June 13, 2025 Project No. 19126620

Phil White, Quality Control
Thomas Cavanagh Construction Limited
9094 Cavanagh Road
Ashton, Ontario
K0A 1B0

RESPONSE TO FRIENDS OF LANARK HIGHLANDS PEER REVIEW OF HYDROGEOLOGICAL ASSESSMENT, PROPOSED HIGHLAND LINE PIT, TOWNSHIP OF LANARK HIGHLANDS, ONTARIO

Dear Mr. White,

In a letter dated April 8, 2025, CCR Environmental (CCR) provided peer review comments (on behalf of the Friends of Lanark Highlands) on the *Aggregate Resources Act* license application for the Thomas Cavanagh Construction Limited (Cavanagh) proposed Highland Line Pit as it relates to the hydrogeological and hydrological assessment presented in the following WSP Golder (now WSP Canada Inc.) documents:

- *Level 1 and Level 2 Water Report, Proposed Highland Pit, Township of Lanark Highlands, Ontario*, dated December 2022 (hereafter referred to as the "Water Report").
- *Maximum Predicted Water Table Report, Proposed Highland Line Pit, Township of Lanark Highlands, Ontario*, dated December 12, 2022 (hereafter referred to as the "MPWT Report")

The purpose of this submission is to provide responses to the CCR peer review comments. A copy of the CCR peer review letter is provided in **Attachment 1**. The CCR peer review comments are presented below in *italics* followed by the responses by WSP Canada Inc. (WSP).

CCR Comment #1

We understand that Thomas Cavanagh Construction Limited proposes to obtain a Class A license for a "Pit below the Groundwater Table" under the Aggregate Resources Act (ARA) at Part Lot 15, Concession 10 in the Township of Lanark Highlands, Lanark County, Ontario (Highland Line Pit). The proposed licensed area is 50.6 hectares (ha) with the proposed extraction area being 35.1 ha. We understand that the proponent proposes to only extract sand and gravel overburden "at this time" and not bedrock "at this time".

WSP Response to Comment #1

Comment #1 is generally accurate with the exception that, subsequent to the completion of the Water Report and MPWT Report, the licensed area and the proposed extraction area was reduced in size to 37.6 hectares and 28.4

hectares, respectively. The proposed pit involves the extraction of unconsolidated overburden materials and not bedrock.

CCR Comment #2

We understand that the proponent proposes to not dewater the pit to recover material beyond the reach of Pit equipment. We understand that according to WSP Golder, "The groundwater monitoring program focused on the areas of the site where sand would be extracted". Both WSP Golder reports show that there are six (6) monitoring wells located on the subject property with groundwater elevation data collected on a monthly basis between April 29, 2020 and June 6, 2021. The consultant reports that seasonal groundwater elevation variability ranged between 0.49 to 0.68 metres with higher elevation observed during the spring freshet. According to WSP Golder, depth to groundwater "across the site" ranges from 1.5 to 4.6 metres below grade surface. The six (6) monitoring wells were constructed within six (6) test pits advanced in April 2020.

WSP Response to Comment #2

No response required.

CCR Comment #3

In addition to the 6 monitoring wells a total of sixteen (16) test pits were advanced in February 2019. According to WSP Golder, each of the February 2019 test pits were also instrumented with monitoring wells.

WSP Response to Comment #3

The February 2019 test pit excavation program was completed by Cavanagh and included 18 test pits on the property. None of the 2019 test pits were instrumented with monitoring wells. In Section 3.1.1 of the Water Report, it states that each of the 2020 test pits were completed with monitoring wells in the sand overburden.

CCR Comment #4

WSP Golder conclude that other than nominal loss of overland flow to the surface water features there will be no significant change in base flow and that no flooding or erosional problems will occur.

WSP Response to Comment #4

To elaborate on CCR Comment #4, Section 7.0 of the Water Report summarized the hydrological assessment as follows:

- The water balance assessment suggests that overall, there is a decrease in water surplus of 10% for the site under operational conditions. Rehabilitated conditions are expected to have a similar decrease in surplus compared to existing conditions. Runoff volumes to Barbers Lake, Long Sault Creek, and the unnamed northern wetland are expected to decline, however baseflow to Barbers Lake and Long Sault Creek is expected to slightly increase as a result of the increase in infiltration at the pit. This change from site runoff to infiltration is expected to decrease peak flow contributed from the site and slightly increase a steadier base flow from the site.
- Operation of the proposed pit area is not expected to contribute to flooding problems in the receiving drainage features, as there will be limited water discharge from the pit. The pit itself is expected to operate as a large infiltration basin with a surface outlet near Barbers Lake at 186 metres asl. The redirection of catchment

areas from the north, from the east, and from the southeast to the pit area thus results in an overall reduction in peak surface flow rates in all directions.

- Overall, the surface water impacts associated with the proposed pit are marginal. Changes in contributing catchment to the locations discussed are on the order of 2%, while infiltration is still estimated to report to two out of the three adjacent waterbodies as baseflow.
- Based on the findings of this assessment, no adverse effects to surface water resources and their uses are anticipated as a result of the proposed Highland Line Pit.

CCR Comment #5

According to WSP Golder, "The groundwater monitoring program focused on the areas of the site where sand would be extracted". However, it appears that the hydrogeological data used to conduct their evaluation and draw conclusions is restricted to 6 monitoring wells located outside of the extraction area.

WSP Response to Comment #5

The six (6) test pits that were completed with monitoring wells in 2020 were all constructed on Cavanagh property and specifically placed within the regulatory setback between the limit of extraction and the licensed area so that these monitoring wells would be preserved for the purpose of monitoring groundwater levels over the active life of the pit operation and not be removed as a result of sand and gravel extraction. The locations of the six monitoring wells relative to the originally proposed limit of extraction and licensed area are shown on Figure 2 of the Water Report.

COMMENTS AND RECOMMENDATIONS

CCR Comment #6

It is stated in the Level 1 and Level 2 Water Report that monitoring wells were constructed in each of the 16 test pits advanced in 2019, however, none of the water level or other hydrogeological data is provided for these monitoring wells in their reports. It also appears that this data was not incorporated into their calculations and conclusions.

WSP Response to Comment #6

The Water Report does not state that monitoring wells were constructed in the 2019 test pits, as there were no well installations completed during the 2019 field program. In Section 3.1.1 of the Water Report, it states that each of the 2020 test pits were completed with monitoring wells in the sand overburden.

The data obtained from the 2019 test pit excavation program were used in the geological characterization of the site and the subsurface geological conditions in these test pits are discussed in the text of the Water Report and presented in Appendix B of the Water Report.

The data obtained from the 2020 test pit excavation program were used in the hydrogeological and geological characterization of the site. The subsurface geological conditions in these test pits are discussed in the text of the Water Report and presented in Appendix B of the Water Report. The hydrogeological data obtained from the 6 monitoring wells is discussed in Sections 3.1.3 and 3.1.4 of the Water Report.

CCR Comment #7

There are test pit logs provided that show constructed monitoring wells but there is no hydrogeologic data provide other than a few references to seepage. In our opinion this represents a significant gap or omission within the assessment. Not only does this apparent gap/omission appear to be contrary to their primary objective - "The groundwater monitoring program focused on the areas of the site where sand would be extracted" -, but in our opinion precludes our ability to determine if the WSP Golder conclusions about baseflow; flooding; erosion; etc. are reasonable. This is especially the case given that there is significant and patchy topographic relief across the subject property.

WSP Response to Comment #7

Groundwater elevation data collected from the 6 monitoring wells are presented in Section 3.1.4 of the Water Report and in Section 1.0 of the MPWT Report. In addition, and as noted by the reviewer, seepage conditions in the test pits excavated in 2020 are noted on the test pit logs presented in Appendix B of the Water Report.

Grain size distribution curves from soil samples collected from the 2020 test pits are included in Appendix C of the Water Report. The hydraulic conductivity testing data are presented/discussed in Section 3.1.3 and Appendix D of the Water Report.

All of the geological and hydrogeological data obtained on the property were included in the Water Report and used in the impact assessment presented in Section 5.0 of the Water Report.

CCR Comment #8

We recommend that WSP Golder, either provide the additional hydrogeological data or conduct the self-described scope of hydrogeological assessment before we can comment further.

WSP Response to Comment #8

As noted in the response to Comment #7, all of the geological and hydrogeological data obtained on the property were included in the Water Report and used in the impact assessment presented in Section 5.0 of the Water Report.

The objective of the studies (i.e., Water Report and MPWT Report) undertaken by WSP Golder (now WSP) was to fulfill the requirements of a Level 1 and 2 Hydrogeological and Hydrological Assessment for the licensing of a Class 'A', Pit Below the Groundwater Table, under the *Aggregate Resources Act*, and to support an application under the *Planning Act*. The study included a hydrogeological and hydrological assessment to establish the groundwater conditions and water balance for the site. The results of the hydrogeological and hydrological investigation were used to assess the potential for adverse effects to groundwater users, surface water resources and natural environment features as a result of the proposed extraction below the groundwater table. It is WSP Canada Inc's opinion that the Water Report and MPWT Report met the requirements of the *Aggregate Resources Act*.

If you have any questions on this submission, please contact the undersigned.

Yours truly,

WSP Canada Inc.

Brian Henderson, M.A.Sc., P.Eng.
Environmental Engineer

Kris Marentette, M.Sc., P.Geo.
Senior Hydrogeologist

BH/KAM/rk

CC: Neal DeRuyter, MHBC Planning

Attachments: Attachment 1: CCR Letter dated April 8, 2025

https://wsponline.sharepoint.com/sites/gld-112126/project files/6 deliverables/response to comments/16 gw peer review/19126620-l-rev0-response to hg peer review_13june2025.docx

ATTACHMENT 1

Attachment 1: CCR Letter dated April 8, 2025

CCR
ENVIRONMENTAL
TEL: (613) 985-2703
14 Point Crescent, Kingston, Ontario, K7M 3P3

April 8, 2025

Friends of Lanark Highlands (FLH)
101 Leo Jay Lane
McDonalds Corners,
Ontario, K0G 1M0

RE: Peer Review: Proposed Highland Line Pit Hydrogeological Assessment

We are pleased to provide the results of our peer review of the following documents provided by FLH.

- **Level 1 and Level 2 Water Report, Proposed Highland pit, Township of Lanark Highlands, Ontario**, prepared for Thomas Cavanagh Construction Limited by WSP Golder, dated December 2022.
- **Maximum Predicted Water Report, Proposed Highland pit, Township of Lanark Highlands, Ontario**, prepared for Thomas Cavanagh Construction Limited by WSP Golder, dated December 12, 2022.

We understand that Thomas Cavanagh Construction Limited proposes to obtain a Class A license for a "Pit below the Groundwater Table" under the Aggregate Resources Act (ARA) at Part Lot 15, Concession 10 in the Township of Lanark Highlands, Lanark County, Ontario (Highland Line Pit). The proposed licensed area is 50.6 hectares (ha) with the proposed extraction area being 35.1 ha. We understand that the proponent proposes to only extract sand and gravel overburden "at this time" and not bedrock "at this time". We understand that the proponent proposes to not dewater the pit to recover material beyond the reach of Pit equipment. We understand that according to WSP Golder, "The groundwater monitoring program focused on the areas of the site where sand would be extracted". Both WSP Golder reports show that there are six (6) monitoring wells located on the subject property with groundwater elevation data collected on a monthly basis between April 29, 2020 and June 6, 2021. The consultant reports that seasonal groundwater elevation variability ranged between 0.49 to 0.68 metres with higher elevation observed during the spring freshet. According to WSP Golder, depth to groundwater "across the site" ranges from 1.5 to 4.6 metres below grade surface. The six (6) monitoring wells were constructed within six (6) test pits advanced in April 2020. In addition to the 6 monitoring wells a total of sixteen (16) test pits were advanced in February 2019. According to WSP Golder, each of the February 2019 test pits were also instrumented with monitoring wells. WSP Golder conclude that other than nominal loss of overland flow to the surface water features there will be no significant change in base flow and that no flooding or erosional problems will occur.

COMMENTS & RECOMMENDATIONS

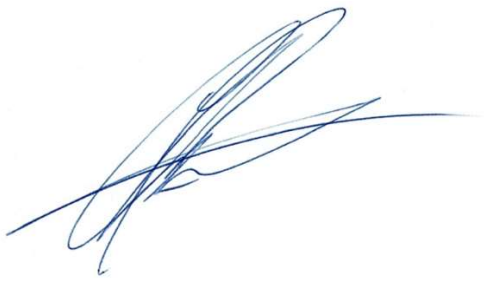
According to WSP Golder, "The groundwater monitoring program focused on the areas of the site where sand would be extracted". However, it appears that the hydrogeological data used to conduct their evaluation and draw conclusions is restricted to 6 monitoring wells located outside of the extraction area. It is stated in the Level 1 and Level 2 Water Report that monitoring wells were constructed in each of the 16 test pits advanced in 2019, however, none of the water level or other hydrogeological data is provided for these monitoring wells in their reports. It also appears that this data was not incorporated into their calculations and conclusions. There are test pit logs provided that show constructed monitoring wells but there is no hydrogeologic data provide other than a few references to seepage. In our opinion this represents a significant gap or omission within the assessment. Not only does this apparent gap/omission appear to be contrary to their primary objective - "The groundwater monitoring program focused on the areas of the site where sand would be extracted" -, but in our opinion precludes our ability to determine if the WSP Golder conclusions about baseflow; flooding; erosion; etc. are reasonable. This is especially the case given that there is significant and patchy topographic relief across the subject property.

We recommend that WSP Golder, either provide the additional hydrogeological data or conduct the self-described scope of hydrogeological assessment before we can comment further.

If there are any further questions or clarifications requested, please do not hesitate to contact the undersigned,

Yours Truly,

CCR Environmental



Christopher C Rancourt, M.Sc., P.Geo.
Senior Geoscientist, Hydrogeologist, President