KEEYASK TRANSMISSION PROJECT WATERCOURSE CROSSINGS

POST-CONSTRUCTION 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 Keeyask Transmission Project (Licence No. 3106), construction, operation, and maintenance of the Project will adhere 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 the final site visit to the four completed 138 kV AC Unit Transmission lines crossing the Nelson River during spring 2021.

All power lines associated with the Keeyask Transmission Project were complete at the time of monitoring including the Construction Power Line (KN36), temporary Construction Power Line (KR1T), the three Generation Outlet Transmission lines (KR) and the four Unit Transmission Lines (KE). No mitigation measures were deemed to be not in compliance with prescribed mitigation. With the completion of the Keeyask Transmission Project, no further monitoring is required.

ACKNOWLEDGEMENTS

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

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1.0 INTRODUCTION

As outlined in *The Environment Act* Licence for the Keeyask Transmission Project (Licence No. 3106), construction, operation, and maintenance of the Project will adhere to mitigation found within the EIS and supporting materials as well as Environmental Protection Plan (EnvPP). Included in the Project EnvPP is an obligation to monitor the effectiveness of mitigation measures. Stream crossing monitoring consists of a minimum of one site visit to each identified stream crossing in the first spring and/or summer following construction and subsequent site visits as required. This report provides documentation of an aerial site visit conducted by North/South Consultants Inc. (NSC) at four watercourse crossings located along the four 138 kV Unit Transmission lines during spring 2021 (Map 1).

2.0 STUDY AREA

The Keeyask Transmission Project Study Area (approximately 600 km^2) is found within the Nelson River watershed basin and the Lower Nelson River sub-basin. It includes the Nelson River from Gull Rapids and the southern shore of Stephens Lake east to the Kettle Generating Station. In addition, the study area includes the land south of these waterbodies to and beyond Butnau Lake.

The land bordering Stephens Lake includes areas of poor, moderate and well-drained soils, dominated by black spruce forest in upland areas and black spruce bogs, peatland and fens in low lying areas. Sand, gravel, cobble, and areas of organic material dominate the shoreline, with much of the shoreline being prone to erosion. Riparian vegetation typically includes willow and alder, black spruce, tamarack, and scattered stands of trembling aspen typically found where there is well drained soil. Typical of the Lower Nelson River sub-basin the study area consists of a large number of small round lakes, marsh and bog areas and numerous ephemeral and perennial tributaries.

Of the Project components, the Unit Transmission lines and the Construction Power Line cross the Nelson River at the base of Gull Rapids. Fish habitat sensitivity was assigned ’moderate/high’; numerous forage fish species and larger bodied species such as Freshwater Drum, Goldeye, Lake Sturgeon, Lake Whitefish, Longnose Sucker, Mooneye, Northern Pike, Sauger, Walleye, White Sucker and Yellow Perch have been documented in this region.

Two medium-sized perennial rivers are present within the study area; the Butnau and the Kettle rivers. The Butnau River was diverted away from Stephens Lake through Cache Lake and into the Kettle River when the Kettle Generating Station was constructed. Similar to the smaller creeks in the area, habitat in the upper reaches of the Butnau and Kettle rivers are characterized by low water velocities, soft substrates, and abundant cover. Lower reaches of the Kettle River and the Butnau River Diversion Channel are shallow, with moderate water velocity, and rocky substrate.

Fish habitat within the Butnau and Kettle rivers is considered to be of 'moderate' and 'moderate/high' sensitivity, respectively. Both rivers were found to be used extensively by Northern Pike for various life stages including spawning. Relatively uncommon, Walleye occur in both rivers and suitable spawning habitat is present in the Butnau River Diversion Channel and the lower Kettle River. White and Longnose sucker are also known to spawn in both rivers. Although documented in the Kettle/Butnau river system, Lake Whitefish were found to be uncommon.

The Generation Outlet Transmission lines and Construction Power Line each cross the Butnau River once. The Kettle River is crossed at three locations by the three Generation Outlet Transmission lines.

3.0 METHODS

Field studies in 2021 consisted of aerial reconnaissance photos of the Unit Transmission lines taken by NSC, specifically of the KE1-Aqua-100a, KE2-Aqua-100b, KE3-Aqua-100c and KE4-Aqua-100d sites at the Nelson River which were the only sites not completed at the time of monitoring in 2019. Stability of stream banks and floodplain was visually evaluated form the air 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.

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 (blankets, silt fences) their effectiveness was evaluated. Tower locations were assessed to determine if they adhered to prescribed mitigation. Photos of sites were taken to capture the overall state of the sites as well as any particular concerns. Any further reclamation needed to meet the prescribed mitigation was noted as well as the requirement for a follow-up site visit for further monitoring of reclamation.

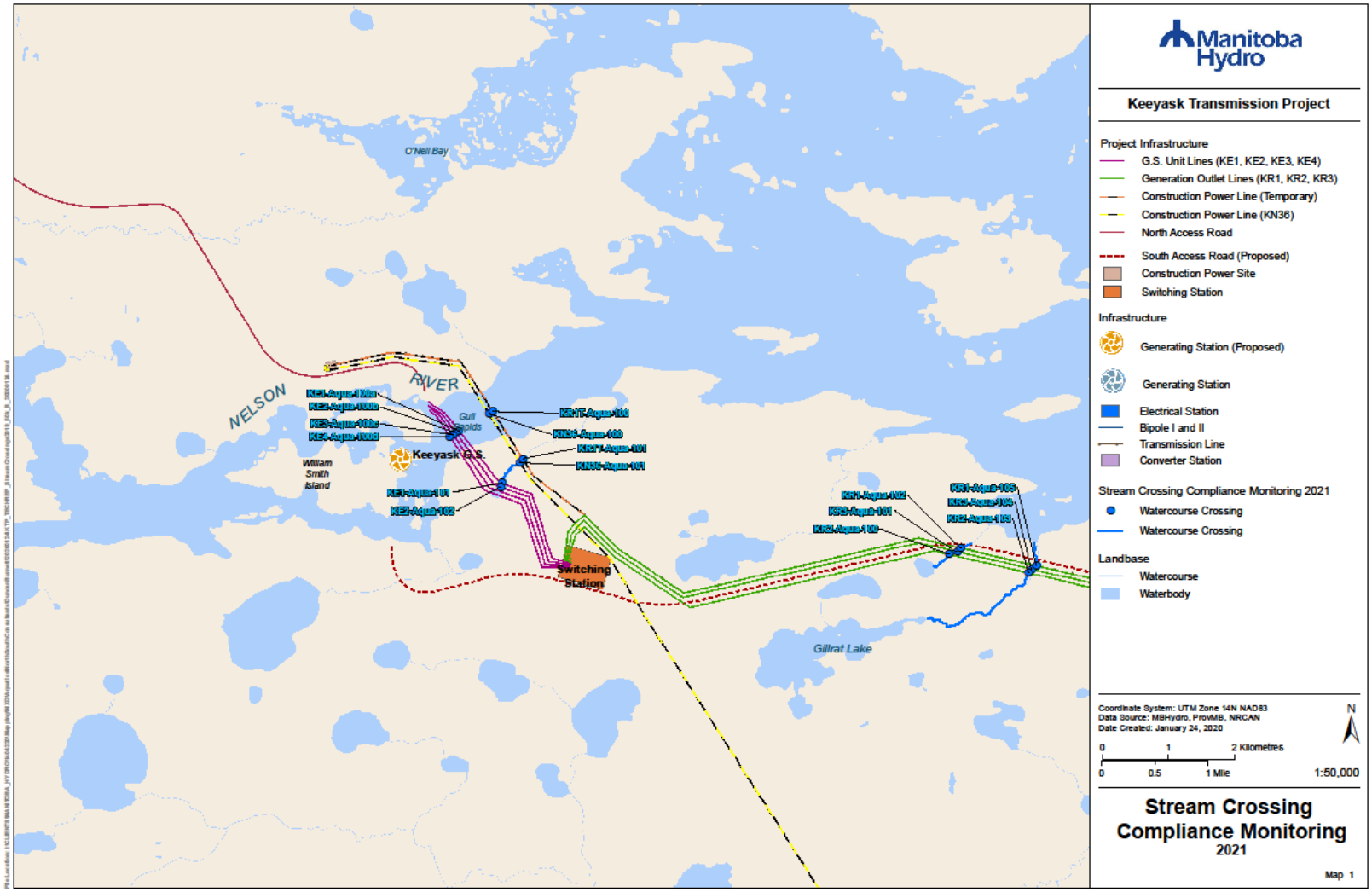
4.0 RESULTS

In order to transmit power from the Keeyask Generating Station to the new Keeyask Switching Station, four 138 kV AC Unit Transmission Lines (KE) were erected in a single corridor 4 km long and 265 m wide, across two watercourses and includes seven crossing sites in total. As of March 2021, all components of the Keeyask Transmission Project, including the Unit Transmission Lines were completed. During monitoring in 2019, one section of the Unit Transmission Line spanning the Nelson River was not complete (four sites) and could not be assessed. This report focuses on the Unit Transmission Line, specifically the four sites not completed at the time of monitoring in 2019.

Site Visits

Site visits to the stream crossings were conducted on May 31, 2021 by NSC personnel. Aerial surveys were conducted at the four stream crossing sites over the Nelson River and no ground surveys were required in 2021. Construction at all stream crossing sites was compliant with prescribed mitigation where applicable (Photos 1-3). A summary of compliance with mitigation for all seven Unit Transmission Line sites is available in Appendix 1.

5.0 MAPS



Map 1. Watercourse crossing locations for the seven Unit Transmission Line (KE) sites, and portions of the temporary (KR1T) and Construction Power lines (KN36) and the western section of the Generation Outlet Transmission Lines (KR), 2021.

6.0 PHOTOS

Photo 1. Sites KE1-Aqua-100a, KE2-Aqua-100b, KE3-Aqua-100c and KE4-Aqua-100d showing completed towers on south shoreline, no mitigation compliance issues.

Photo 2. Sites KE1-Aqua-100a, KE2-Aqua-100b, KE3-Aqua-100c and KE4-Aqua-100d showing completed towers on south shoreline looking towards the Keeyask GS, no mitigation compliance issues.

Photo 3. Sites KE1-Aqua-100a, KE2-Aqua-100b, KE3-Aqua-100c and KE4-Aqua-100d showing completed towers on the north shoreline at the Keeyask GS, no mitigation compliance issues.

7.0 APPENDIX 1: STREAM CROSSING COMPLIANCE SUMMARY

Table A1. Compliance with 21 mitigation measures for stream crossings on the four 138 kV Unit Transmission lines (KE), June 2021.

ESS	Name	Construction Status 2021	Cross Perpendicular to Channel	Structures Above Tree Line	Riparian Ground Cover Remain	Machine Free Zone 7 m	Riparian Buffer 30 m	Clearing Limits Marked	Construction on Frozen Ground	Riparian Vegetation Roots Intact	Slash Above the Tree Line	Revegate Disturbed Areas	Erosion Sediment Control Implemented	Temp. Crossings Only As Needed	Appropriate Temp.Crossing Design	Existing Access Used	Temp. Crossings Perpendicular	Clean Material for Temp. Crossing Removed	One-time Fording	Timing Window for Instream Work	Fording Under Acceptable Condtions	Stream Bank Protection	Temp. Bridge As Needed	Follow-up Site Inspection 2022
Watercourse Crossings of the four Unit Transmission Lines																								
KE1-Aqua-100a	Nelson R.	C	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	Y	Y	Y	Y	Y	NA	Y	Y	U	Y	N
KE2-Aqua-100b	Nelson R.	C	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	Y	Y	Y	Y	Y	NA	Y	Y	U	Y	N
KE3-Aqua-100c	Nelson R.	C	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	Y	Y	Y	Y	Y	NA	Y	Y	U	Y	N
KE4-Aqua-100d	Nelson R.	C	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	Y	Y	Y	Y	Y	NA	Y	Y	U	Y	N

Compliance: Y- compliant; N - non-compliant; NA - not applicable; U - uncertain
Contstruction Status 2019: NC - no clearing; CL - center line only cleared; RI - riparian buffer incomplete; RC -RoW clearing complete; TF- tower footprint cleared; TA - tower anchors installed; TW - towers complete; C - construction complete
Other: R. - river; Temp. - temporary; Trib. - tributary

Available in accessible formats upon request