

September 8, 2017

David Schaeffer Engineering Ltd. 120 Iber Road, Unit 103 Stittsville, ON K2S 1E9

Attention: Jennifer Ailey

Re: Review of Meander Belt Width Delineated for the Jock River Subwatershed Study Jock River, Barrhaven Conservancy GEO Morphix Project No. PN17071

A review was completed to delineate the extent of the erosion hazard associated with the Jock River adjacent to the Barrhaven Conservancy development. As part of the assessment to finalize the erosion hazards, the following activities were completed: a review of the reach delineation, meander amplitudes, and erosion setbacks provided by the Subwatershed Study (Stantec, 2007), field reconnaissance, and delineation of the central tendency and final meander belt.

Reach Delineation and Field Reconnaissance

Reaches are homogeneous segments of channel used in geomorphological investigations. They are studied semi-independently as each is expected to function in a manner that is different from the adjoining reaches. Reach delineation was completed by Stantec (2007) based on review of aerial photographs and field reconnaissance. Reaches were separated based on land use, topography, geology, and channel sinuosity. The reach delineation was appropriate and acceptable.

Reach mapping is provided in **Appendix A**. The study site lies north of reaches JR-3 and JR-4. Reach JR-2 is just downstream and east of the study site. Site reconnaissance was completed at the Borrisokane Road crossing at the reach break between JR-3 and JR-4. Photographs are provided in **Appendix B**. Both reaches are unconfined with narrow riparian buffer zones. Bank erosion was not observed in the vicinity of the crossing. This was consistent with Stantec's observations.

Meander Belt Widths

Most watercourses in southern Ontario have a natural tendency to develop and maintain a meandering planform, provided there are no spatial constraints. A meander belt width assessment estimates the lateral extent that a meandering channel has historically occupied and will likely occupy in the future. This assessment is therefore useful for determining the potential limit of development for proposed activities in the vicinity of a watercourse.

The Jock River meander belt widths within the Subwatershed Study (Stantec, 2007) were reviewed to assess suitability. The meander belt widths provided by the Subwatershed Study for reaches JR-3 and JR-4 are 218 and 231 m, respectively (Stantec, 2007). These meander belt widths include a 10% buffer. We are generally in agreement with the scale of the meander belt widths. The central tendency of the watercourse generally follows the overall trend of the channel passing through riffles or runs. Although there may be an opportunity for minor adjustments to the central tendencies for reaches JR-3 and JR-4. This does not fundamentally adjust the meander belt width from the location illustrated in the subwatershed study. Our finalized meander belt widths and central tendencies are provided in **Appendix A**.

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We have a minor refinement for the downstream reach, JR-2. The geologic feature at Half Moon bay is not technically a meander. Half Moon bay was formed by reworking the underlying glaciomarine deposits (OGS, 2010). Therefore, the meander belt width for reach JR-2 is 130 m plus a 10% buffer plus a 7 m setback. The proposed meander belt width for reach JR-2 is 150 m. This is smaller than that proposed in the subwatershed study.

We trust this report meets your requirements. Should you have any questions please contact the undersigned.

Respectfully submitted,

Paul Villard Ph.D., P.Geo., CAN-CISEC Director, Principal Geomorphologist

Cara Hutton

Cara Hutton, M.Sc. Senior Earth Science Technician



References

Ontario Geological Survey (OGS). 2010. Physiography of Southern Ontario.

Stantec Consulting Ltd. 2007. Jock River Reach One Subwatershed Study Final Report: Volume 1 of 2. Prepared for the City of Ottawa.

Appendix A Meander Belt Widths



Appendix B Photographic Record



Photo 2

Reach JR-4: Photograph taken facing right bank, south, from Borrisokane Road. The reach was unconfined.



