

MANITOBA MINNESOTA TRANSMISSION PROJECT

POST-CONSTRUCTION WATER COURSE CROSSINGS MONITORING REPORT – 2020

February 2021

Prepared for:

Manitoba Hydro

By:



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Aquatic Environment Specialists

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EXECUTIVE SUMMARY

As outlined in *The Environment Act* Licence for the Manitoba Minnesota Transmission Project (Licence No. 3288), construction, operation, and maintenance of the Project adhered to mitigation found within the EIS and supporting materials, as well as Environmental Protection Plans (EnvPP). Included in the Project EnvPP is an obligation to monitor the effectiveness of mitigation measures. This report provides documentation of desktop surveys and site visits conducted at 33 watercourse crossing sites located along the single 500 kV AC Manitoba Minnesota Transmission line during summer 2020.

At the time of monitoring, the Project was fully constructed with all towers in place and conductors strung. Of the 33 Aqua-100 series Environmentally Sensitive Sites (ESS) assessed, mitigation measures were only deemed to be not in compliance with prescribed mitigation at one site, Aqua-130 (Pine Creek). Woody debris from riparian clearing was observed in the channel at Aqua-130 during site visit. Removal of the debris was recommended to prevent channel blockage during spring run-off and potentially blocking the movement of fish. In accordance with the above recommendation the woody debris was removed by the contractor and removal was confirmed by Manitoba Hydro inspectors on August 5, 2020. Monitoring in 2020 was the first and final year of monitoring water course crossings along the MMTP alignment and no follow-up site visits are recommended for summer 2021.

ACKNOWLEDGEMENTS

Manitoba Hydro is thanked for the opportunity to conduct this project.

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TABLE OF CONTENTS

	page
1.0 Introduction.....	1
2.0 Study Area	1
3.0 Methods.....	3
4.0 Results.....	4
Aqua-130	4
5.0 References.....	5
6.0 Tables.....	6
7.0 Maps.....	9
8.0 Photos.....	35

LIST OF TABLES

Table 1.	Summary of compliance with mitigation for all ESS assessed using aerial and desktop surveys in 2020. Shaded cells represent sites visited by North/South Consultants on June 29, 2020. Bold text indicates non-compliance with mitigation measures.	7
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LIST OF PHOTOS

Photo 1.	Aerial photo of Aqua-103 (Assiniboine River) showing full compliance with prescribed mitigation, June 29, 2020.	36
Photo 2.	Aerial photo of Aqua-109 (Red River) showing full compliance with prescribed mitigation, June 29, 2020.....	36
Photo 3.	Ground visit at Aqua-109 (Red River) showing good riparian coverage and growth. June 29, 2020.....	37
Photo 4.	Aerial photo of Aqua-117 (Cooks Creek) showing full compliance with prescribed mitigation, June 29, 2020.	37
Photo 5.	Ground visit at Aqua-117 (Cooks Creek) showing good riparian growth and stable banks. June 29, 2020.....	38
Photo 6.	Aerial photo of Aqua-129 (Pine creek Diversion) showing full compliance with prescribed mitigation, June 29, 2020.	38

Photo 7.	Large woody debris observed in the channel at Aqua-108 (La Salle River), June 29, 2020.....	39
Photo 8.	Large woody debris observed at Aqua-118 (Fish Creek) on the edge of the RoW within the riparian zone and near the water course crossing, June 29, 2020.....	39
Photo 9.	Minor centerline rutting observed at Aqua-119 (Unnamed Creek), June 29, 2020.....	40
Photo 10.	Cleared woody debris present within the channel at Aqua-130 (Pine Creek), June 29, 2020.....	40

LIST OF APPENDICES

Table A1-1.	A list of mitigation measures for water course crossings on the 500 kV Manitoba Minnesota Transmission Project (MMTP) (Source: Manitoba-Minnesota Transmission Project Construction Environmental Protection Plan August 2019).....	43
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1.0 INTRODUCTION

Manitoba Hydro has constructed a 500 kilovolt (kV) transmission line in southeastern Manitoba that includes additions and upgrades to three associated transmission stations at Dorsey, Riel and Glenboro South. The Manitoba-Minnesota Transmission Project (the Project) consists of approximately 213 km of single circuit, 500 kV AC transmission line (D604I) that starts at the existing Dorsey Converter Station northwest of Winnipeg, in the RM of Rosser, and connects at the Manitoba-Minnesota border to a new transmission line proposed by Minnesota Power, called the Great Northern Transmission Line.

An Environmental Monitoring Plan (EMP) was developed as part of the Manitoba-Minnesota Transmission Project (MMTP) Environmental Impact Statement (EIS) and was submitted for review and approval by regulatory authorities. Included in the Project EMP is an obligation to monitor water course crossings to verify the implementation and effectiveness of mitigation prescribed for areas adjacent to watercourses, including riparian buffers, erosion control, and temporary water course crossings. Water course crossing monitoring consisted of one site visit to each identified water course crossing in the first spring and/or summer following construction. This report provides documentation of desktop surveys and site visits conducted at 33 water course crossings located along the single 500 kV AC transmission line.

2.0 STUDY AREA

A detailed description of the aquatic environment within the Project study area can be found in Chapter 8 of the Project EIS (Manitoba Hydro 2015). The description below provides an overview of the study area in relation to the aquatic habitat spanned by the Project.

The Project is located predominantly within the Red River Basin, where fish habitat has been historically affected by agricultural activity. Channelized waterways and constructed agricultural drains with poor quality riparian vegetation are prevalent in areas under crop production. The Project crosses two major watersheds, the Assiniboine River Basin and the Red River Basin, and seven sub-watersheds, including the Lower Assiniboine, La Salle River, Red River, Seine River, Cooks Creek/Devils Creek, Rat River and Roseau River. The transmission line crosses 75 watercourses, including rivers, streams, creeks and agricultural drains of which 33 were considered fish habitat and assigned as Aqua-100 series Environmentally Sensitive Sites (ESS). The water course crossings are inhabited by a possible nine aquatic Species of Conservation Concern (SOCC).

The Lower Assiniboine River sub-watershed encompasses an area of approximately 2,485 km² and is dominated by agriculture which has influenced many of the riparian areas in the region. The Project crosses 15 watercourses in this sub-watershed: two were classified as Type A habitat and one each of types B, C, and D habitats. The remaining 10 watercourses were Type E habitat

(Milani 2013). One watercourse, the Assiniboine River is known to support aquatic SOCC such as the Mapleleaf (*Quadrula quadrula*), Chestnut Lamprey (*Ichthyomyzon castaneus*) and Lake Sturgeon (*Acipenser fulvescens*). The fish habitat sensitivity rating is high for the Assiniboine River due to aquatic SOCC and is moderate for Sturgeon Creek due to the presence of a diverse fish community and its uniform habitat extends well outside of the Local Assessment Area (LAA).

The La Salle River sub-watershed drains an area of 2,426 km² with land use consisting largely of agriculture with a mix of urban, residential, deciduous forest as well. Aquatic habitats in this watershed are moderately to severely affected by anthropogenic activities. The Project crosses 14 watercourses in the La Salle River sub-watershed: one supports high sensitivity fish habitat (La Salle River; Type A habitat) and is known or suspected to support aquatic SOCC. The remaining 13 watercourse crossings consist of agricultural drains (three low-sensitivity Type D habitat and 10 Type E habitat that do not support fish)

The Project crosses two watercourses in the Red River sub-watershed which drains an area of 96,716 km²; the Red River itself and the Red River Floodway. The Red River is considered highly sensitive supporting a diverse fish community including aquatic SOCC and habitat to support spawning, rearing, overwintering and migration. The Floodway habitat is ranked as moderate. The Red River is classified as a Type A habitat and the Floodway a Type B habitat (Milani 2013).

The Seine River sub-watershed is similar in makeup to the La Salle River sub-watershed in that land use is dominated by agriculture. Urban development in the sub-watershed includes the southeast corner of Winnipeg, the city of Steinbach, and the towns of Ste. Anne and Niverville. There are 15 watercourse crossings in the sub-watershed: three Type A habitat (two crossings of the Seine River and one of its unnamed tributaries), one Type B habitat, three Type C, two type D and six type E crossings. The southern crossing of the Seine River and its unnamed tributary support the highest quality fish habitat and are highly sensitive. The crossing of the Seine River near the Floodway was assessed as moderate and of the remaining 12 sites, 10 were ranked as low sensitivity and two were deemed not fish habitat. The Seine River is suspected to support aquatic SOCC.

The Cooks Creek/Devils Creek sub-watershed drains an area of 4,251 km² with the majority of land use being agriculture. The northern portion of the Project passes through the southern-most portion of the sub-watershed. There are 18 watercourse crossings in the sub-watershed two of which are crossed twice (Cooks Creek and Edie Creek). Both Cooks Creek crossings and the northern Edie Creek crossing are classified as Type A habitat with the southern upstream crossing of Edie Creek classified as Type B habitat (Milani 2013). The remaining 13 crossings consist of one Type D habitat and 12 Type E habitat. The habitat sensitivity rankings for the two Cooks Creek crossings are high due to the potential presence of aquatic SOCC. The habitat sensitivity rankings for the remaining sites are low.

The Rat River sub-watershed covers roughly 3,193 km² and encompasses a large natural floodplain which floods in the spring. The sub-watershed can be divided into two distinct halves; the lower Rat River is primarily agriculture, while the Upper Rat River is predominantly forested. The Project crosses three watercourses in the sub-watershed with the Rat River (Type A habitat) the only fish bearing watercourse. The remaining two watercourses are classified as Type E habitat (Milani 2013). The habitat sensitivity ranking of the Rat River is high due to a diverse fish community as well as having habitat that supports aquatic SOCC.

The Roseau River sub-watershed drains an area of 5,349 km² and accounts for the most southerly section of the constructed alignment. The predominant land use in the area is agriculture and forestry. There are eight watercourses crossed by the Project in the sub-watershed: One Type A habitat (Pine Creek), one Type B habitat (Pine Creek Diversion), two Type C, one Type D, and three Type E (Milani 2013). Pine Creek and the Pine Creek Diversion are ranked as having a moderate habitat sensitivity with the habitat primarily supporting forage fish. The habitat sensitivity of the remaining six watercourses is considered low and there are no known aquatic SOCC in any of the watercourses in the Roseau River sub-watershed.

3.0 METHODS

Mitigation compliance and effectiveness at 33 water course crossing sites (Aqua-100 series ESS) were evaluated using Manitoba Hydro's Daily Inspection Reports, aerial photography and ground visits in the summer of 2020. Daily Inspection Reports on Manitoba Hydro's Environmental Protection Information Management System (EPIMS) were reviewed prior to commencing field work to identify where mitigation compliance was documented during construction and to focus attention on sites flagged with concerns. Mitigation measures include those prescribed in the EIS and Construction EnvPP. Aerial photographs of MMTP transmission towers captured by Manitoba Hydro in April 2020 were reviewed and considered to be sufficient to assess mitigation compliance at 11 of the 33 water course crossing ESS. The remaining 22 water course crossing ESS required additional surveys in the 2020 field program. The 22 sites were surveyed by helicopter and sites with non-compliance issues and/or habitat sensitivity ranking of high were chosen for closer examination by ground visit to obtain an overall evaluation of the state of the site. Ground visits were restricted to areas where an appropriate landing site was available.

Stability of stream banks and floodplain were visually evaluated and rutting, slumping, or other damage to the ground noted. The presence of slash or disturbed sediment within the buffer was noted, as well as any evidence of erosion. Buffer widths from the stream or floodplain were evaluated and compared to the width prescribed, as well as the amount of vegetation left in the buffer and the clearing method used. In the case of observed erosion and sedimentation within a watercourse, it was documented and turbidity of the water course was measured.

Where present, vehicle crossings were evaluated for appropriate grade and angle across the stream, and the presence of any organic debris remaining from temporary bridge crossings. If any erosion control measures were in place (erosion control blankets, sediment fences) their effectiveness was evaluated. Photos of the sites were taken to capture the overall state of the sites as well as to document any particular concerns. Recommendations for further reclamation to meet the prescribed mitigation were made as required.

4.0 RESULTS

Site visits to water course crossings were conducted on June 29, 2020. At the time of monitoring, the Project was fully constructed with all towers and conductors in place. Aerial surveys were conducted at 22 water course crossing sites of which ground visits were conducted at seven sites. An additional 11 water course crossings were assessed by desktop survey using aerial photos provided by Manitoba Hydro (April 2020). The photos provided by Manitoba Hydro were sufficient to determine mitigation compliance and effectiveness at the 11 sites and were therefore not visited during aerial surveys carried out by North/South Consultants in June. Construction was compliant with prescribed mitigation and considered to be effective at 32 of the 33 water course crossings assessed in 2020 (Photos 1-6). Large woody debris was observed in the channel at Aqua-108 (La Salle River; Photo 7) and also at the edge of the RoW at Aqua-118 (Fish Creek; Photo 8) but neither was considered a mitigation non-compliance. Woody debris at the two sites was likely the result of natural processes and was not deemed construction related therefore they were not considered a non-compliance issue. Minor rutting along the centerline was also noted at several sites but was not considered to pose a significant threat to fish or fish habitat (Photo 9). The minor rutting observed at several sites was not deemed construction related and sufficient re-vegetation was occurring therefore it was not considered a mitigation non-compliance issue. The crossing at Aqua-130 (Pine Creek) was the only water course crossing considered not compliant with prescribed mitigation and is discussed in detail below. A summary of compliance with mitigation for all sites is presented in Table 1 and a list of mitigation measures outlined in the Construction EnvPP is available in Appendix 1.

Aqua-130

Woody debris from riparian clearing was observed in the channel at Aqua-130 during aerial surveys in June (Photo 10). According to the EnvPP cleared trees and woody debris should not be pushed into (or adjacent) to standing timber, or within the high-water mark of wetlands or waterbodies (Manitoba Hydro 2019; Appendix 1). It is recommended the woody debris be removed from the channel in order to prevent blockage of the watercourse during spring run-off and potentially inhibiting the movement of fish.

Based on the above recommendations, the Project contractor at the request of Manitoba Hydro removed the woody debris from Aqua-130. Removal of the woody debris from the channel was

confirmed by a Manitoba Hydro inspector on August 25, 2020 (Photo 11). There is no longer a mitigation concern with the watercourse crossing at Aqua-130.

5.0 REFERENCES

- Manitoba Hydro. 2015. Manitoba - Minnesota Transmission Project Environmental Impact Statement Chapter 8: Assessment of Potential Environmental Effects on Fish and Fish Habitat. 84 pp.
- Manitoba Hydro. 2019. Manitoba-Minnesota Transmission Project. Construction Environmental Protection Plan. 262 pp.
- Milani, D.W. 2013. Fish community and fish habitat inventory of streams and constructed drains throughout agricultural areas of Manitoba (2002-2006). *Ca. Data Rep Fish Aquat Sci.* 1247: xvi + 6,153 p.

6.0 TABLES

Table 1. Summary of compliance with mitigation for all ESS assessed using aerial and desktop surveys in 2020. Shaded cells represent sites visited by North/South Consultants on June 29, 2020. Bold text indicates non-compliance with mitigation measures.

ESS ID	Water Course Name	Suitable Vehicle Crossing	Riparian Buffers Maintained	Riparian Zone Rutting	Stream Banks Stable	Erosion and Sedimentation	Vegetative Cover (% Cover: % Bare)	Revegetation (% Cover: % Bare)	Instream Debris	Comments
Aqua-100	Sturgeon Creek	Y	Y	N	Y	N	U	U	N	
Aqua-101	Third Creek	Y	Y	N	Y	N	U	U	N	
Aqua-102	Unnamed Creek	Y	Y	N	Y	N	U	U	N	
Aqua-103	Assiniboine River	Y	Y	N	Y	N	90:10	90:10	N	
Aqua-104	Unnamed Drain	Y	Y	N	Y	N	100:0	100:0	N	
Aqua-105	Unnamed Drain	Y	Y	N	Y	N	U	U	N	
Aqua-106	Oak Bluff Drain	Y	Y	N	Y	N	U	U	N	
Aqua-107	Oak Bluff Drain	Y	Y	N	Y	N	U	U	N	
Aqua-108	La Salle River	Y	Y	N	Y	N	70:30	70:30	N	several large trees in river but appear to be from natural river processes
Aqua-109	Red River	Y	Y	N	Y	N	100:0	100:0	N	
Aqua-110	Red River Floodway	Y	Y	N	Y	N	U	U	N	
Aqua-111	Seine River Diversion	Y	Y	N	Y	N	100:0	100:0	N	minor rutting at tower footprint
Aqua-112	Old Prairie Grove Drain	Y	Y	N	Y	N	U	U	N	
Aqua-113	Prairie Grove Drain	Y	Y	N	Y	N	U	U	N	
Aqua-114	Cook Creek	Y	Y	N	Y	N	100:0	100:0	N	
Aqua-115	Edie Creek	Y	Y	N	Y	N	95:5	10:90	N	tower footing within 30 m of stream, crossing stable and well vegetated banks
Aqua-115A	Unnamed Creek	Y	Y	N	Y	N	40:60	20:80	N	minor centerline rutting

Table 1. Continued.

ESS ID	Water Course Name	Suitable Vehicle Crossing	Riparian Buffers Maintained	Riparian Zone Rutting	Stream Banks Stable	Erosion and Sedimentation	Vegetative Cover (% Cover: % Bare)	Revegetation (% Cover: % Bare)	Instream Debris	Comments
Aqua-116	Edie Creek	Y	Y	N	Y	N	U	U	N	
Aqua-117	Cooks Creek	Y	Y	N	Y	N	95:5	85:15	N	
Aqua-118	Fish Creek	Y	Y	N	Y	N	75:25	50:50	N	riparian growth thin at outer edges, some minor rutting down centerline, fallen tree on edge of RoW
Aqua-119	Unnamed Creek	Y	Y	N	Y	N	100:0	75:25	N	wet ground near tower footing, minor centerline rutting
Aqua-120	Unnamed Creek	Y	Y	N	Y	N	100:0	100:0	N	
Aqua-121	Unnamed Creek	Y	Y	N	Y	N	100:0	100:0	N	
Aqua-122	Unnamed Creek	Y	Y	N	Y	N	U	U	N	
Aqua-123	Seine River	Y	Y	N	Y	N	95:5	80:20	N	
Aqua-124	Unnamed Creek	Y	Y	N	Y	N	100:0	100:0	N	
Aqua-125	Unnamed Drain	Y	Y	N	Y	N	95:5	90:10	N	
Aqua-126	Rat River	Y	Y	N	Y	N	100:0	100:0	N	
Aqua-127	Unnamed Drain	Y	Y	N	Y	N	90:10	70:30	N	
Aqua-128	Unnamed Creek	Y	Y	N	Y	N	85:15	80:20	N	no real channel, rutting through centerline but minor
Aqua-129	Pine Creek Diversion	Y	Y	N	Y	N	100:0	95:5	N	
Aqua-130	Pine Creek	Y	Y	N	Y	N	100:0	100:0	Y	woody debris from riparian clearing left in the water course
Aqua-131	Pine Creek	Y	Y	N	Y	N	100:0	100:0	N	

Y = Yes; N = No; U = Unknown

7.0 MAPS

Manitoba-Minnesota Transmission Project

Project Infrastructure

- Converter Station (Existing)
- MMTF Final Preferred Route

Infrastructure

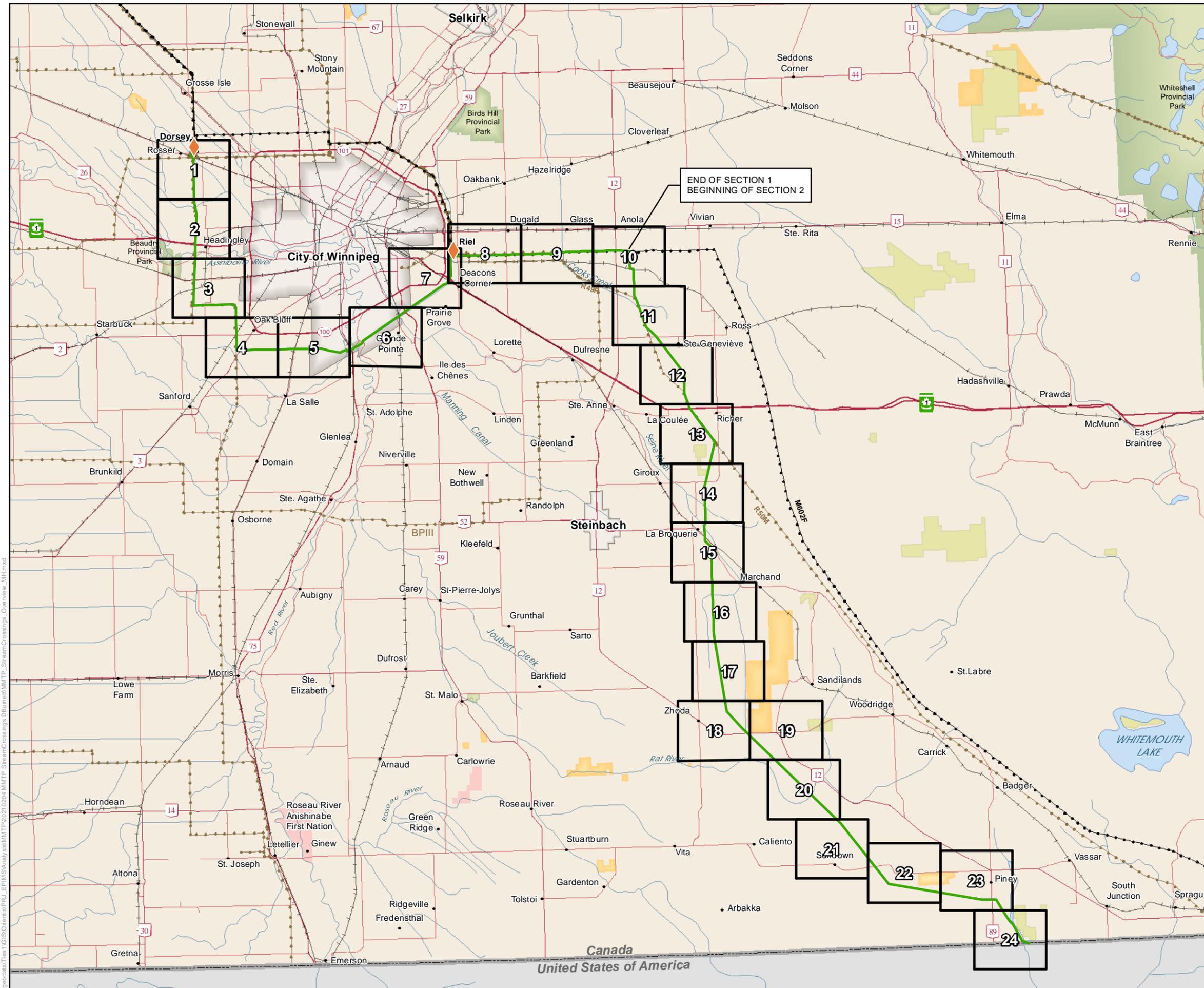
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

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- Map Series Tile

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park



END OF SECTION 1
BEGINNING OF SECTION 2

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Index of Map Series Stream Crossings

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Manitoba - Minnesota Transmission Project

Project Infrastructure Access

- Tower Location
- Angle Tower Location
- Final Preferred Route
- Right of Way

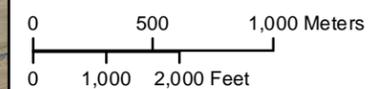
Environmentally Sensitive Sites

- Water Crossing
- Wetland
- Water Crossing

Landbase

- Trans-Canada Highway
- Provincial Trunk Highway
- Provincial Road
- Municipal Road
- Rail
- Electrical Station
- Rural Municipality

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Water Crossings



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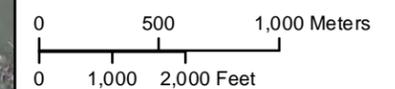
Environmentally Sensitive Sites

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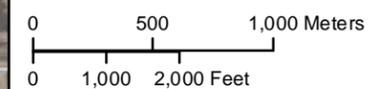
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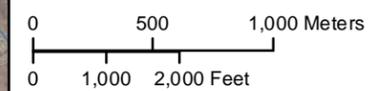
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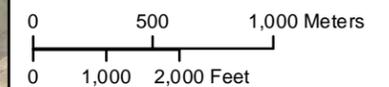
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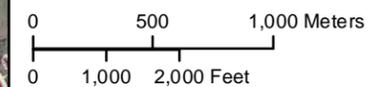
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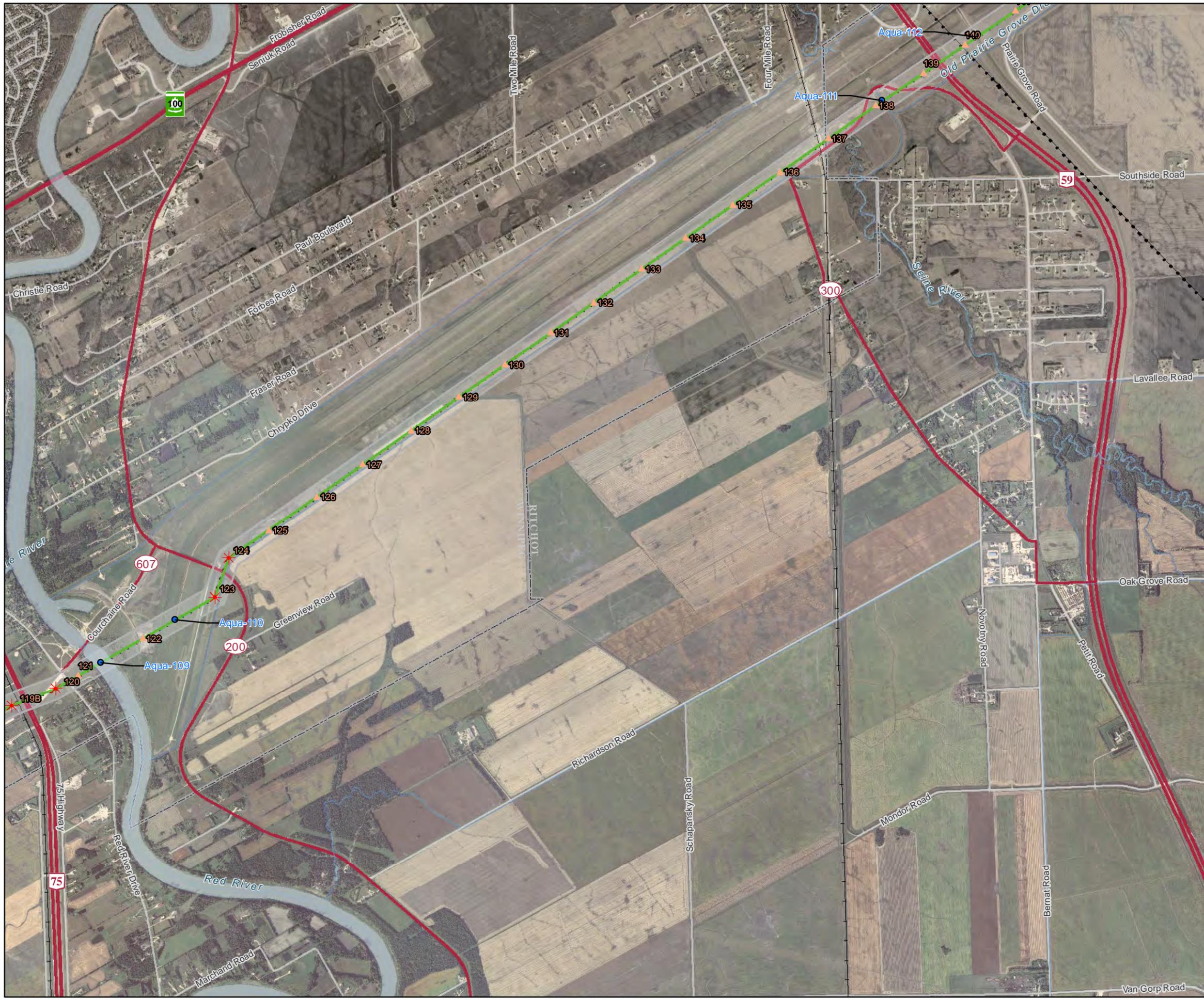
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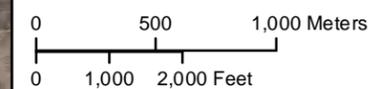
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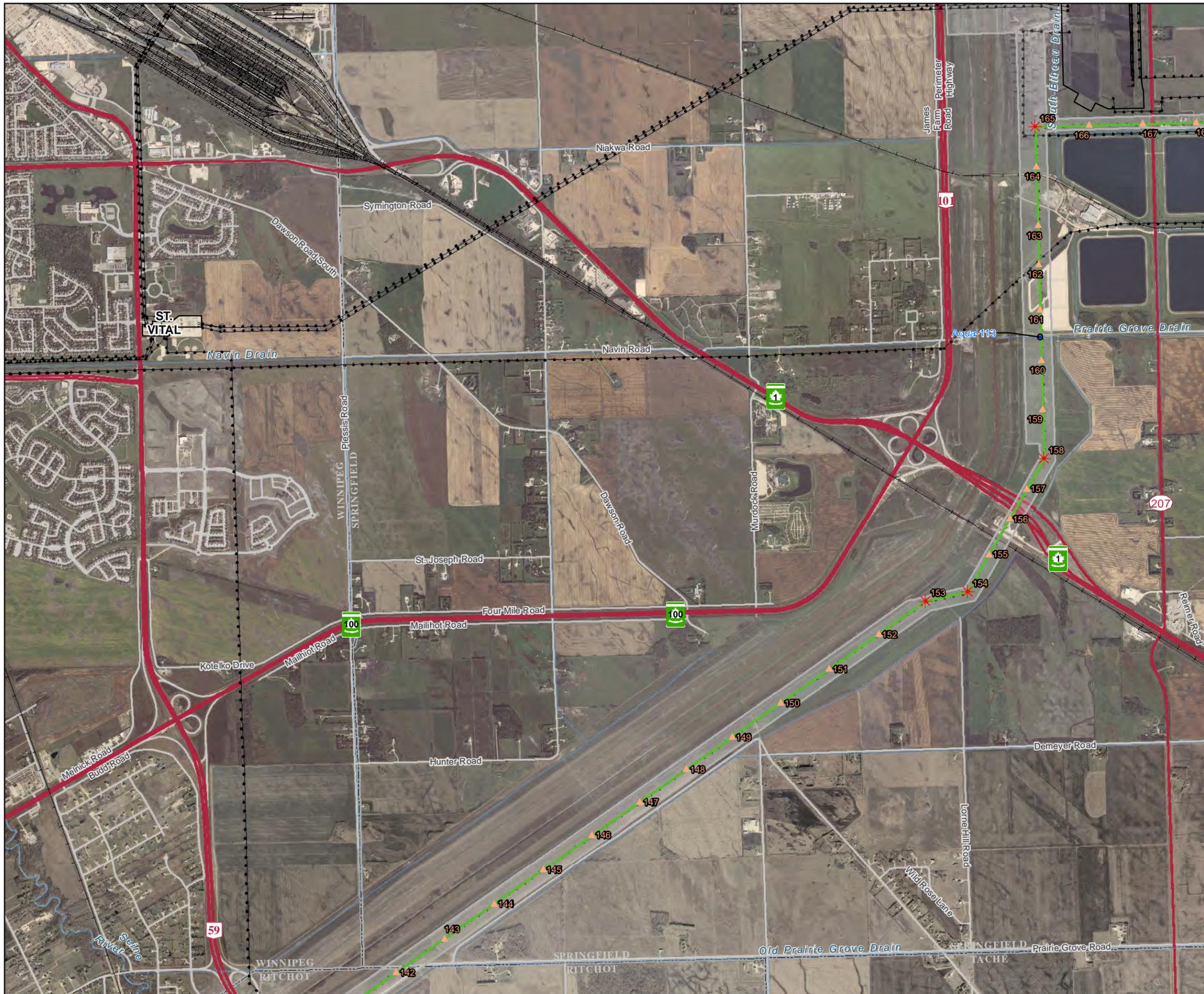
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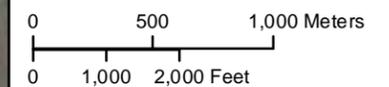
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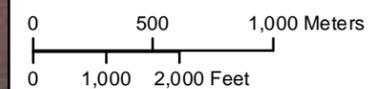
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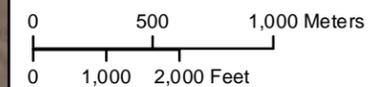
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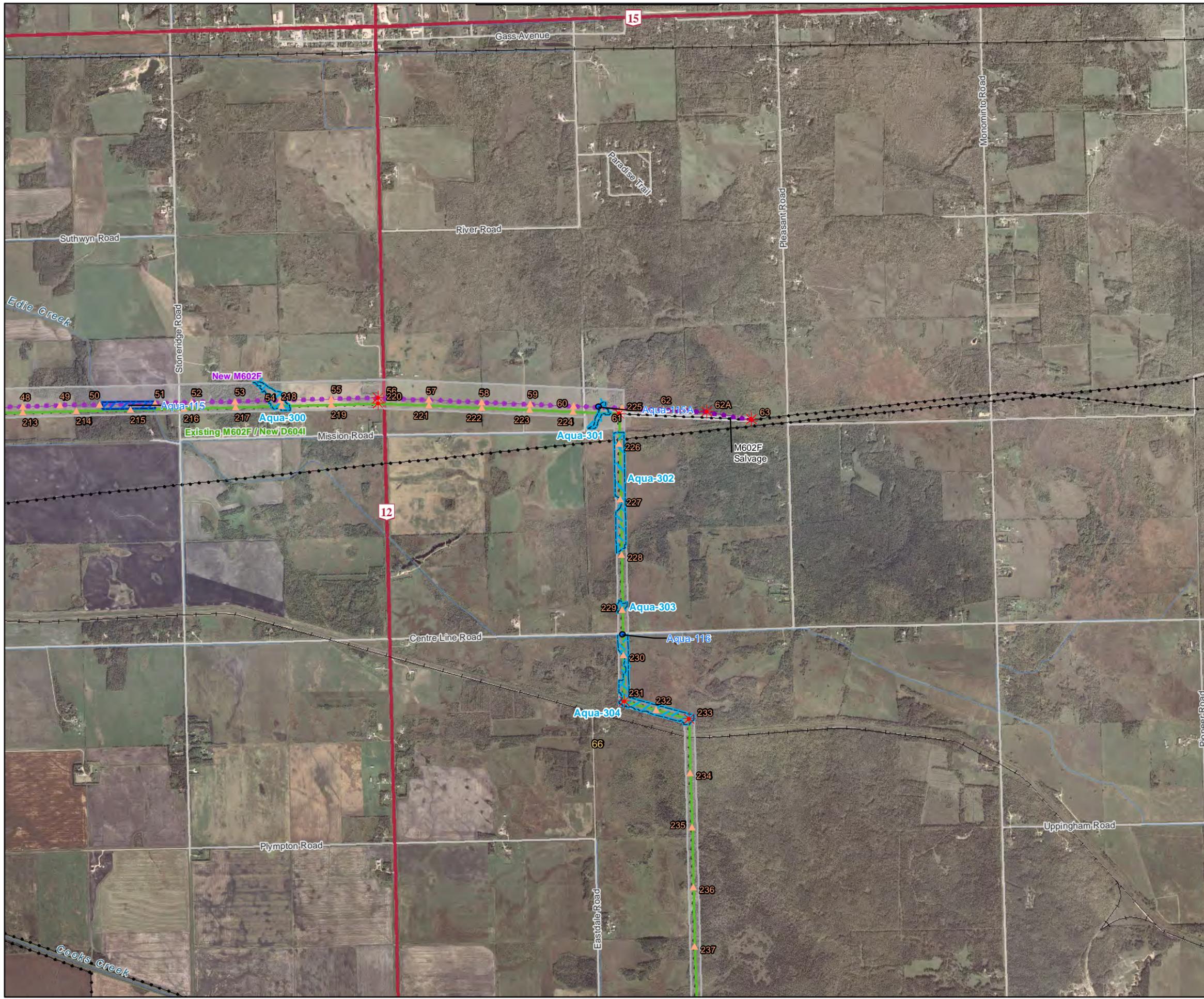
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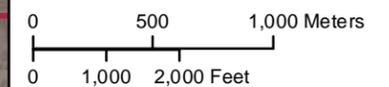
Environmentally Sensitive Sites

- Water Crossing
- Wetland
- Water Crossing

Landbase

- Trans-Canada Highway
- Provincial Trunk Highway
- Provincial Road
- Municipal Road
- Rail
- Electrical Station
- Rural Municipality

Coordinate System: UTM Zone 14N NAD83
 Data Source: MBHydro, ProvMB
 Date Created: February 04, 2021



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Water Crossings



Manitoba - Minnesota Transmission Project

Project Infrastructure Access

- Tower Location
- Angle Tower Location
- Final Preferred Route
- Right of Way

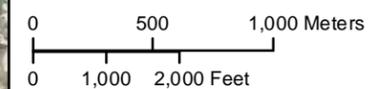
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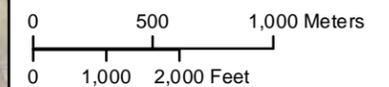
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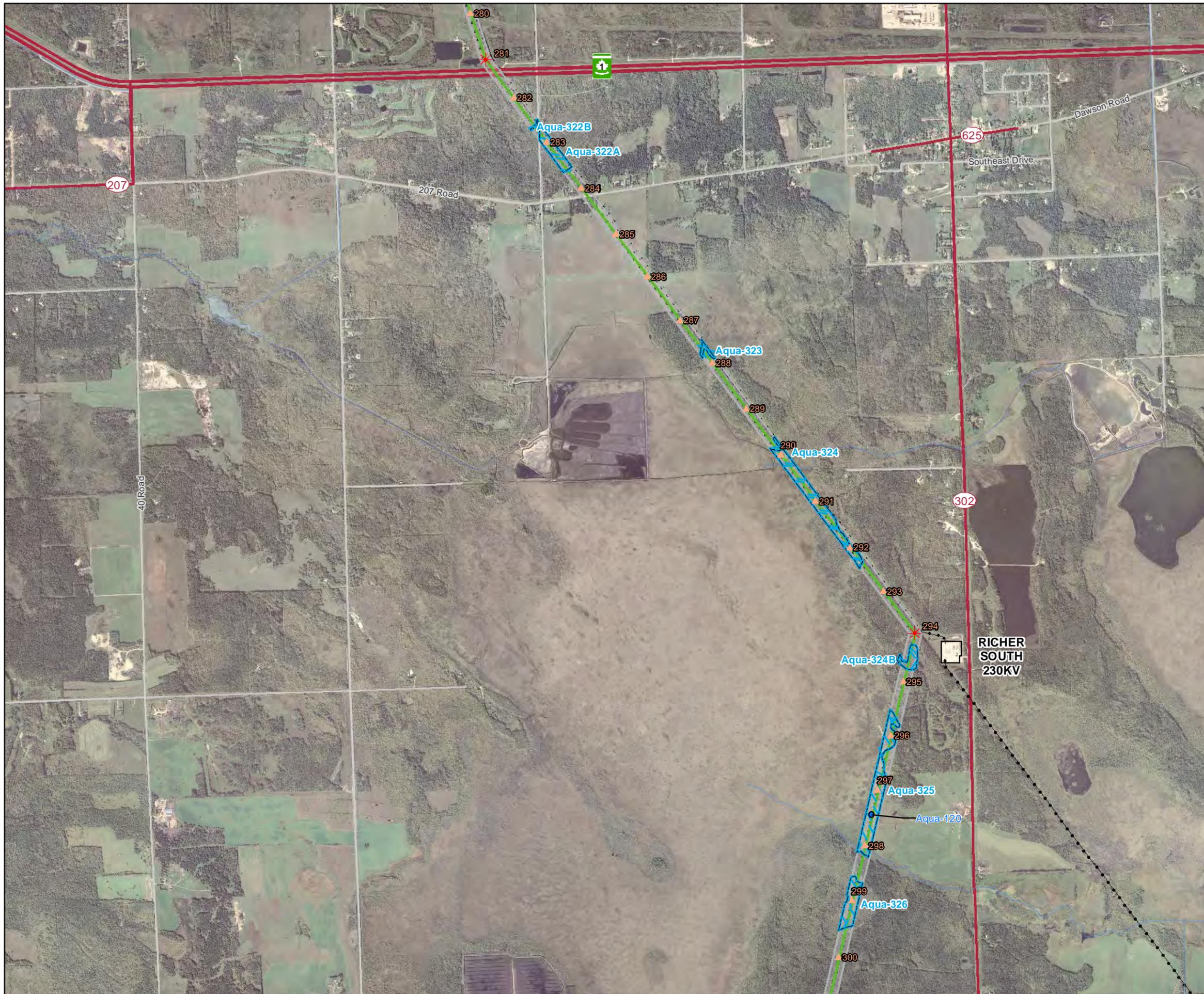
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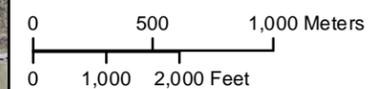
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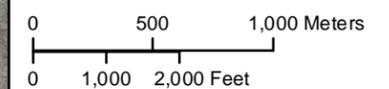
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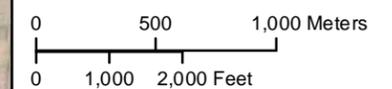
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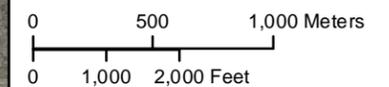
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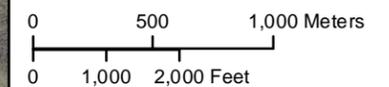
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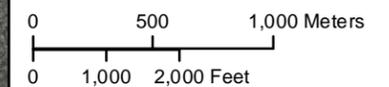
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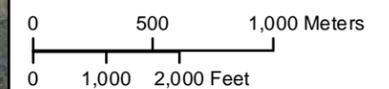
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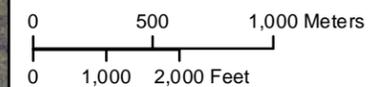
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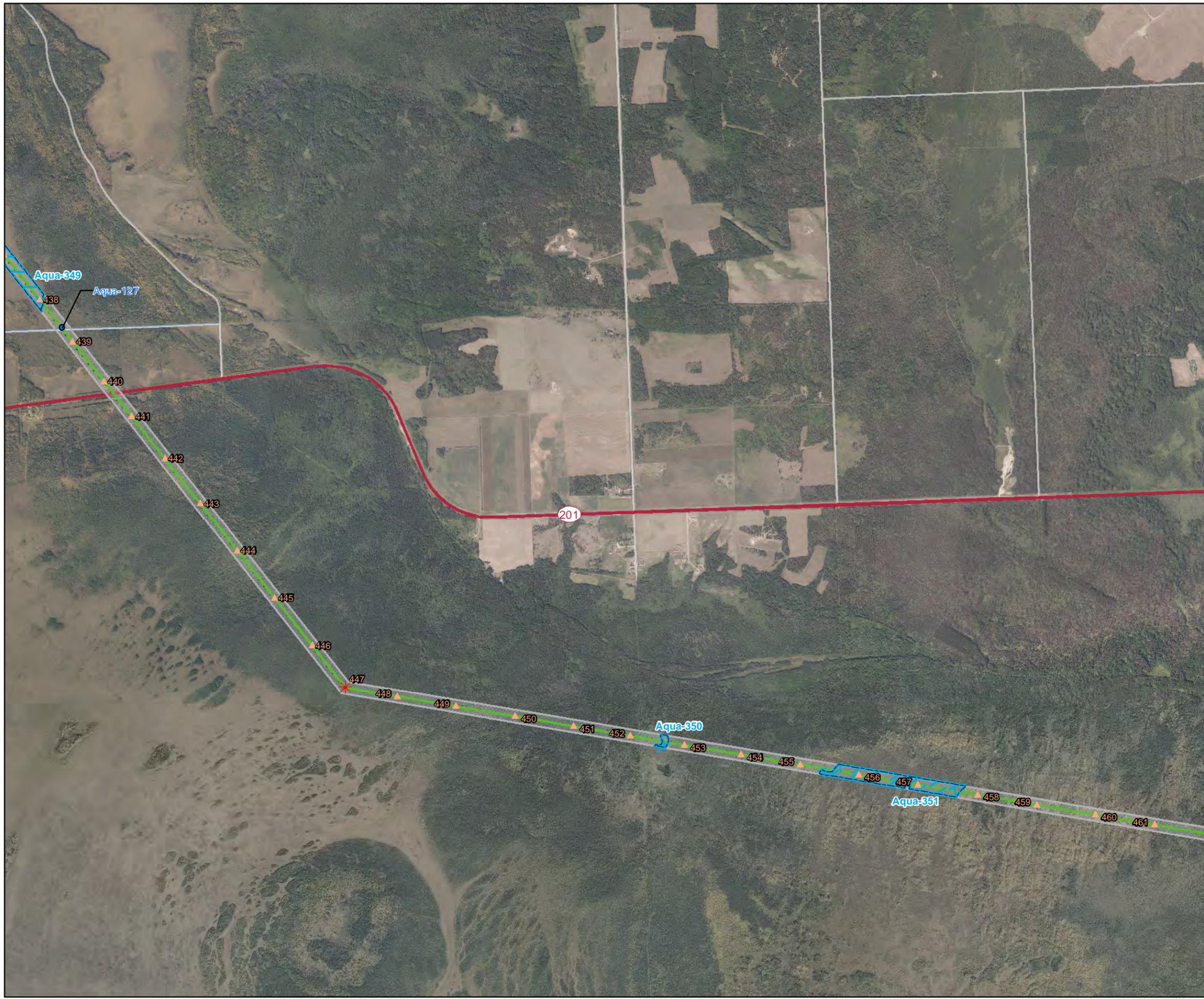
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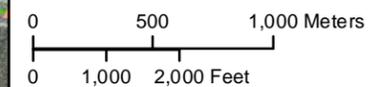
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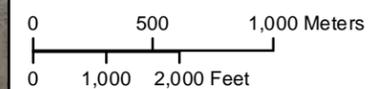
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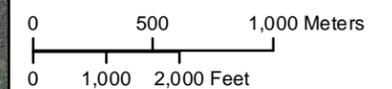
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Water Crossings



8.0 PHOTOS



Photo 1. Aerial photo of Aqua-103 (Assiniboine River) showing full compliance with prescribed mitigation, June 29, 2020.



Photo 2. Aerial photo of Aqua-109 (Red River) showing full compliance with prescribed mitigation, June 29, 2020.



Photo 3. Ground visit at Aqua-109 (Red River) showing good riparian coverage and growth. June 29, 2020.



Photo 4. Aerial photo of Aqua-117 (Cooks Creek) showing full compliance with prescribed mitigation, June 29, 2020.



Photo 5. Ground visit at Aqua-117 (Cooks Creek) showing good riparian growth and stable banks. June 29, 2020.



Photo 6. Aerial photo of Aqua-129 (Pine creek Diversion) showing full compliance with prescribed mitigation, June 29, 2020.



Photo 7. Large woody debris observed in the channel at Aqua-108 (La Salle River), June 29, 2020.



Photo 8. Large woody debris observed at Aqua-118 (Fish Creek) on the edge of the RoW within the riparian zone and near the water course crossing, June 29, 2020.



Photo 9. Minor centerline rutting observed at Aqua-119 (Unnamed Creek), June 29, 2020.



Photo 10. Cleared woody debris present within the channel at Aqua-130 (Pine Creek), June 29, 2020.



Photo 11. Manitoba Hydro inspector photo from August 5, 2020 showing the removal of woody debris from Aqua-130 (Pine Creek) noted during aerial surveys on June 29, 2020.

**9.0 APPENDIX 1:
WATER COURSE CROSSING COMPLIANCE SUMMARY**

Table A1-1. A list of mitigation measures for water course crossings on the 500 kV Manitoba Minnesota Transmission Project (MMTP) (Source: Manitoba-Minnesota Transmission Project Construction Environmental Protection Plan August 2019)

Water Course Crossing Mitigation Measures

- 1.1 Access road crossings will be at right angles to waterbodies to the extent possible
- 1.2 Riparian buffers shall be a minimum of 30 m and increase in size based on slope of land entering waterway (see riparian buffer table in CEnvPP). Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro vegetation clearance requirements.
- 1.3 Construction vehicles and equipment will not be permitted in designated machine-free zones except at designated crossings.
- 1.4 Construction of water course crossings will follow the Manitoba Stream Crossing Guidelines For The Protection of Fish and Fish Habitat (DFO and MNR 1996).
- 1.5 Ice bridges are constructed of clean water, ice and snow and snow fills are constructed of clean snow. Materials such as gravel, rock and loose woody material are cannot be used. Crossings cannot impede water flow at any time of the year.
- 1.6 The withdrawal of any water will not result in reduction in the wetted width of a stream, in order to maintain existing fish habitat. Water flow is maintained under the ice, where this naturally occurs, and If water is being pumped from a under the ice, where this naturally occurs, and If water is being pumped from a lake or river to build up the ice bridge, the intakes are sized and adequately screened to prevent debris blockage and fish mortality.
- 1.7 Where logs are required for use in stabilizing shoreline approaches, they are clean and securely bound together, and they are removed either before or immediately following work or before the spring freshet.
- 1.8 When the crossing season is over and where it is safe to do so, create a v-notch in the centre of the ice bridge to facilitate water flow and also to prevent blocking fish passage, channel erosion and flooding. Compacted snow and all crossing materials will be removed prior to the spring freshet.
- 1.9 No logs or woody debris are to be left within the water body or on the banks or shoreline where they can wash back into the water body.
- 1.10 Grading of the stream banks for the approaches should not occur. Establish a single entry and exit. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage.

Table A1. Continued.

Water Course Crossing Mitigation Measures

- 1.11 Fording should occur only after authorization from an MH environmental Officer/Inspector. Machinery fording a flowing watercourse to bring equipment required for construction to the opposite side is limited to a onetime event (over and back) and is to occur only if an existing crossing at another location is not available or practical to use. One-time fording will be timed to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows and will not be permitted to occur in areas that are known fish spawning sites.
- 1.12 Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding, the channel width at the crossing site is no greater than 5 metres from ordinary high water mark to ordinary high water mark.
- 1.13 In watercourses where mussel species of conservation concern are known to occur, watercourse crossings may occur by boat or barge, or during winter (i.e., under frozen conditions) to prevent mortality of the mussels.
- 1.14 The contractor is responsible for having signage at each end of any ice bridges indicating the ice thickness and the date it was last measured.
- 1.15 Cleared trees and woody debris will not be pushed into (or adjacent) to standing timber, or within the high-water mark of wetlands or waterbodies
- 1.16 The contractor requires approval from a Manitoba Hydro Environmental Officer prior to withdrawing water from any waterbody. The withdrawal of water from a waterbody will not reduce water levels to the point of exceeding that waterbody's ability to sustain an active beaver lodge

