

BIRTLE TRANSMISSION PROJECT
POST-CONSTRUCTION AQUATIC HABITAT MONITORING REPORT –
2021

June 2021

Prepared for:

Manitoba Hydro

By:



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EXECUTIVE SUMMARY

As outlined in *The Environment Act* Licence for the Birtle Transmission Project (Licence No. 3314), construction, operation, maintenance and decommissioning of the Project must adhere to mitigation found within the Environmental Protection Plans (EnvPP). Included in the Project EnvPP is an obligation to monitor the effectiveness of mitigation measures. This report provides documentation of site visits conducted at five stream crossing sites located along the single circuit 43 km long 230 kV AC Birtle Transmission line during summer 2021.

At the time of monitoring, the Project was fully constructed with all towers in place and conductors strung. Mitigation measures were deemed compliant with prescribed mitigation at all five Aqua-100 series Environmentally Sensitive Sites (ESS) assessed. Monitoring in 2021 was the first and final year of monitoring stream crossings along the BTP alignment and no follow-up site visits are recommended for summer 2022.

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

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1.0 INTRODUCTION

Manitoba Hydro has constructed a 230 kilovolt (kV) transmission line in southwestern Manitoba that was designed to fulfill a power sale agreement with SaskPower. The Birtle Transmission Project (the Project) consists of approximately 43 km of single circuit, 230 kV AC transmission line (B71T) that starts at the Birtle South Station and runs to the Manitoba/Saskatchewan border.

An Environmental Monitoring Plan (EMP) was developed as part of the Birtle Transmission Projects (BTP) Environmental Assessment (EA) and was submitted for review and approval by regulatory authorities. Included in the Project EMP is an obligation to monitor stream crossings to verify the implementation and effectiveness of mitigation prescribed for areas adjacent to streams, including riparian buffers, erosion control, and temporary stream crossings. Stream crossing monitoring consisted of one site visit to each identified stream crossing in the first spring and/or summer following construction. This report provides documentation of site visits conducted at five stream crossings located along the single 230 kV AC transmission line.

2.0 STUDY AREA

A detailed description of the aquatic environment within the Project study area can be found in Chapters 5 and 7 of the Project Environmental Assessment Report (Manitoba Hydro 2018). 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 Assiniboine-Birdtail sub-watershed where aquatic 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 long-term effects of habitat use in the area include changes in riparian ecosystem structure and water quality. The Project crosses eleven streams of which five are considered fish-bearing (Milani 2013).

The Birdtail Creek crossing consisted of moderately stable banks with a riparian area composed of a mix of grasses, shrubs and deciduous trees. Milani (2013) identified several species of fish in Birdtail Creek including: Brook Stickleback (*Culaea inconstans*), Iowa Darter (*Etheostoma exile*), Blackside Darter (*Percina maculata*), Fathead Minnow (*Pimephales promelas*), Northern Redbelly Dace (*Phoxinus eos*) and White Sucker (*Catostomus commersoni*). The Birdtail Creek crossing was classified as a Type A habitat by Milani (2013).

The Snake Creek crossing, despite being surrounded by agricultural land has a robust riparian area consisting of thick assemblage of deciduous trees and shrubs. Similar to Birdtail Creek, fish present at the Snake Creek crossing are likely restricted to small-bodied forage fish species tolerant of warm, low oxygen ponds such as Brook Stickleback and Fathead Minnow. The Snake Creek crossing was classified as a Type A habitat by Milani (2013).

The crossing over an unnamed tributary of Snake Creek is surrounded by agricultural land with little to no riparian vegetation. Flows are considered ephemeral with water likely only present in the spring during winter runoff. Habitat quality is considered poor with no defined channel. No historical fish species information was available for the unnamed tributary of Snake Creek and is considered Type D habitat.

The Armstrong Creek crossing is surrounded by agricultural land with highly stable banks and a riparian area consisting of grasses, shrubs and some trees. During preliminary studies the creek channel was completely dry and is likely ephemeral in nature. No historical fish species information was available for Armstrong Creek and it is considered a Type D habitat.

The Assiniboine River and its tributaries provide habitat for 65 known species of fish including priority species such as Chestnut Lamprey (*Ichthyomyzon castaneus*), Silver Chub (*Macrhybopsis storeriana*) and Bigmouth Buffalo (*Ictiobus cyprinellus*). The Assiniboine River also supports a diversity of freshwater mussel species including the Mapleleaf (*Quadrula quadrula*). The Assiniboine River at the Project crossing consists of a gradually bending river with steep eroding banks on the outside bend characteristic of meandering prairie rivers. The riparian area on the west side is primarily agricultural crop land with a thin strip of trees along the river. The east shoreline riparian area consists of a natural mix of grasses, shrubs and trees. The Assiniboine River crossing was classified as a Type A habitat according to Milani (2013). The fish habitat sensitivity rating is high for the Assiniboine River due to the potential presence of priority species.

3.0 METHODS

Mitigation compliance and effectiveness at five fish-bearing stream crossing sites (Aqua-100 series ESS) were evaluated using Manitoba Hydro's Daily Inspection Reports and ground visits in the summer of 2021. 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 Construction EnvPP. The five sites were surveyed by ground visit to obtain an overall evaluation of the state of the site.

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 recorded, 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. Erosion and sedimentation within a watercourse were documented and any increase in turbidity of the stream 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 concerns. Recommendations for further reclamation to meet the prescribed mitigation were made as required.

4.0 RESULTS

Site visits to stream crossings were conducted on June 7, 2021. At the time of monitoring, the Project was fully constructed with all towers and conductors in place. Ground surveys were conducted at five stream crossing sites identified as potential fish-bearing streams. Construction was compliant with prescribed mitigation and considered to be effective at all five stream crossings assessed in 2021 (Photos 1-8). 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.

5.0 REFERENCES

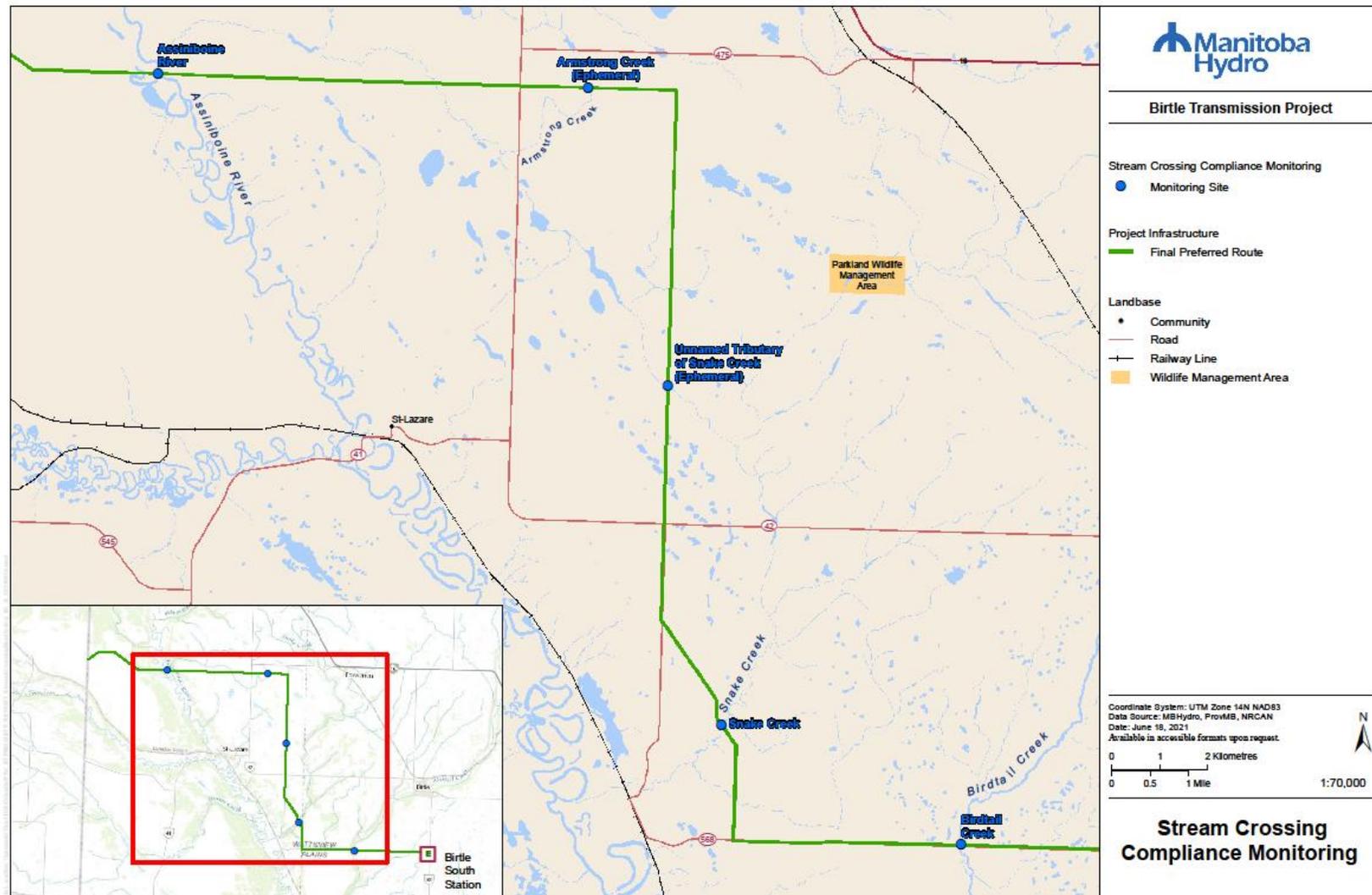
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6.0 TABLES

Table 1. Summary of compliance with mitigation for all ESS Aqua-100 series stream crossings assessed during ground surveys on June 7, 2021.

ESS ID	Stream 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-103	Birdtail Creek	Y	Y	N	Y	N	100:0	100:0	N	No clearing at or near the stream crossing
Aqua-105	Snake Creek	Y	Y	N	Y	N	100:0	100:0	N	No clearing at or near the stream crossing
Aqua-106	Unnamed Trib. Of Snake Creek	Y	Y	N	Y	N	100:0	100:0	N	No visible tributary present
Aqua-107	Armstrong Creek	Y	Y	N	Y	N	100:0	100:0	N	No issues
Aqua-108	Assiniboine River	Y	Y	N	Y	N	100:0	100:0	N	No issues

7.0 MAPS



Map 1. Locations of the five Aqua-100 series Environmentally Sensitive Sites visited during stream crossing mitigation compliance monitoring, June 2021.

8.0 PHOTOS



Photo 1. Ground photo of Aqua-103 (Birdtail Creek) showing the east shoreline in full compliance with prescribed mitigation, June 7, 2021.



Photo 2. Aqua-103 (Birdtail Creek) showing the west shoreline in full compliance with prescribed mitigation, June 7, 2021.



Photo 3. Aqua-105 (Snake Creek) showing good riparian coverage and growth with no apparent clearing at or approaching the crossing. June 7, 2021.



Photo 4. Aqua-105 (Snake Creek) showing a small amount of riparian clearing at the top of the valley and full compliance with prescribed mitigation, June 7, 2021.



Photo 5. Aqua-106 (Unnamed Trib. of Snake Creek) showing no distinct channel and no water present, June 7, 2021.



Photo 6. Aqua-107 (Armstrong Creek) showing full compliance with prescribed mitigation, June 7, 2021.



Photo 7. East shoreline of Aqua-108 (Assiniboine River) showing full compliance with prescribed mitigation, June 7, 2021.



Photo 8. View of west shoreline of Aqua-108 (Assiniboine River) showing full compliance with prescribed mitigation, June 7, 2021.

**9.0 APPENDIX 1:
STREAM CROSSING COMPLIANCE SUMMARY**

Table A1-1. A list of mitigation measures for stream crossings on the 230 kV Birtle Transmission Project (BTP) (Source: Birtle Transmission Project Construction Environmental Protection Plan June 2020)

	Stream 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 stream 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 vnotch 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.

Table A1. Continued.

Stream Crossing Mitigation Measures	
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.
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

