

Attachment A

PTH 1A Bridge Replacement Project: Mapleleaf Mussel Survey, Relocation, and Monitoring Plan

The need for the crossing replacement has rapidly developed and therefore it was not possible to conduct a mussel survey in the previous open-water season. As such, the site survey will be conducted concurrent to the relocation program. If no Mapleleaf Mussels are encountered in the proposed work area, then the mussel relocation program will be concluded. No surveys will be conducted the following summer and the monitoring program will not be conducted.

Although it is unlikely that maple leaf mussels will be encountered, an application for a SARA permit has been made as a precautionary measure as the project occurs within the historic range of Maple leaf Mussel.

The potential mussel habitat in the project area was defined as permanently wetted areas of the Assiniboine River channel. Viable mussel beds require sufficient and regular water cover year round to ensure individuals are not exposed or subject to freezing. Available habitat was defined using the Normal Winter Water Level (NWWL), calculated using hydrometric data and recent bathymetric survey

The salvage area will be divided into 4 zones. The footprint of the temporary work bridges will define the activity zone which will see direct disturbance through the placement of rock on the riverbed. The risk zone includes the undisturbed channel thalweg and a 10 m zone upstream and downstream of the work bridges. The zone of influence includes the 25 m of channel below the NWWL downstream of the risk zone. River flows at the time of work bridge construction would be during seasonal lows (late fall/winter) which minimizes transport risks associated with the placement of rock.

The prescribed search area will be investigated using the square metre quadrat system and standard underwater search protocol, described in Mackie et al. (2008). The physical area will be defined and marked with floats and weighted lines. The search will be conducted using m² quadrates fabricated from PVC. Each section will be seeded with a determined number of golf balls which are easily identified underwater and represent a similar size to mussels. Recovery of all seeded golf balls within a defined area qualifies the effectiveness of the search and will produce a measurable result.

All captured mussels will be measured, photographed and identified to species by a benthic invertebrate specialist prior to being relocated.

The preferred relocation areas are upstream of the proposed activity so as to avoid any re-suspension of sediment or changes to water quality that may occur as a result of the proposed activities (Mackie et al. 2008). In addition, freshwater mussel movements tend to be downstream which places the relocated mussels in a position to re-colonize the work area once all activities have ceased (Perles et al. 2003).

Review of the bathymetric and substrate data has indicated that the river channel between the weir and the bridge will provide more than enough suitable relocation habitat. Other potential areas will be further investigated and defined during the survey and relocation fieldwork.

The plan for post-construction monitoring is to focus on re-establishment of native material in the area of works as habitat for Mapleleaf Mussel. The monitoring program will be conducted in

2017 following the completion of all bridge works and following the spring freshet. The spring freshet will result in the transportation, deposition and redistribution of native materials into the study area.

The monitoring program will include all areas disturbed during the proposed works as well as the zone of influence and a buffer zone upstream and downstream of the work site (see attached figure). The upstream relocation area will not be monitored as the area is outside of any potential project effects or influences.

The monitoring program will be conducted as a one-time follow-up once the in-water works have been completed. Should it be required and depending on schedule the field work for post-construction monitoring would be complete in August 2017 with any reporting to follow.

References:

- Mackie, G., T.J. Morris, and D. Ming. 2008. Protocol for the detection and relocation of freshwater mussel species at risk in Ontario-Great Lakes Area (OGLA). Can. Manuscr. Rep. Fish. Aquat. Sci. 2790: vi +50 p.
- Perles, S.J. A.D. Christian, and D.J. Berg. 2003. Vertical Migration, Orientation, Aggregation, and Fecundity of the Freshwater Mussel *Lampsilis siliquoidea*. Ohio J. Sci. 103 (4):73-78

