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Lake Winnipeg East System Improvement Transmission Project: Aquatics Monitoring - Summer 2017 Watercourse Crossing Report and Monitoring Conclusions

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1. Introduction

The Lake Winnipeg East System Improvement (LWESI) Transmission Project Monitoring Program was implemented as part of Manitoba Hydro's commitment to protect and preserve natural environments and heritage resources affected by its projects and facilities. The monitoring program included environmental protection measures for terrestrial and aquatic components of the environment.

The purpose of the aquatics component of the LWESI Transmission Project Monitoring Program was to monitor potential effects to the aquatic environment as a result of construction-related activities at watercourse crossings (i.e., clearing of vegetation; creation of access roads and/or temporary crossings; movement and use of crews and equipment). The monitoring of potential effects at watercourse crossings was accomplished by:

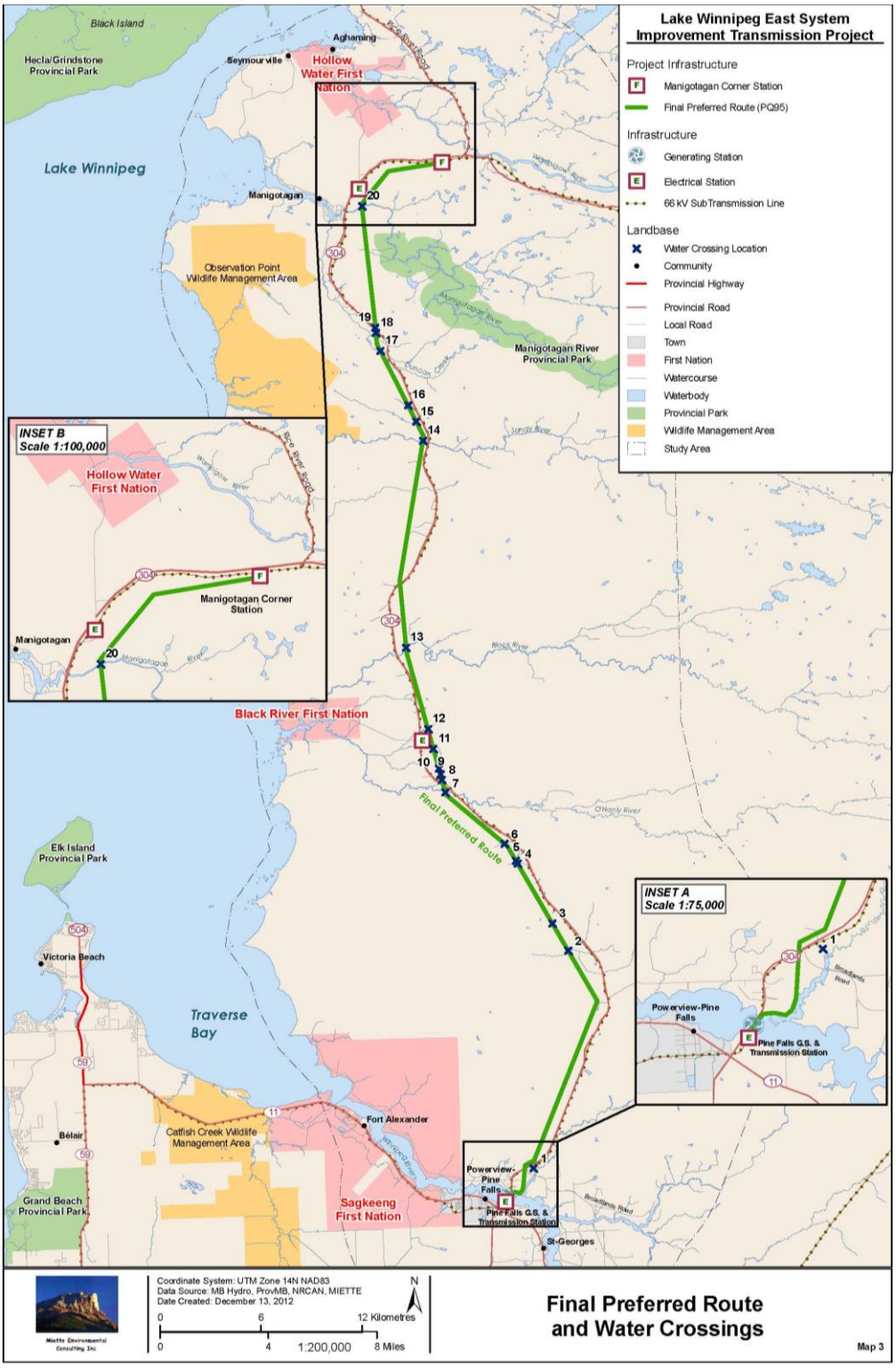
- review of the information provided in the LWESI Transmission Project Aquatic Environment Technical Report (Miette Environmental Consulting 2012);
- review of the Manitoba Hydro Environmental Protection Plan (EnvPP) and Province of Manitoba Environment Act License (EAL) requirements;
- review of construction activities and monitoring conducted;
- examination of recent imagery data; and
- field surveys, which included overflights of the sites by helicopter and on-site assessments.

The field surveys were conducted in the summer of 2016 and the summer of 2017, and focussed on the collection of data that demonstrated application of the measures outlined in the EnvPPs and fulfillment of the EAL requirements. The locations of the watercourse crossings for the LWESI Transmission Project are shown on **Figure 1**.

This report provides a summary of the 2017 field survey conducted on July 20, 2017. The objectives for the 2017 field survey were to:

- conduct a low level helicopter survey over the LWESI Transmission Project watercourse crossings to assess overall adherence to watercourse crossing mitigation measures as per the EnvPP, and examine upstream and downstream connectivity and flow within the watercourses where crossings were required;
- conduct on-site assessments at watercourse crossing sites located along the LWESI Transmission Project where construction activities have occurred;
- provide documentation and results of the implementation of the EnvPPs and monitoring objectives to Manitoba Hydro; and
- complete the aquatics component of the (LWESI) Transmission Project Monitoring Program.

Figure 1: Location of Watercourse Crossing Sites



Source: Miette Environmental Consulting 2012

2. Approach and Methods

The helicopter surveys and on-site assessments were conducted at the 24 watercourse crossing sites where tower construction and/or transmission line installation activities had occurred over the 2015 to 2016 construction season, and the 2016 to 2017 construction season. The summer 2017 field survey included assessment of all of the LWESI Transmission Project watercourse crossing sites, and marked the completion of the aquatics monitoring program.

The parameters that were examined at each watercourse crossing site included:

- In-stream Conditions – presence/absence of debris that may block flow or cover substrates; visual assessment of water flow and clarity at, immediately upstream of and immediately downstream of the crossing; changes to the channel that could release or introduce debris or sediment to the watercourse;
- Stream-side Conditions – presence/absence of exposed soils, vegetated or re-vegetated areas; changes to the banks or approach that could release or introduce debris or sediment to the watercourse; evaluation of any sediment and erosion control measures;
- Riparian Zone Conditions – maintenance of recommended buffer zone widths and existing vegetation as per the EAL and EnvPP requirements; and
- Connectivity – maintenance of channel connectivity and water flow upstream and downstream of the watercourse crossing location.

3. Summer 2017 Field Survey Results

A total of 24 sites were examined as part of the summer 2017 monitoring activities. **Table 1** provides a summary of the name, location, type of flow regime and fish habitat rank for each site, and whether the site was constructed in accordance with the EnvPP measures.

Table 1: Summary Information for the Watercourse Crossing Sites Assessed in July 2017

Number of Sites	EnvPP Site Number	EnvPP Site Name	UTM - East	UTM - North	Flow[1]	Rank[2]	EnvPP Measures Met (Yes/No)
1	LWE-Aqua-100	Manigotagan River	691183	5664922	P	I	Y
2	LWE-Aqua-101	Unnamed Tributary	691866	5657136	I/P	M	Y
3	LWE-Aqua-102	Duncan Creek	692290	5656272	P	I	Y
4	LWE-Aqua-103	Unnamed Drain	693925	5653028	I	M	Y
5	LWE-Aqua-104	Unnamed Drain	694147	5652587	I/E	NFH	Y
6	LWE-Aqua-105	Unnamed Drain	694429	5652027	I	M	Y
7	LWE-Aqua-106	Sandy River	694814	5650870	P	I	Y
8	LWE-Aqua-107	Unnamed Drain	694587	5649494	I/P	M	Y
9	LWE-Aqua-108	Black River	693820	5638490	P	I	Y
10	LWE-Aqua-109	Unnamed Tributary of Kapukwaywetewunk Creek	695506	5633905	I	M	Y
11	LWE-Aqua-110	Unnamed Tributary of O'Hanly River	695606	5632521	I	M	Y
12	LWE-Aqua-111	Creek Draining to Pond	695746	5631228	E	NFH	Y
13	LWE-Aqua-112	Beaver Flood/Beaver Pond	695836	5630899	I	M	Y

Number of Sites	EnvPP Site Number	EnvPP Site Name	UTM - East	UTM - North	Flow[1]	Rank[2]	EnvPP Measures Met (Yes/No)
14	LWE-Aqua-113	Unnamed Drain	695922	5630583	I	M	Y
15	LWE-Aqua-114	O'Hanly River	696130	5629820	P	I	Y
16	LWE-Aqua-115	Unnamed Drain	699692	5626737	E	NFH	Y
17	LWE-Aqua-116	Unnamed Drain	700343	5625708	E	NFH	Y
18	LWE-Aqua-117	Unnamed Drain	700439	5625541	P	M	Y
19	LWE-Aqua-118	Unnamed Drain	702497	5621979	P	M	Y
20	LWE-Aqua-119	Unnamed Drain	703453	5620322	P	M	Y
21	LWE-Aqua-120	Unnamed Tributary	704506	5615565	I/P	M	Y
22	LWE-Aqua-121	Unnamed Tributary	703239	5612341	I/P	M	Y
23	LWE-Aqua-122	Unnamed Tributary	702576	5610655	I/P	M	Y
24	LWE-Aqua-123	Winnipeg River	699989	5605554	P	I	Y

Source: Manitoba Hydro 2017; Miette Environmental Consulting 2012

[1] P= perennial, I = intermittent, E = ephemeral

[2] I= important, M = marginal, NFH = no fish habitat

All of the sites observed were cleared, constructed and cleaned up in accordance with the mitigation measures outlined in the EnvPP, and the crossing and site conditions met the EnvPP and EAL requirements. Photographs 1 and 2 provide examples of the conditions observed along the project Right of Way (RoW) at watercourse crossing sites during the 2017 field survey.

Photograph 1: View looking east of the crossing at the Black River (LWE-Aqua-108) showing the preservation of the riparian zone and regrowth of vegetation along the RoW, July 20, 2017.

Photograph 2: View looking west of the crossing at an Unnamed Drain (LWE-Aqua-107) showing the preservation of the riparian zone and regrowth of vegetation along the RoW, July 20, 2017.

At Site LWE-Aqua-114, the O'Hanly River, there was an observation of a black rubber tire caught in woody debris on the surface of the river (Photograph 3). This site was ranked as having a perennial flow regime and categorized as having important habitat for fish (Miette 2012). The woody debris present in the watercourse was considered to be part of natural riverine processes and not due to construction activities. The tire and instream debris did not appear to be affecting the water flow in the river. This site could be revisited to remove the tire, if this action is considered to be necessary.

Photograph 3: View looking south of the watercourse crossing site at the O'Hanly River (LWE-Aqua-114), July 20, 2017. The red circle shows the location where the tire was caught in the woody debris.

4. Follow-up to Summer 2016 Field Surveys

The 2016 summer field survey identified potential environmental issues at two watercourse crossing sites visited in 2016. These two watercourse crossing sites were revisited in 2017 to confirm that the potential environmental issues had been addressed. Information on the two watercourse crossing sites, the issues identified at the watercourse crossing sites in 2016 and the follow-up information from the 2017 field survey is provided below.

The 2016 survey had noted the presence of a sheen on the water at Site LWE-Aqua-114, the O'Hanly river, that was thought to potentially represent a minor fuel spill. Further investigations were conducted in 2016 by Manitoba Hydro staff at the site, and it was concluded that there was no evidence of a fuel spill, and no further assessment was required at this watercourse crossing site. It is expected that the sheen observed on the water surface was related to natural processes of decomposition of organic materials in the river system.

4.1. Watercourse Crossing Site LWE-Aqua-103

Site LWE-Aqua-103 (referred to as Site 16 in Miette 2012) is an Unnamed Drain located between the Sandy River and Duncan Creek that was ranked as having an intermittent flow regime and categorized as having marginal habitat for fish (Miette 2012). During the 2016 field survey, it was noted that clearing had taken place up to the water's edge on the north side of the crossing, and there were remnants of silt fencing material and straw erosion control blanket/matting on the north bank of the crossing. There were no indications of erosion or sediment control issues at the site; the banks were stable with no exposed areas of soil and there was no slash or debris in the watercourse or any disruption in water flow noted during the 2016 field survey.

This site was revisited in 2017; the silt fence materials had been removed and there were no exposed areas of soil observed at the crossing (Photograph 4). Further regrowth of vegetation had occurred to the water's edge and the banks appeared to be stable (Photograph 4). As such, no further follow-up at this site was required.

Photograph 4: View looking west of the watercourse crossing site at LWE-Aqua-103, July 20, 2017.

4.2. Watercourse Crossing Site LWE-Aqua-113

Site LWE-Aqua-113 (referred to as Site 8 in Miette 2012) is an Unnamed Drain located north of the O'Hanly River that was ranked as having an intermittent flow regime and categorized as having marginal habitat for fish (Miette 2012). During the 2016 field survey, it was noted that clearing on the south side of the crossing had been completed in accordance with the EnvPP but it appeared that machinery may have entered the 7m "No Machine Zone" at the north side of the crossing. There were no areas of exposed soils observed during the 2016 field survey that could potentially release or transport sediment or debris to the watercourse.

There was no slash or debris in the watercourse or any disruption in water flow observed at the crossing site during the 2016 field survey.

This watercourse crossing site was revisited in 2017; further regrowth of vegetation had occurred to the water's edge and the banks appeared to be stable (Photograph 5). As such, no further follow-up at this site was required.

Photograph 5: View looking east of the watercourse crossing site at LWE-Aqua-113, July 20, 2017.

5. Incidental Observations

Although monitoring for invasive plant species is not part of the aquatics component of the LWESI Transmission Project Monitoring Program, it was noted that Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*) and white sweet clover (*Melilotus albus)* were present within the riparian zone vegetation at LWE-Aqua-104 (Photograph 6, Photograph 7).

Other incidental observations included the following:

- Painted lady butterfly (*Vanessa virginiensis*) at LWE-Aqua-104;
- American black bear (*Ursus americanus*) scat at LWE-Aqua-104;
- Grey wolf (*Canis lupus*) scat at LWE-Aqua-104;
- Wood frog (*Lithobates sylvaticus*) at LWE-Aqua-109; and
- One adult American black bear and two cubs observed on RoW during the helicopter flight.

Photograph 6: View of Canada thistle in the riparian zone at LWE-Aqua-104, July 20, 2017.

Photograph 7: View of white sweet clover in the riparian zone at LWE-Aqua-104, July 20, 2017.

6. Summary

The 2017 field survey was completed on July 20, 2017. All of the sites observed were cleared, constructed and cleaned up in accordance with the mitigation measures outlined in the EnvPP, and the crossing and site conditions met the EnvPP and EAL requirements. Follow-up visits were conducted in 2017 at two sites to revisit potential environmental issues identified during the 2016 field surveys. The issues identified in 2016 for sites LWE-Aqua-103 and LWE-Aqua-113 had been addressed and no further follow-up was deemed to be required.

The 2016 field survey had noted the presence of a sheen on the water at Site LWE-Aqua-114, the O'Hanly river, that was thought to potentially represent a minor fuel spill. Further investigations were conducted in 2016 by Manitoba Hydro staff at the site, and it was concluded that there was no evidence of a fuel spill, and no further assessment was required at this watercourse crossing site. It is expected that the sheen observed on the water surface was related to natural processes of decomposition of organic materials in the river system.

In 2017, at Site LWE-Aqua-114, the O'Hanly River, there was an observation of a black rubber tire caught in woody debris on the surface of the river. The woody debris present in the watercourse was considered to be part of natural riverine processes and not due to construction activities. The tire and instream debris did not appear to be affecting the water flow in the river. This site could be revisited to remove the tire, if this action is considered to be necessary.

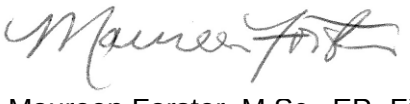
7. Conclusions

The aquatics component of the LWESI Transmission Project Monitoring Program was conducted in the summer of 2016 and the summer of 2017, following completion of winter construction activities in 2015 to 2016, and 2016 to 2017. The aquatics monitoring program found that the watercourse crossing sites had been completed and protected in accordance with the Manitoba Hydro EnvPP and Province of Manitoba EAL requirements. The summer 2017 field surveys included assessment of all of the LWESI Transmission Project watercourse crossing sites, and marked the completion of the aquatics monitoring program.

8. Closure

We trust the above meets your present requirements. Thank you for the opportunity to participate in this important Manitoba project. If you have any questions or require additional details, please contact the undersigned.

Best regards,



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9. References

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