CORRUGATED FIBERGLASS
9.0	18.0	PERFORATIONS			0.040	SAW CUT	FIBERGLASS
9.0	18.0	GRAVEL PACK					WASHED SAND
8.0	9.0	CASING GROUT					BENTONITE
0	8.0	GRAVEL PACK					WASHED SAND

Top of Casing: 2.000 ft. above ground

PUMPING TEST

Date: 2012 Jun 15

Pumping Rate: 30.000 Imp. gallons/minute
Water level before pumping: 10.0 ft. below ground
Pumping level at end of test: 17.0 ft. below ground
Test duration: 1 hours, minutes
Water temperature: ?? degrees F

REMARKS

PIPESTONE, PUMP TEST IS RECOVERY

Location: NE9-7-26W

Well_PID: 21504

Owner: WRB

Driller: M & M Drilling Rivers Ltd.

Well Name: OBSERVATION WELL

Well Use: TEST WELL

Water Use:

UTMX: 359233.326

UTMY: 5491429.54

Accuracy XY: UNKNOWN

UTMZ:

Accuracy Z: UNKNOWN

Date Completed: 1974 Apr 24

WELL LOG

From	To	Log
(ft.)	(ft.)	

0	14.0	SAND-YELLOW COARSE
---	------	--------------------

14.0	16.0	GRAVEL-COARSE
------	------	---------------

16.0	30.0	SILT OR FINE SAND
------	------	-------------------

30.0	36.0	SAND-MEDIUM COARSE
------	------	--------------------

WELL CONSTRUCTION

From	To	Casing	Inside	Outside	Slot	Type	Material
(ft.)	(ft.)	Type	Dia.(in)	Dia.(in)	Size(in)		

0	29.0	casing	2.00			T & C	
---	------	--------	------	--	--	-------	--

29.0	36.0	perforations	2.00			SL. PIPE	
------	------	--------------	------	--	--	----------	--

Top of Casing: 0 ft. below ground

PUMPING TEST

Date:

Pumping Rate: 0 Imp. gallons/minute

Water level before pumping: 10.0 ft. below ground

Pumping level at end of test: ?? ft. below ground

Test duration: hours, minutes

Water temperature: ?? degrees F

REMARKS

MWSB PIPESTONE,23FT.W.OF PUMP WELL

Location: NE9-7-26W

Well_PID: 42008

Owner: RM OF PIPESTONE

Driller: COSENS DRILLING LTD.

Well Name: PIPESTONE NORTH (NO. 2)

Well Use: PRODUCTION

Water Use: Municipal

UTMX: 359375

UTMY: 5491238

Accuracy XY: 1 EXACT [<5M] [GPS]

UTMZ:

Accuracy Z: UNKNOWN

Date Completed: 1981 Sep 25

WELL LOG

From	To	Log
(ft.)	(ft.)	
0	13.0	SAND
13.0	16.0	SAND AND GRAVEL
16.0	30.0	MEDIUM SAND
30.0	37.0	FINE TO MEDIUM SAND, LOOKS CLEAN
37.0	37.5	CLAY OR TILL

WELL CONSTRUCTION

From	To	Casing	Inside	Outside	Slot	Type	Material
(ft.)	(ft.)	Type	Dia.(in)	Dia.(in)	Size(in)		
2.0	27.0	casing	5.00			INSERT	PVC
27.0	37.0	perforations	5.00		0.018	WIRE WOUND	S. S.

0 37.5 gravel pack 5.00 10.00 NO. 20-40 SILICA S.

Top of Casing: 0 ft. below ground

PUMPING TEST

Date: 0019 Sep 01

Pumping Rate: 32.982 Imp. gallons/minute

Water level before pumping: 13.0 ft. below ground

Pumping level at end of test: 17.0 ft. below ground

Test duration: hours, 30 minutes

Water temperature: ?? degrees F

REMARKS

LOADING STATION - MWSB COMMUNITY WELL PROGRAM. AGRI WATER PROJECT,
WATER RIGHTS FILE. AT SITE OF TH-4. WELL INVENTORY/GPS COMPLETED BY
MWSB IN JAN 2008.

Location: NE9-7-26W

Well_PID: 42005

Owner: RM OF PIPESTONE

Driller: COSENS DRILLING LTD.

Well Name: PIPESTONE SOUTH (NO. 1)

Well Use: PRODUCTION

Water Use: Municipal

UTMX: 359374

UTMY: 5491220

Accuracy XY: 1 EXACT [<5M] [GPS]

UTMZ:

Accuracy Z: UNKNOWN

Date Completed: 1981 Sep 24

WELL LOG

From To Log

(ft.) (ft.)

0 20.0 SAND, COARSE LAYER AT 15 FEET

20.0 32.0 MEDIUM SAND

32.0 37.0 FINE SAND

37.0 38.0 TILL OR CLAY

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
2.0	25.0	casing	5.00			INSERT	PVC
25.0	35.0	perforations	5.00		0.018	WIRE WOUND	S. S.
18.0	30.0	gravel pack	5.00			NO. 20-40	SILICA S.

Top of Casing: 2.000 ft. above ground

PUMPING TEST

Date: 0019 Sep 01

Pumping Rate: 29.987 Imp. gallons/minute

Water level before pumping: 13.0 ft. below ground

Pumping level at end of test: 20.0 ft. below ground

Test duration: hours, 30 minutes

Water temperature: ?? degrees F

REMARKS

LOADING STATION - MWSB COMMUNITY WELL PROGRAM. AGRI WATER PROJECT. AT SITE OF TH-1. WELL INVENTORY/GPS COMPLETED BY MWSB IN JAN 2008.

Location: NE9-7-26W

Well_PID: 21503

Owner: WRB

Driller: M & M Drilling Rivers Ltd.

Well Name: PS-1

Well Use: TEST WELL

Water Use:

UTMX: 359233.326

UTMY: 5491429.54

Accuracy XY: UNKNOWN

UTMZ:

Accuracy Z: UNKNOWN

Date Completed: 1974 Apr 22

WELL LOG

From (ft.)	To (ft.)	Log
0	14.0	SAND-COARSE YELLOW
14.0	16.0	GRAVEL-COARSE

16.0 30.0 NO RETURNS

30.0 40.0 SAND- MEDIUM COARSE TILL- GREY AT 40 FEET

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	32.0	casing	2.00			T & C	
32.0	39.0	perforations	2.00			SL. PIPE	

Top of Casing: 0 ft. below ground

PUMPING TEST

Date:

Pumping Rate: 19.987 Imp. gallons/minute

Water level before pumping: 11.0 ft. below ground

Pumping level at end of test: ?? ft. below ground

Test duration: 1 hours, minutes

Water temperature: ?? degrees F

Location: NE9-7-26W

Well_PID: 21502

Owner: WRB

Driller: M & M Drilling Rivers Ltd.

Well Name: PS-2

Well Use: TEST WELL

Water Use:

UTMX: 359233.326

UTMY: 5491429.54

Accuracy XY: UNKNOWN

UTMZ:

Accuracy Z: UNKNOWN

Date Completed: 1974 Apr 23

WELL LOG

From (ft.)	To (ft.)	Log
0	15.0	SAND-BROWN
15.0	30.0	SAND& GRAVEL COARSE
30.0	39.0	SAND-DARK GREY VERY DIRTY

39.0 42.0 SAND-FINE& SILT TILL- CLAYEY GREY SOFT AT 42 FEET

WELL CONSTRUCTION

From (ft.)	To (ft.)	Casing Type	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0	22.0	casing	2.00			T & C	
22.0	29.0	perforations	2.00			SL. PIPE	

Top of Casing: 0 ft. below ground

PUMPING TEST

Date:

Pumping Rate: 19.987 Imp. gallons/minute

Water level before pumping: 13.0 ft. below ground

Pumping level at end of test: ?? ft. below ground

Test duration: 3 hours, minutes

Water temperature: ?? degrees F

REMARKS

MWSB PIPESTONE,S.SIDE 1ST.AVE.@ S.END OF 2ND.ST.,EC=500MM,NACL=25PPM,
H=16GPG,FE=0,NITRATE NITROGEN=0,CHEMICAL ANALYSIS,PUMP TESTED ZONE
32-39FT.@ 5IGPM.

Location: NE-1-7-27W

Well_PID: 10036

Owner: DEPT MINES & SURVEYS

Driller: MCHARG DRILLING

Well Name:

Well Use: TEST WELL

Water Use:

UTMX: 354294.858

UTMY: 5489826.57

Accuracy XY: UNKNOWN

UTMZ:

Accuracy Z:

Date Completed: 1967 Aug 15

WELL LOG

From (ft.)	To (ft.)	Log
------------	----------	-----

0 16.0 GRAVEL

16.0 256.8 TILL, VERY DARK GREY

256.8 299.8 SHALE, VERY DARK GREY

No construction data for this well.

Top of Casing: 0 ft. below ground

No pump test data for this well.

REMARKS

E-LOGGED, GROUND LEVEL ELEV EST 1460 FT

Location: NW1-7-27W

Well_PID: 3987

Owner: WRB

Driller: International Water Supply

Well Name: RESTON TH #10

Well Use: TEST WELL

Water Use:

UTMX: 353499.616

UTMY: 5489851.71

Accuracy XY: UNKNOWN

UTMZ:

Accuracy Z: UNKNOWN

Date Completed: 1962 Apr 17

WELL LOG

From To Log

(ft.) (ft.)

0 0.5 TOPSOIL

0.5 6.0 LIGHT BROWN SANDY CLAYEY SILT

6.0 21.0 LIGHT BROWN SILTY CLAY

21.0 24.0 GREY AND BROWN SILTY CLAY

24.0 25.0 SANDY CLAY

25.0 101.9 TILL, GREY, SANDY, SILTY, CLAY AND GRAVEL

101.9 204.9 FAIRLY SOFT TILL

204.9 230.8 TILL, GREY, SANDY, SILTY, CLAY AND GRAVEL

230.8 261.8 GREY SANDY SILTY CLAY AND GRAVEL, ODD STREAKS OF GRAVEL

261.8 262.8 LIMESTONE BOULDERS

262.8 265.8 GREY SHALE

No construction data for this well.

Top of Casing: 0 ft. below ground

No pump test data for this well.

REMARKS

GROUND LEVEL ELEV EST 1470 FT

Location: NW-4-7-27W

Well_PID: 75959

Owner: RM OF PIPESTONE

Driller: Paddock Drilling Ltd.

Well Name: LAGOON SITE TH #2

Well Use: TEST WELL

Water Use:

UTMX: 348540.288

UTMY: 5489999.45

Accuracy XY: UNKNOWN

UTMZ:

Accuracy Z:

Date Completed: 1993 Jun 21

WELL LOG

From To Log

(ft.) (ft.)

0 7.0 SANDY GRAVELLY TILL

7.0 16.0 FIRM BROWN TILL

16.0 20.0 FIRM GREY TILL

No construction data for this well.

Top of Casing: 0 ft. below ground

No pump test data for this well.

REMARKS

SOUTH HOLE, S OF TH #1, DRILLED USING 6 INCH DIAM FLIGHT AUGERS,

BACKFILLED WITH DRILL CUTTINGS

Appendix B

Title Page

Plan 1: Proposed Forcemain Alignment

Plan 2: Reston Lagoon Layout Plan and Pipe Detail

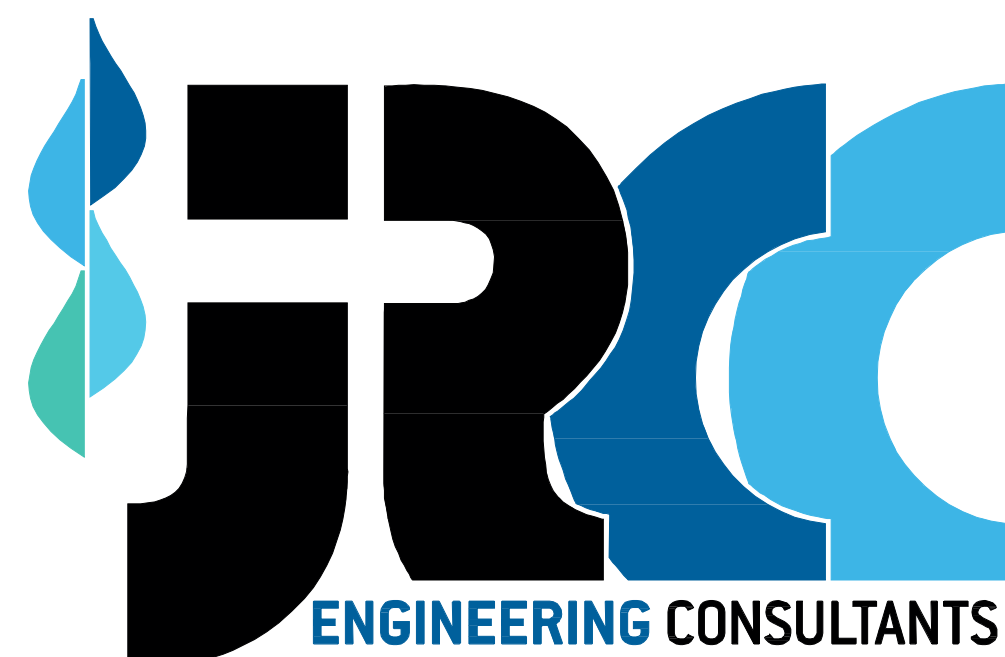
Plan 3: Silt Fence and Pipe Trench Detail

RURAL MUNICIPALITY OF PIPESTONE

FORCEMAIN EAP

PLAN INDEX

- PLAN 1. PROPOSED FORCEMAIN ALIGNMENT
- PLAN 2. RESTON LAGOON LAYOUT PLAN
- PLAN 3. SILT FENCE AND PIPE TRENCH DETAILS



JR Cousin Consultants Ltd.

91A Scurfield Blvd. Winnipeg MB R3Y 1G4

p. (204) 489-0474

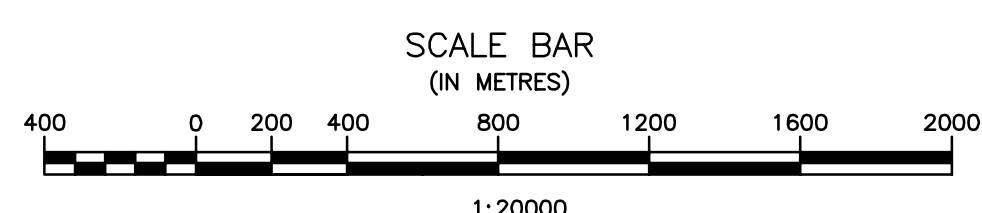
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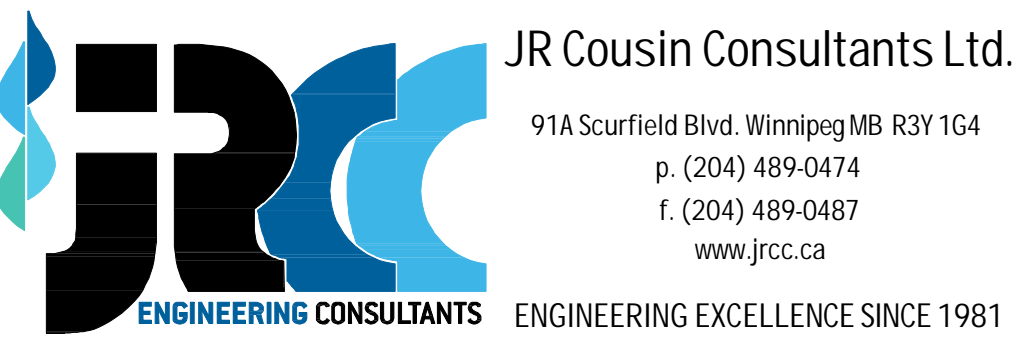
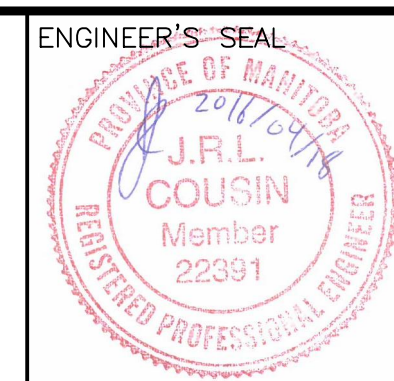
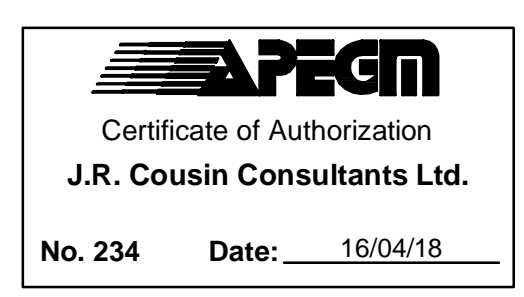


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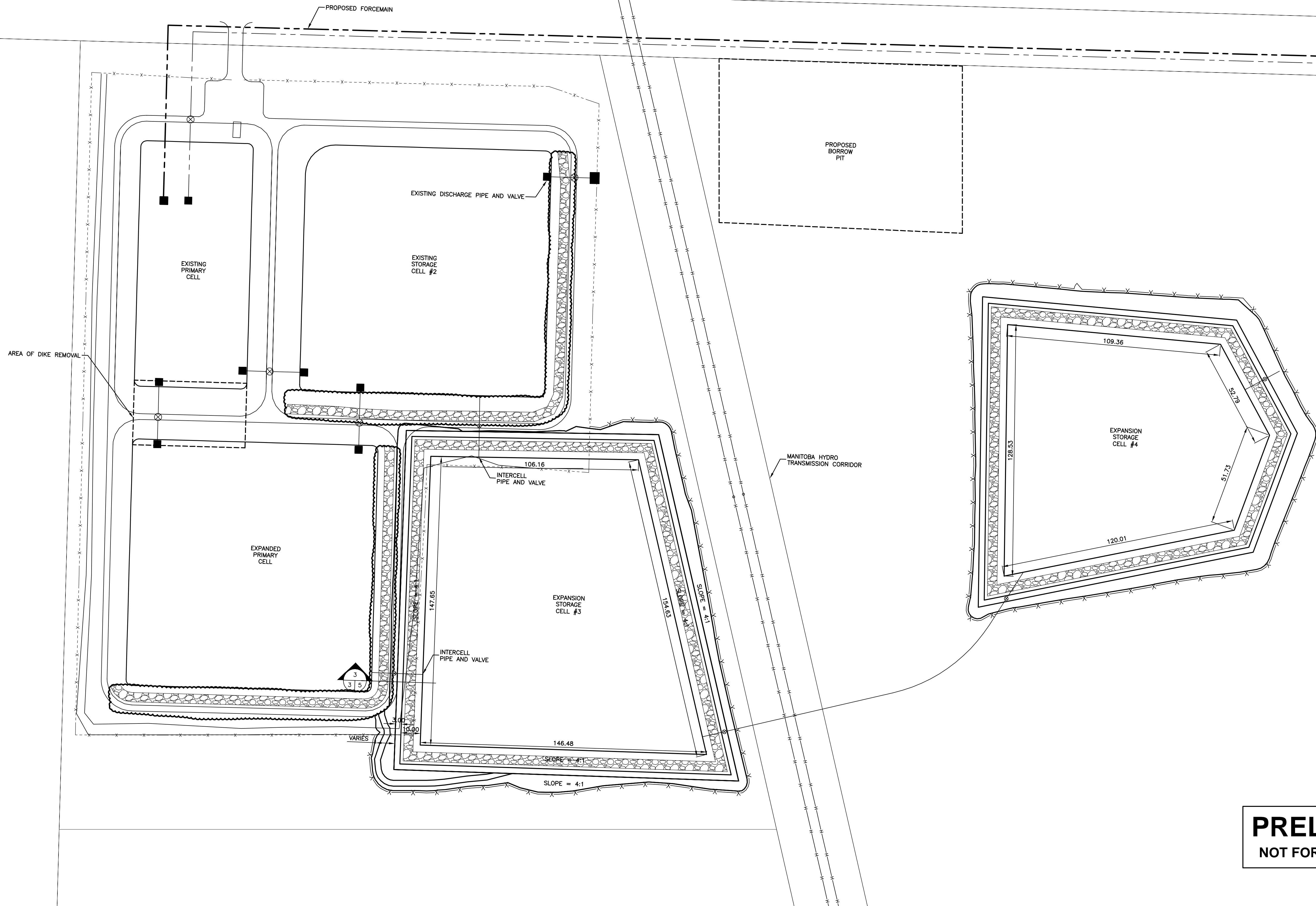
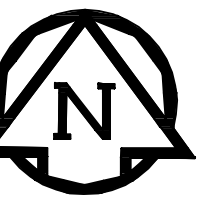
No.	REVISIONS	DATE	INITIALS	B.M. EL.

LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION BUT NO GUARANTEE IS GIVEN OR IMPLIED THAT ALL EXISTING UNDERGROUND STRUCTURES/UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL UNDERGROUND STRUCTURES/UTILITIES MUST BE OBTAINED FROM THE APPROPRIATE AUTHORITY/OWNER, BY THE CONTRACTOR, BEFORE PROCEEDING WITH CONSTRUCTION.

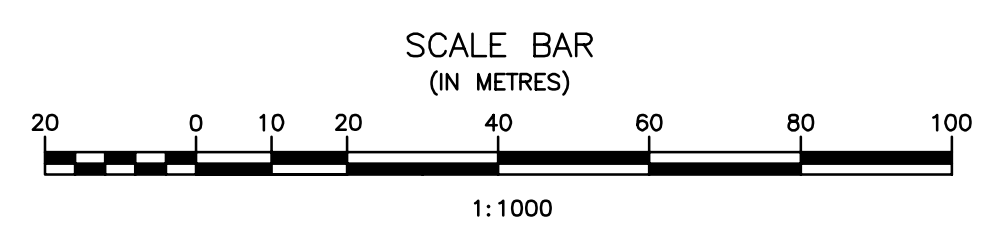


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DESIGNED BY: OW	FORCEMAIN EAP
DRAWN BY: MF	TITLE: PROPOSED FORCEMAIN ALIGNMENT
REVIEWED BY: JRC	SCALE: 1:20000
	DATE: 16/01/25
	PLAN: 1
	SHEET: 1 of 3

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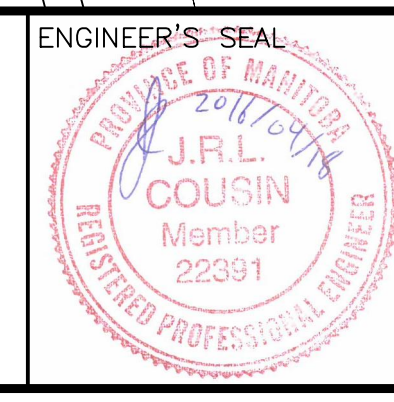
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APEGM
Certificate of Authorization
J.R. Cousin Consultants Ltd.
No. 234 Date: 16/04/18



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CODE: P-118.07	DESIGNED BY: OW	DRAWN BY: RH	REVIEWED BY: JRC	PROJECT: RURAL MUNICIPALITY OF PIPESTONE FORCEMAIN EAP	TITLE: RESTON LAGOON LAYOUT PLAN	SCALE: 1:1000	DATE: 13/11/28	PLAN: 2	SHEET: 2 of 3
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