PUSLINCH

Comment Summary – 2nd Submission

Consultant	Comments
County of Wellington Planning	See letter attached
GM Blue Plan	See letter attached
Hydrogeologist Comments	See letter attached
Ecology Comments	See letter attached
Township of Puslinch Fire Department – Brent Smith	No concerns
Township of Puslinch Building Department – Andrew Hartholt, CBO	Please clarify the intent and use of the buildings that remain on the site? If the plan is to demolish the buildings, we require demolition permits. If any of the existing buildings are being used for office spaces or any use other than the original use of the building, a "change of use" permit will be required.
Township of Puslinch By-law Enforcement	No comments received
Township Planning Consultant	See letter attached
Township of Puslinch Public Works – Mike Fowler	No comments received

PUSLINCH

Township Traffic Consultant	See letter attached
Township Noise Consultant	See letter attached
Source Water	See letter attached
GRCA	See letter attached

COUNTY OF WELLINGTON

PLANNING AND DEVELOPMENT DEPARTMENT
Aldo L. Salis, BES, M.Sc. MCIP, RPP Director of Planning and Development
TEL: (519) 837-2600
FAX: (519) 823-1694
1-800-663-0750

ADMINISTRATION CENTRE
74 WOOLWICH STREET
GUELPH, ONTARIO
N1H 3T9

March 13th, 2024

Township of Puslinch
7404 Wellington Road 34
Guelph, ON N0B 2J0

Dear Ms. Lynne Banks:

Re: Pre-consultation – 2nd Stage Pre-consultation – Initial Comments
New Aggregate Operation (Lake Pit – Concession 2)
6947 Concession Road 2

Please find general County Planning comments below in reference to the above noted Zoning By-law amendment based on our preliminary review. Detailed County Planning comments will be provided as part of the review of the related Official Plan amendment application.

It is anticipated that many of these studies are being reviewed by the appropriate technical staff/consultants and agencies.

Planning Comments:

General

1. It is noted that this proposal was submitted with a concurrent application to the County of Wellington (Official Plan Amendment). An acknowledgement letter was provided to the applicant dated January 19th, 2024 and requires a notice sign to be posted in order to deem the application complete.

   Once complete, a Notice of a Complete application for the OPA will be circulated to all agencies and the Township. All technical comments for the Township will assist in the review and consideration of the proposed Official Plan Amendment.

   Detailed County planning comments will be provided through the review of the Official Plan Amendment and shared with the Township.

2. A pre-consultation meeting for this proposal took place on July 27th, 2023. As part of that meeting the County identified several studies and followed up in written format via a letter dated September 8th, 2023. A series of studies were identified to be

submitted most of which appear to have been provided, except for a Visual Impact Study. The applicant has confirmed this study will be provided by April 1st, 2024. Once received, the Township may wish to consider having this study peer reviewed.

3. The application refers to this proposal as an "expansion"; however, its unclear why it is being characterized this way. Based on the proposal, applying Section 4.2.8.2 c) of the Growth Plan does not appear to be appropriate. Additional discussion and assessment of the policies in Section 4.2.8.2 are required.

4. Please be aware that the County continues to issue Objection Letters to new and expanding aggregate operations submitted under the Aggregate Resources Act.

Official Plan

5. The County Official Plan identifies the land use designations on-site as Greenland System due to natural features on-site, which includes floodplain, PSW, locally significant wetlands, significant woodlands, and an Environmentally Sensitive Area (Galt Creek and Forest).

   As the subject lands are located within the Greenland System, as identified in the Official Plan, the ecological peer reviewer will need to be satisfied that the subject development is also consistent with Part 5 of the Official Plan; that the associated ecological assessment also addresses Section 4.6.2 Environmental Impact Assessment of the Official Plan; and consistency with Provincial policy.

6. As these lands are not part of the Greenbelt Plan, the Provincial Agricultural System mapping is not yet in effect on the subject lands. Based on the former Township Official Plan, the underlying land use designation appears to be Secondary Agricultural Area.

   The applicant has submitted an Agricultural Consideration Letter dated September 8th, 2023 and indicates within their letter that the review utilized the draft Provincial Agricultural Impact Assessment to assess the impacts of the use. The letter and conclusion of said letter also need to confirm compliance with the Official Plan and Section 4.6.5 Agricultural Impact Assessment within the Official Plan. Additional comments regarding this letter may be provided through the Official Plan amendment review.

COUNTY OF WELLINGTON

PLANNING AND DEVELOPMENT DEPARTMENT
Aldo L. Salis, BES, M.Sc. MCIP, RPP Director of Planning and Development
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GUELPH, ONTARIO
N1H 3T9

Zoning By-law Amendment

7. The current zoning appears to be Natural Environment (NE) Zone, with the Environmental Protection Overlay, and some small area identified as Agriculture (A) Zone.

   It is understood that the applicant intends to rezone the subject lands to an Extractive (EXI) Zone, refine the Natural Environment (NE) Zone and apply the Environmental Protection Overlay. It is generally encouraged that the 30 m setback from the adjacent natural features be placed in the NE Zone and subject to the Environmental Protection Overlay.

8. It is noted that there is a dwelling on-site that will be retained but is currently being utilized as an office. It appears that the dwelling is not included in the noise study for that reason.

9. Detailed comments on the zoning are to be prepared by the Township's planning consultant (Stovel and Associates) and the zoning should align with any resulting Official Plan schedule, if approved.

These comments are preliminary and in relation to the circulation of a Zoning By-law amendment application. I trust these comments will be of assistance.

If you have questions, please contact the County of Wellington Planning and Development Department.

Yours truly,

[redacted]

_____

Meagan Ferris, RPP MCIP
Manager of Planning and Environment

February 6, 2024
Our File: 121006-036

Township of Puslinch
7404 Wellington Road 34
Guelph, ON N0B 2J0

Attention: Ms. Lynne Banks

Re: Development Review Request
CBM Aggregates – Pit Expansion
6947 Concession Road 2
Township of Puslinch

Dear Ms. Banks,

Following our review of the pre-consultation second submission documents received on November 30, 2023, we are providing comments related to a future Zoning By-Law Amendment (ZBA) and Official Plan Amendment (OPA) for the subject lands at 6947 Concession Road 2 in the Township of Puslinch. CBM Aggregates is proposing an aggregate extraction operation at the subject lands referred to as "Aberfoyle South Pit Expansion" and has applied for a Class A Licence under the Aggregate Resources Act with the Ministry of Natural Resources and Forestry.

The first meeting for the proposed pit expansion was on September 28, 2021, which was an introduction to the proposal and included a conceptual plan. No formal engineering comments were prepared at that time in 2021. The proponent subsequently updated their application, and a pre-consultation meeting was held on July 27, 2023, per our review letter dated August 8, 2023.

In support of the identification of engineering requirements for future ZBA and OPA, the following documents and drawings received on November 30, 2023 were reviewed:

- Best Management Practices Plan for the Control of Fugitive Dust by WSP, dated October 2023.
- Transportation Impact Study (Preliminary Roadway and Structural Conditions Review) by TYLin, dated November 2023.
- Site Plan drawings by MHBC, dated November 2023:
    - Existing Features Plan
    - Operational Plan
    - Operational Notes Plan
    - Rehabilitation Plan
    - Cross Sections Plan

We defer detailed review of the following to Township and County Planning and Development:

- Application to Amend the County Official Plan, dated November 20, 2023.
- Agricultural Considerations Review by MHBC, dated September 8, 2023.
- Planning Act Applications Letter by MHBC, dated November 29, 2023.
- Public Consultation Strategy Requirement, dated November 20, 2023.
- Planning Report and ARA Summary Statement by MHBC, dated November 2023.
- Land Transfer of Ownership Receipt, dated March 15, 2018.
- Review and Entry into the Ontario Public Register of Archaeological Reports by Ontario Ministry of Citizenship and Multiculturism, dated November 10, 2023.
- Stage 1 and 2 Archaeological Assessment by WSP, dated August 28, 2023.
- Stage 3 Archaeological Assessment by WSP (Location 3), dated June 1, 2023.
- Stage 3 Archaeological Assessment by WSP (Location 5), dated June 1, 2023.

We defer detailed review of the following to Township of Puslinch consultants:

- Aggregate Resource Evaluation by WSP, dated November 2023.
- Natural Environment Report by WSP, dated November 2023.
- Noise Impact Assessment by WSP, dated November 2023.
- Transportation Impact Study by TYLin, dated November 2023.
- Maximum Predicted Water Table Report by WSP, dated November 2023.
- Water Report Level 1/2 by WSP, dated November 2023.

We defer detailed review of the following to County of Wellington Source Water Protection:

- Drinking Source Water Protection Form, dated November 20, 2023.

Based on our first submission comments and review of second submission documents, we provide the following comments:

Deficiencies / Outstanding Matters

Item No.	Matter / Requirement	Drawing / Document Reference	Date Issue Identified	Comment
2.	Existing Condition of Concession 2	Transportation Impact Study	July 27, 2023	GMBP Comment (July 27, 2023) Township staff confirm that Concession 2 has only a single lift of asphalt west of the existing MacMillan pit entrance. Proponent to investigate the existing road structure and provide a geotechnical investigation and identify any required upgrades to support the increased use of the gravel hauling trucks, from the MacMillan entrance to the proposed site access. Response Transportation Impact Study (TIS) provided includes a "Preliminary Roadway and Structural Conditions Review." GMBP Comment (January 31, 2024) TIS recommends a second lift of asphalt but did not suggest that a geotechnical review of the existing road base was completed. Please provide a geotechnical investigation.
3.	Existing Bridge Structure 2012	Transportation Impact Study	July 27, 2023	GMBP Comment (July 27, 2023) The Township noted that the new pit location will increase the loading on the existing bridge on Conc 2 just west of SDR 20. Township will review the most recent OSIM inspection report and advise of any concerns. Response TIS provided includes a "Preliminary Roadway and Structural Conditions Review."

Item No.	Matter / Requirement	Drawing / Document Reference	Date Issue Identified	Comment
				GMBP Comment (January 31, 2024) TIS states that the OSIM report does not include any information on load capacity and recommends a "comprehensive test of the structural condition" including geotechnical testing for soil bearing capacity and concrete and rebar testing. Please provide a structural investigation.
4.	Site Entrance paving	Site Plan drawings	July 27, 2023	GMBP Comment (July 27, 2023) New entrances onto Concession No 2 are to be paved 20m before the edge of travelled lane to reduce debris tracked onto Concession 2. Response Site Plan drawings provided. GMBP Comment (January 31, 2024) Extent of pavement at the proposed entrance does not appear to be indicated in the drawings.
5.	Road Maintenance	BMPP for the Control of Fugitive Dust	July 27, 2023	GMBP Comment (July 27, 2023) Proponent to include a maintenance plan for Concession No 2, to address dust mitigation and mud / debris cleanup. Response Best Management Practices Plan for the Control of Fugitive Dust provided. GMBP Comment (January 31, 2024) The provided report includes plans for the entrance and internal roadways but not Concession 2. Please provide a maintenance plan for the paved roadway, including inspection and mud / debris cleanup.
7.	Feeder Pit to Processing Pit	Transportation Impact Study	July 27, 2023	GMBP Comment (July 27, 2023) Township staff noted a potential concern with overloaded gravel haulers between Feeder to Processing pits; this will limit lifecycle of road and bridge. Response TIS provided includes a "Preliminary Roadway and Structural Conditions Review." GMBP Comment (January 31, 2024) See comment on Items No. 2 and 3.

Item No.	Matter / Requirement	Drawing / Document Reference	Date Issue Identified	Comment
8.	Flood Potential	Site Plan drawings	February 6, 2023	GMBP Comment (February 6, 2024) The water level of the lake in rehabilitated conditions is predicted to be "±302m," suggesting uncertainty and that the water level could end up higher. Contours show that ground elevations are close to 302m along the lake at the southwest end, which could result in the lake spilling over without flood control measures. Please show additional contours outside the proposed lake, including Mill Creek. Provide two additional cross-sections showing the water levels of the proposed lake and Mill Creek: one for the northeast corner of the lake, cutting across Mill Creek and Sideroad 20; and another for the southwest corner, cutting across the proposed wetland and Mill Creek (refer to the attached drawing). Include flood control measures if necessary.

Additional Commentary

Item No.	Additional Commentary
1.	Please provide review comments as received by the GRCA.
2.	The bridge on Concession No. 2 is referenced in the Township OSIM records as Structure 2012.

Completed / Approved

Item No.	Matter / Requirement	Drawing / Document Reference	Date Issue Identified	Date Issue Cleared	Comment
1.	Access to Concession 2	Transportation Impact Study	July 27, 2023	January 31, 2024	GMBP Comment (July 27, 2023) It was noted by the Director of Public works that the site will be permitted the existing residential entrance and 1 new entrance for the proposed pit. Location of Pit entrance to take into consideration the distance from the Conc 2 / Sideroad No 20 intersection. Proponent to provide a copy of the traffic study and consider the requirement for an accelerator lane for loaded trucks entering Concession No 2. Response Transportation Impact Study (TIS) provided states that no additional improvements beyond the proposed driveway are required. GMBP Comment (January 31, 2024) Accepted, no further comment.

Item No.	Matter / Requirement	Drawing / Document Reference	Date Issue Identified	Date Issue Cleared	Comment
6.	Entrance Permit	Planning Report and ARA Summary Statement	July 27, 2023	January 31, 2024	GMBP Comment (July 27, 2023) Township staff confirmed that the new site entrance will require an entrance permit. Response Planning report provided states an "access permit will be obtained from the Township." GMBP Comment (January 31, 2024) Acknowledged. Please note that the entrance permit will be required at time of construction.
8.	Traffic Study	Transportation Impact Study	July 27, 2023	January 31, 2024	GMBP Comment (July 27, 2023) The Proponent noted that a traffic study has been prepared, please provide a copy of the traffic study for review by the Township. Response TIS provided. GMBP Comment (January 31, 2024) No further comment.

If you have any questions or require additional information, please do not hesitate to contact us.

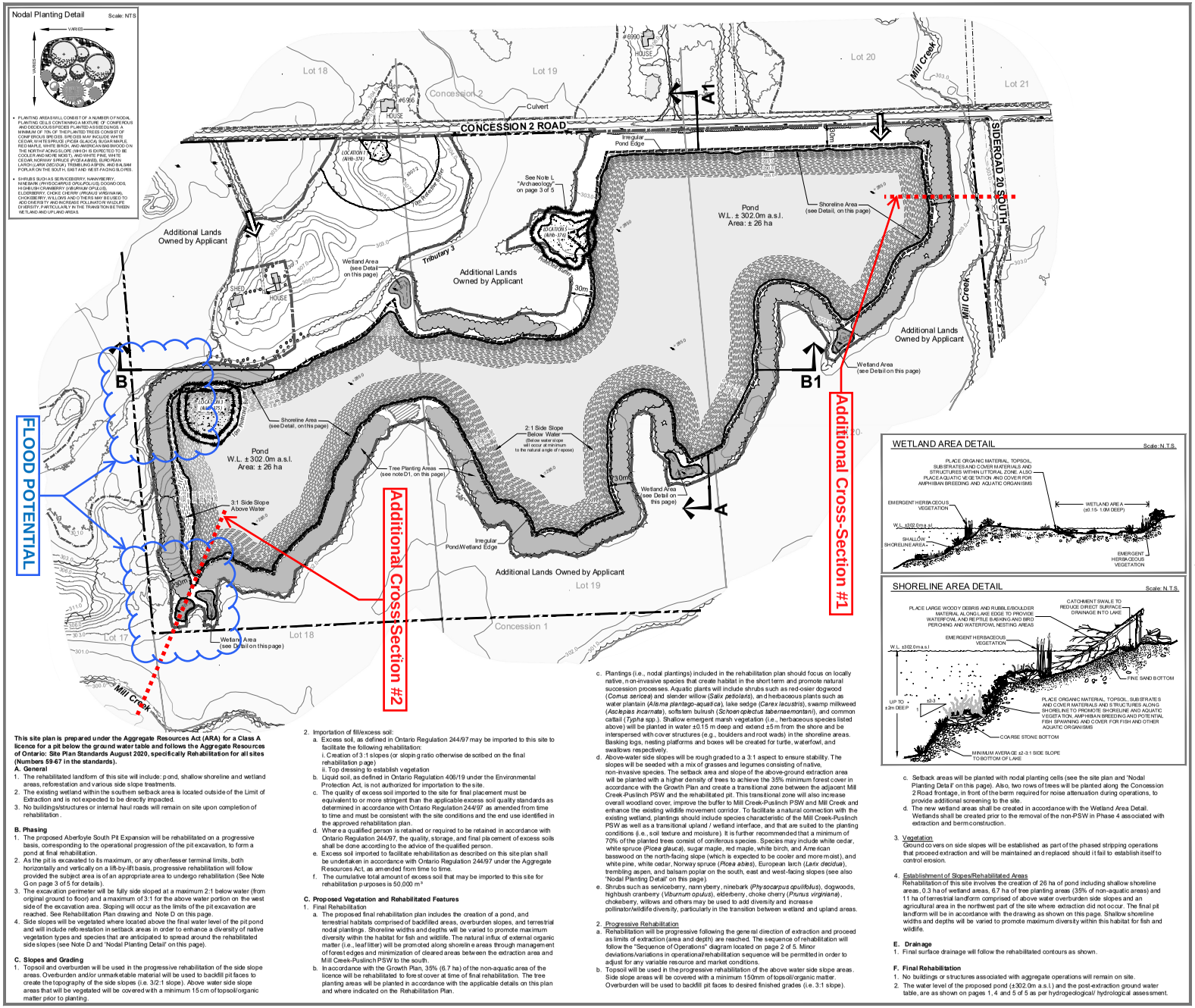
GM BLUEPLAN ENGINEERING
Per:

[redacted]

Parth Lad, E.I.T.
Technical Specialist

[redacted]

Steve Conway, C.E.T., rcsi, PMP
Construction Services Lead, Vice President



This site plan is prepared under the Aggregate Resources Act (ARA) for a Class A licence for a pit below the ground water table and follows the Aggregate Resources of Ontario: Site Plan Standards August 2020, specifically Rehabilitation for all sites (Numbers 59-67 in the standards).

A. General

1. The rehabilitated landform of this site will include: pond, shallow shoreline and wetland areas, reforestation and various side slope treatments.
2. The existing wetland within the southern setback area is located outside of the Limit of Extraction and is not expected to be directly impacted.
3. No building/structures or internal haul roads will remain on site upon completion of rehabilitation.

B. Phasing

1. The proposed Aberfoyle South Pit Expansion will be rehabilitated on a progressive basis, corresponding to the operational progression of the pit excavation, to form a pond at final rehabilitation.
2. As the pit is excavated to its maximum, or any other/lesser terminal limits, both horizontally and vertically on a lift-by-lift basis, progressive rehabilitation will follow provided the subject area is of an appropriate area to undergo rehabilitation (See Note G on page 3 of 5 for details).
3. The excavation perimeter will be fully side sloped at a maximum 2:1 below water (from original ground to floor) and a maximum of 3:1 for the above water portion on the west side of the excavation area. Sloping will occur as the limits of the pit excavation are reached. See Rehabilitation Plan drawing and Note D on this page.
4. Side slopes will be vegetated where located above the final water level of the pit pond and will include reforestation in setback areas in order to enhance a diversity of native vegetation types and species that are anticipated to spread around the rehabilitated side slopes (see Note D and 'Nodal Planting Detail' on this page).

C. Slopes and Grading

1. Topsoil and overburden will be used in the progressive rehabilitation of the side slope areas. Overburden and/or unmarketable material will be used to backfill pit faces to create the topography of the side slopes (i.e. 3/2:1 slope). Above water side slope areas that will be vegetated will be covered with a minimum 15 cm of topsoil/organic matter prior to planting.
2. Importation of fill/excess soil:
   a. Excess soil, as defined in Ontario Regulation 244/97 may be imported to this site to facilitate the following rehabilitation:
      i. Creation of 3:1 slopes (or sloping ratio otherwise described on the final rehabilitation page)
      ii. Top dressing to establish vegetation
   b. Liquid soil, as defined in Ontario Regulation 406/19 under the Environmental Protection Act, is not authorized for importation to the site.
   c. The quality of excess soil imported to the site for final placement must be equivalent to or more stringent than the applicable excess soil quality standards as determined in accordance with Ontario Regulation 244/97 as amended from time to time and must be consistent with the site conditions and the end use identified in the approved rehabilitation plan.
   d. Where a qualified person is retained or required to be retained in accordance with Ontario Regulation 244/97, the quality, storage, and final placement of excess soils shall be done according to the advice of the qualified person.
   e. Excess soil imported to facilitate rehabilitation as described on this site plan shall be undertaken in accordance with Ontario Regulation 244/97 under the Aggregate Resources Act, as amended from time to time.
   f. The cumulative total amount of excess soil that may be imported to this site for rehabilitation purposes is 50,000 m³

C. Proposed Vegetation and Rehabilitated Features

1. Final Rehabilitation
   a. The proposed final rehabilitation plan includes the creation of a pond, and terrestrial habitats comprised of backfilled areas, overburden slopes, and terrestrial nodal plantings. Shoreline widths and depths will be varied to promote maximum diversity within the habitat for fish and wildlife. The natural influx of external organic matter (i.e., leaf litter) will be promoted along shoreline areas through management of forest edges and minimization of cleared areas between the extraction area and Mill Creek-Puslinch PSW to the south.
   b. In accordance with the Growth Plan, 35% (6.7 ha) of the non-aquatic area of the licence will be rehabilitated to forest cover at time of final rehabilitation. The tree planting areas will be planted in accordance with the applicable details on this plan and where indicated on the Rehabilitation Plan.
   c. Plantings (i.e., nodal plantings) included in the rehabilitation plan should focus on locally native, non-invasive species that create habitat in the short term and promote natural succession processes. Aquatic plants will include shrubs such as red-osier dogwood (*Cornus sericea*) and slender willow (*Salix petiolaris*), and herbaceous plants such as water plantain (*Alisma plantago-aquatica*), lake sedge (*Carex lacustris*), swamp milkweed (*Asclepias incarnata*), softstem bulrush (*Schoenoplectus tabernaemontani*), and common cattail (*Typha* spp.). Shallow emergent marsh vegetation (i.e., herbaceous species listed above) will be planted in water ±0.15 m deep and extend ±5 m from the shore and be interspersed with cover structures (e.g., boulders and root wads) in the shoreline areas. Basking logs, nesting platforms and boxes will be created for turtle, waterfowl, and swallows respectively.
   d. Above-water side slopes will be rough graded to a 3:1 aspect to ensure stability. The slopes will be seeded with a mix of grasses and legumes consisting of native, non-invasive species. The setback area and slope of the above-ground extraction area will be planted with a higher density of trees to achieve the 35% minimum forest cover in accordance with the Growth Plan and create a transitional zone between the adjacent Mill Creek-Puslinch PSW and the rehabilitated pit. This transitional zone will also increase overall woodland cover, improve the buffer to Mill Creek-Puslinch PSW and Mill Creek and enhance the existing wildlife movement corridor. To facilitate a natural connection with the existing wetland, plantings should include species characteristic of the Mill Creek-Puslinch PSW as well as a transitional upland / wetland interface, and that are suited to the planting conditions (i.e., soil texture and moisture). It is further recommended that a minimum of 70% of the planted trees consist of coniferous species. Species may include white cedar, white spruce (*Picea glauca*), sugar maple, red maple, white birch, and American basswood on the north-facing slope (which is expected to be cooler and more moist), and white pine, white cedar, Norway spruce (*Picea abies*), European larch (*Larix decidua*), trembling aspen, and balsam poplar on the south, east and west-facing slopes (see also 'Nodal Planting Detail' on this page).
   e. Shrubs such as serviceberry, nannyberry, ninebark (*Physocarpus opulifolius*), dogwoods, highbush cranberry (*Viburnum opulus*), elderberry, choke cherry (*Prunus virginiana*), chokeberry, willows and others may be used to add diversity and increase pollinator/wildlife diversity, particularly in the transition between wetland and upland areas.
   f. Setback areas will be planted with nodal planting cells (see the site plan and 'Nodal Planting Detail' on this page). Also, two rows of trees will be planted along the Concession 2 Road frontage, in front of the berm required for noise attenuation during operations, to provide additional screening to the site.
   g. The new wetland areas shall be created in accordance with the Wetland Area Detail. Wetlands shall be created prior to the removal of the non-PSW in Phase 4 associated with extraction and berm construction.
3. Vegetation
   Ground covers on side slopes will be established as part of the phased stripping operations that proceed extraction and will be maintained and replaced should it fail to establish itself to control erosion.
4. Establishment of Slopes/Rehabilitated Areas
   Rehabilitation of this site involves the creation of 26 ha of pond including shallow shoreline areas, 0.3 ha of wetland areas, 6.7 ha of tree planting areas (35% of non-aquatic areas) and 11 ha of terrestrial landform comprised of above water overburden side slopes and an agricultural area in the northwest part of the site where extraction did not occur. The final pit landform will be in accordance with the drawing as shown on this page. Shallow shoreline widths and depths will be varied to promote maximum diversity within this habitat for fish and wildlife.

2. Progressive Rehabilitation
   a. Rehabilitation will be progressive following the general direction of extraction and proceed as limits of extraction (area and depth) are reached. The sequence of rehabilitation will follow the "Sequence of Operations" diagram located on page 2 of 5. Minor deviations/variations in operational/rehabilitation sequence will be permitted in order to adjust for any variable resource and market conditions.
   b. Topsoil will be used in the progressive rehabilitation of the above water side slope areas. Side slope areas will be covered with a minimum 150mm of topsoil/organic matter. Overburden will be used to backfill pit faces to desired finished grades (i.e. 3:1 slope).

E. Drainage

1. Final surface drainage will follow the rehabilitated contours as shown.

F. Final Rehabilitation

1. No buildings or structures associated with aggregate operations will remain on site.
2. The water level of the proposed pond (±302.0m a.s.l.) and the post-extraction ground water table, are as shown on pages 1, 4 and 5 of 5 as per hydrogeological/ hydrological assessment.

WETLAND AREA DETAIL
Scale: N.T.S.

SHORELINE AREA DETAIL
Scale: N.T.S.

Legal Description

PART OF LOTS 18, 19 and 20
CONCESSION 1
(Geographic Township of Puslinch)
TOWNSHIP OF PUSLINCH
COUNTY OF WELLINGTON

Legend

- Boundary of Area to be Licensed
- Additional Lands Owned by Applicant — POST & WIRE FENCE UNLESS OTHERWISE NOTED
- Contour with Elevation — METRES ABOVE SEA LEVEL
- Existing Fence — POST & WIRE FENCE UNLESS OTHERWISE NOTED
- Existing Vegetation
- Private Laneway
- Access
- Provincially Significant Wetland — ON-SITE VERIFIED IN FIELD BY WSP 2021 AND OFF-SITE FROM ONTARIO GEO HUB
- Unevaluated Wetland — GRCA OPEN DATA
- Archaeological Site — SITE RECOMMENDED FOR FURTHER ARCHAEOLOGICAL FIELD WORK
- Cross Sections — SEE PAGE 5 OF 5 FOR EXISTING AND REHABILITATED CROSS SECTIONS
- Limit of Excavation — ALL SETBACKS ARE DRAWN TO SCALE AND SHOW LABELLED DISTANCES
- Proposed Contour — METRES ABOVE SEA LEVEL (m A.S.L.)
- Proposed Elevation — REHABILITATED ELEVATION
- Proposed Tree Planting Areas — LOCATION APPROXIMATE
- Post Extraction Pond
- Proposed Shoreline Area — (SEE DETAIL ON THIS PAGE)
- Proposed Wetland Area — (SEE DETAIL ON THIS PAGE)

Site Plan Amendments

No.	Date	Description	By

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
200 - 540 BINGEMANS CENTRE DR. KITCHENER, ON. N2B 3X9 | P. 519.576.3650 F. 519.576.0121 | WWW.MHBCPLAN.COM

MNRF Approval Stamp

Stamp

Applicant

Voturantim cimentos cbm

55 Industrial St. 4th Floor Toronto, Ontario M4G 3W9
Telephone: (416) 696-4411

Applicant's Signature

David Hanratty
Votorantim Cimentos - North American Aggregates
Director of Land & Resources

Project

Aberfoyle South Pit Expansion

MNRF Licence Reference No.

Pre-approval review:

For application submission - November 2023

Plan Scale 1:2,500 (Arch D)

SCALE
0 25 50 100
METRES

Plot Scale 1:2.5 [1mm = 2.5 units] MODEL

Drawn By D.G.S.

Checked By N.D.

File No. **Y321AB**

File Name

REHABILITATION PLAN

Drawing No.

4 OF 5

K:\Y321AB- CBM Aberfoyle South Pit Expansion\A\Aberfoyle South Pit Expansion Rehaplan 4of5 November2023.dwg

Harden Environmental Services Ltd.
4622 Nassagaweya-Puslinch Townline
Moffat, Ontario, L0P 1J0
Phone: (519) 826-0099 Fax: (519) 826-9099

Hydrogeological Assessment

Geochemistry

Phase I / II ESA

Regional Flow Studies

Contaminant Investigations

OLT Hearings

Water Quality Sampling

Groundwater & Surface Water Monitoring

Groundwater Protection Studies

Groundwater Modelling

Groundwater Mapping

Permits to Take Water

Environmental Compliance Approvals

Designated Substance Surveys

Our File: 2340

February 7, 2024

Township of Puslinch
7404 Wellington Road 34
Puslinch, Ontario N0B 2J0

Attention: Lynne Banks
Development and Legislative Coordinator

Re: Review of 2nd Submission
CBM Aberfoyle South Expansion, Puslinch, Ontario

Dear Lynne,

We have several broad issues with the information provided and conclude that the submission is insufficient for a complete application. The broad issues are listed below and in addition, we have a preliminary list of comments and questions regarding the technical reports that require a response from the applicant. Additional issues will be raised depending on responses received by the applicant.

Silt Deposition at Aberfoyle Main Pit (South of Hwy 401)

The proposed operations include aggregate processing at the McNally Pit (License 5497) with deposition of fine-grained material possibly into the Aberfoyle Main Pit (5520). The area designated for silt deposition in the Aberfoyle Main pit is also used for deposition of silt from the Neubauer and Lanci Expansion. CBM has a history of depositing silt in areas not designated for silt ponds at this location. A detailed analysis of ongoing and future sediment deposition needs must be prepared, and the appropriate areas designated for sediment disposal. Potential hydrogeological and ecological impact assessments for the areas designated for silt disposal below the water table must be made, verification monitoring undertaken, and mitigation measures identified.

Cumulative Impact of Multiple Below-Water-Table Aggregate Operations and Permitted Groundwater Abstractions

A cumulative impact assessment of ongoing aggregate extractive activities in this area of intensive aggregate operations has not been prepared or presented. A cumulative impact assessment including all groundwater abstractions from Permitted water taking, aggregate extraction from below-the-water-table and deposition of sediment below the water table must be included. The cumulative impact assessment must also include a detailed water balance of the cumulative impact of increased evaporation in this area from converting farmland to open bodies of water. Mill Creek should not be assumed to be a hydrologic boundary to the effects of below water table extraction, particularly when up to four metres of drawdown are being predicted. The impacts of other groundwater abstractions extend beneath Mill Creek.

Localized Impact to Private Property

The proposed pit is surrounded by private property. It is clear throughout the reporting that there will be impacts on both groundwater movement and groundwater elevations beyond the applicant's property boundaries. For example, all groundwater movement from the CBM property will cease or be significantly reduced between the proposed lake and Mill Creek along a 1600 m stretch of Mill Creek as detailed in Appendix G of the Water Report. This impact is not isolated to the CBM property.

Groundwater levels beneath properties north and south of the CBM owned lands will decrease (east half of site) and groundwater levels beneath properties south and west of the CBM lands will increase (west half of site). There is also the potential for annual seasonal overland flow from the proposed lake onto private lands. The concerns of the private landowners must be addressed.

Direct Impacts to Mill Creek Within the Area of Influence of the Pit

There is a significant reach of Mill Creek that will either have reduced or eliminated groundwater discharge from the west and or north shore because of the proposed below water table mining. Approximately 1,600 metres of shoreline will have between 92% and 100% of natural groundwater discharge diverted from Mill Creek to the proposed lake (WSP 2023, Section 4.2.3: Table 8 and corresponding Figure 16). This area of Mill Creek is an important fishery as we have learned through the work commissioned by the Department of Fisheries and Oceans and work done for the Grand River Conservation Authority. The direct impact of this groundwater flow reduction to Mill Creek has not been adequately described, other than in a general way calculated as a percentage reduction of total upstream baseflow.

Impacts to the Mill Creek Puslinch Provincially Significant Wetland

In correlation with the direct impacts to Mill Creek described above, discharge to the Mill Creek Puslinch Provincially Significant Wetland (PSW) will be reduced by 60% to 100% in the upgradient zones (WSP 2023, Section 4.2.3: Table 7 and corresponding Figure 16).

The reporting provided in Appendix G, Groundwater Model of the Water Report clearly identifies areas where there will be both temporary and permanent groundwater level reductions and groundwater level increases. These extensive areas are not identified in the Natural Heritage Report assessment. There are three main areas where the Natural Heritage Report hydrological assumptions do not correlate to the findings of the Groundwater Model.

1) The Natural Heritage report states that there will be no groundwater level impact beyond 120 m whereas the Groundwater Model indicates impacts occurring at a distance greater than 720 m.

2) The Natural Heritage report states that there will be up to 489 mm/year of additional groundwater discharge to the Mill Creek Puslinch Provincially Significant Wetland south of the proposed lake whereas the model shows that the PSW in Zone 2 will have a significant decrease in groundwater discharge. This is the same area where groundwater flow will be reduced.

3) The Natural Heritage report states that that the rise in water levels in the southwest area will not change water availability to the wetland. The groundwater model predicts a rise of up to 0.9 m in the southwest corner of the site significantly reducing the thickness of the unsaturated zone and greatly increasing the volume of groundwater discharge into the wetland.

Impacts to On-Site Tributary 3

The surface water catchment area for Tributary 3 will be reduced. There will also be a permanent decline in groundwater levels beneath Tributary 3 leading to a reduction in baseflow. It is estimated that there will be a permanent 52% reduction in baseflow to Tributary 3 as documented in the Groundwater Model report. A referral to the DFO has been made and we recommend that our detailed comments and those of Aboud and Associates are also sent to the DFO. The groundwater model only simulates a steady state solution calibrated to, presumably, an average condition and drought conditions will result in even lower levels of the water table adjacent to and beneath Tributary 3. It is known that the flow in Tributary 3 varies considerably seasonally, but generally has baseflow throughout the year. The flow in Tributary 3 should be evaluated in a holistic

manner including seasonal surface water and groundwater inputs in order to assess long term impacts.

Flood Control

The potential for flood control will be reduced at the site because of the creation of a large single pond in combination with the a) reduction in discharge to upgradient PSW areas and b) capture of baseflow normally discharging to Mill Creek at the northeast end of the lake.

The pond will allow for instantaneous transfer of hydraulic potential from upstream end(northeast)of the site to downstream edge(southwest). The proposed lake level (302 m AMSL) at the downstream edge will already be very close to, if not above the original ground surface. The site plans show a wetland at 301 m AMSL in very close proximity to the proposed lake in the southwest area. The groundwater model is calibrated to an average condition, not a high level or low-level condition. Therefore, assuming similar fluctuations in the pond level as observed at other nearby pit ponds, the water level in the spring of the year, could be 0.5 to 0.75 higher and overflow from the lake will be an annual event under normal conditions, let alone flood conditions. This has implications for adjacent wetland hydrology and private properties.

Groundwater Model

There are numerous concerns with the applicability, accuracy and total reliance upon results of the groundwater model as indicated in the following section of this report.

For these reasons, it is our opinion that the information provided is not sufficient to be accepted for a complete application.

We have the following specific comments on the technical reports. Given the integration of the natural heritage discipline and hydrogeology, we have provided comments on the natural heritage report where hydrogeology is mentioned.

Natural Environment Report, Proposed Aberfoyle South Pit Expansion, WSP Canada, November 2023		
Page **S**ection	General Statement from Report	Harden Comment
P1 S1.1	Predicted groundwater impact not expected beyond 120 m, therefore no sensitive natural features beyond 120 m have the	Please see attached figures from the groundwater model report showing that the maximum extent of predicted drawdown is at least 720 m from the northeast corner of the site. The Natural Heritage report assumption of no impact beyond 120 m is incorrect.

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	potential to be impacted.	
P14 S5.2.1	Seeps were identified in the reach of Mill Creek entering the northeast corner of the site.	Please provide additional details including location for the seeps identified in the reach of Mill Creek entering the northeast corner of the site. Are they seasonal, is there active groundwater upwelling in the stream or is the seepage on the banks or in the fields? These seeps are not mentioned in the Water Report. Will this seepage continue post development?
P15 S5.2.1	Minimal recharge function, significant storage capacity attenuating high flows and sustaining low flows, local discharge areas, intermittent perennial streams….	Section 4.9 of the Water Report states that the site is a Significant Groundwater Recharge Area. Does this change the understanding of hydrological relationships to the on-site ecology?
P17 S5.3	Highest groundwater elevation is 303.5 m AMSL in northeast corner and 303.8 m AMSL between Tributary 3 and 5. Lowest in western side at confluence of Tributary 3,4,5.	The maximum predicted water table occurs MW18-05 at an elevation of 304.34 m AMSL as shown on Figure 2 of the Maximum Groundwater Elevation Report.
P18 S5.4	Mill Creek and its tributaries are mainly fed by groundwater through most of the year.	We concur with this assessment.
P18 S5.4	In floodplain, pit pond would be overtopped, no damage as pit already partially flooded, excess water reports back to Mill Creek via infiltration.	There is presently storage at the site in terms of an unsaturated zone at both the northeast and southwest areas of the site and in surface depressions. The mining will remove the unsaturated zone storage area and depressional areas in the fields to be replaced by a lake. According to the Water Report, the 302 m AMSL lake

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		level will already be at least 0.8 m higher than the present groundwater table at the southwest edge of the lake. The site plans show that the ground surface elevation is approximately 302 m AMSL at the west and southwest areas. In addition, the 302 m AMSL final lake level is based on a steady state simulation of at a particular time and does not represent the highest possible lake level. There is very little storage at the site and a flood wave propagated from the upgradient side of the site will move rapidly through the and inundate low lying lands on neighbouring private property.
P31 S5.6.4	Tributaries 1,2,3, 4 have coldwater thermal regime that support same fish as Mill Creek.	The coldwater thermal regime is related to the groundwater discharge into these tributaries.
P45 S7.1	Drawdown of the water table up to 2.5 m, during final three years range of drawdown 1 to 2 m along Mill Creek. Baseflow contributions to Mill creek decreased by 1.7% due to volume replacement.	The water table beside Mill Creek will be permanently lower than Mill Creek for a lengthy portion of the creek along the east side of the pit. This is shown on Figure 14B of the Water Report that shows permanent drawdown of 0.2 m to 1 m of groundwater lowering below the creek along a 1600 m reach of the creek. The particle tracking on Figure 15 of the groundwater model report clearly shows the cessation of groundwater movement through the PSW to Mill Creek in a 900 m reach. There will also be a permanent drawdown of the water table north of the rehabilitated pit extending several hundred metres into the Mill Creek Puslinch PSW and along Mill Creek. The percentage reduction in baseflow contribution mentioned is relative to all baseflow contributions upstream of surface water station. It must be recognized that 100% of baseflow contributions in Zone 1 (Figure 16, Appendix G, Water Report) will be permanently stopped and 92% of baseflow from Zone 2 will be permanently stopped.

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P45 S7.1	Post extraction lower water table permanent at 0.8 m NE and increase of 0.65 SW. Baseflow contributions decrease by 2% at SW3 due to evaporation from pond.	Figure 14B shows an increase of 0.4 m in the water table at the property edge where groundwater levels are less than 0.4 metres below ground surface. This area will be permanently inundated. There is private property beyond this property line.
P45 S7.1	Less seasonal variability resulting in smaller seasonal fluctuations in baseflow in comparison to existing conditions. Higher baseflow during dry periods and lower baseflow during wet periods. This is likely a benefit providing a more constant baseflow throughout the year.	There is a permanent lowering of lake level compared to Mill Creek and a permanent loss of groundwater discharge compared to the present situation.
P46 S7.1	Change from site runoff to infiltration expected to decrease peak flows from site and moderate magnitude of baseflow fluctuations at nearby receptors.	There will be a permanent lowering of the water table adjacent to a 1,600 m reach of Mill Creek resulting in a permanent loss of baseflow to Mill Creek. Greater infiltration occurring at the southwest end of the creek will inundate adjacent lands. The estimated lake level of 302 m AMSL is not the highest to occur on a seasonal basis and will result in inundation of lands west and southwest of the lake.
P46 S7.1	Change in temperature of groundwater reporting to Mill creek less than 1C	The highest observed groundwater temperatures occur at Station MW18-01B due to the proximity of the water table to the ground surface. The projected increase in the water table elevation in this area will increase shallow groundwater temperatures.
P46 S7.1	Tributary 3 Reduced runoff to Tributary 3 by	The Water Report confirms that both runoff and groundwater discharge to Tributary 3 will decrease.

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	reducing catchment area, loss of runoff and loss of infiltration in catchment area due to pit.	
P46 S7.1	Tributary 3 Reduction in baseflow of 29% during operations. Tributary 3 is perennial feature, dry on four occasions, extraction will prolong seasonal dry period but not result in permanent drying.	This is a significant reduction in flow as a percentage of total baseflow to Mill Creek. The model only simulates an average time of year, there is no seasonality to the evaluation so it is not possible to indicate how long the prolonged dryness will be or when the greatest impact will occur.
P46 S7.1	Tributary 3: 1 to 7.5% decrease in baseflow.	The model represents an average day of the year and cannot be used to project impacts on a seasonal basis. Table 7 in Appendix G of the Water Report shows that there is a 52% reduction in groundwater discharge to Zone 5 (Tributary 3).
P46 S7.1	Tributary 3: DFO to be informed about potential HADD.	We recommend that the Township provide our technical comments to the DFO. We recommend that this request be expanded to include a review of impacts to Mill Creek given the predicted reductions in groundwater discharge.
P47 S7.2	PSW located off site and outside of extraction limit therefore no direct impacts. A setback is required to prevent adverse indirect impacts. Proposed limit is 30 m.	There are significant impacts beyond the suggested setbacks. The Water Report states that there will be drawdown of the water table at a distance of at least 720 m from the proposed lake. This extends 690 m beyond the proposed setback. The Water Report shows that 100% of groundwater flow normally passing through the site will be diverted away from the adjacent PSW (Figure 15, Appendix G, Water Report).

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		Table 7 in Appendix G of the Water Report documents a 42% reduction in overall groundwater discharge to the Zone 2 wetland and a 60% reduction in overall groundwater discharge to the Zone 1 Wetland. For Zone 5, which includes off-site PSW, there is a 100% reduction in groundwater discharge to the wetland. The Water Report shows that there will be a rise in groundwater levels extending beyond 30 m setback including into PSW and private lands.
P48 S7.2	Flood storage function provided by MC PSW not impacted as no removal of wetland expected. Pond created expected to replace flood storage function expected to provide additional storage for water to prevent increased flooding downstream.	Flood storage is generally needed when surface water and groundwater elevations are at their highest. The lake will not provide any storage as it is already at least 0.8 m higher at the southwest corner and will have increased overland discharge should flood conditions occur. The proposed lake level of 302 m AMSL is based on a model, calibrated to an average water level. Seasonal high lake level can be expected to be 0.5 to 0.75 m higher based on observations at nearby pits. This will result in annual overflow of the lake into the riparian wetlands along Mill Creek and Tributary 3. During extreme flow conditions, the flooding will be made worse on the McNie property and on the adjacent private property south of the proposed lake.
P48 S7.2	Mill Creek Puslinch PSW supported by groundwater and surface water inputs from site. Aggregate extraction will decrease runoff to these wetland areas, the potential impact to PSW due to reduced runoff expected to be	The Natural Heritage report clearly states that the Mill Creek Puslinch PSW is supported by groundwater and surface water from the site. For approximately 1,000 m along the edge of the wetland, the groundwater levels in the proposed lake area will be lower than present, thereby eliminating or greatly reducing groundwater flow to the PSW. This is shown on the particle tracking Figure 15 in the Water Report. Table 7 and Figure 16 of the Groundwater Modeling Report clearly identify

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	mitigated by infiltration surplus from pit.	large areas of wetland that will be impacted by the proposed aggregate extraction.
P48 S7.2	1.7 % reduction in baseflow to the PSW due to below water table extraction. Most of catchment area east of Mill Creek and no groundwater drawdown expected to extend east of creek. Majority of baseflow contributions to continue unaltered.	The groundwater model does not extend beyond Mill Creek, therefore there is no way of determining the impact of drawdown on the wetland from the eastern side. Please refer to findings in Appendix G for groundwater model estimated reduction of groundwater discharge to the adjacent wetlands and Mill Creek.
P48 S7.2	Post rehabilitation, baseflow to PSW net gain of groundwater discharge of up to 489 mm/year south of extraction area due to water table flattening	The particle tracking on Figure 15 of the groundwater model report clearly shows the cessation of groundwater movement through the PSW to Mill Creek in a 900 m reach downstream of the bridge at Concession 2 Road. The statement in the Water Report in Section 7, Page 38 , Section 10.1 P 51 and in the Groundwater Model Report Section 5, Page 15 incorrectly lump Zone 2 as being an area of net groundwater gain as Tables 7 and 8 of the groundwater model report state that there will be loss of water to this area of the PSW and Mill Creek.
P48 S7.2	Groundwater level in southwest corner expected to increase post rehab. Therefore no change in water availability to MC P PSW is predicted.	There will be a significant increase in water availability in Wetland Zones, 3,4,6 and 7 ranging from 168 mm/year to 1,116 mm/year (Table 7, Groundwater Model Report). These are significant changes and they do not represent the maximum potential increase in water during the seasonal high groundwater period. It can be expected that there will be considerable overland flow during seasonal high periods into these wetlands.
P48 S7.2	Pit pond expected to decrease water levels near Tributary 3, may affect hydroperiod off-	This is contradictory to P47 S 7.2 says PSW located off site and no impact and setback required to prevent indirect impacts. There is a different message provided in different sections of this report.

Natural Environment Report, Proposed Aberfoyle South Pit Expansion, WSP Canada, November 2023		
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	site at the north end of the study area.	Please refer to estimated reductions in groundwater discharge to the wetland and tributary in Zone 5 as reported in Appendix G of the Water Report.
P48 S7.2	Post rehabilitation, PSW north of extraction area to show a net decrease in groundwater discharge of 173 mm/year. Plant community likely tolerant to short term fluctuations.	The groundwater model represents the average groundwater elevation and neither seasonal drought nor seasonally wet conditions are considered. The lake level will be even lower during dry conditions resulting in even lower water levels in the PSW north of the extraction area.
P48 S7.2	The runoff lost from downsizing the catchment area will largely be offset by water directed to the rehabilitated pond, most of which will report to the MC P PSW as baseflow.	This is not beneficial to Zone 1 and Zone 2 where all groundwater is reduced or removed entirely according to Figure 16 and Tables 7 and 8 of the groundwater modeling report. The Natural Heritage report should be clear on which Zones of the wetland will benefit and which ones will have permanently lower water levels and discharge.
P49 S7.4	Cumulative Effects; no cumulative effects.	The cumulative impacts of the extraction have not been assessed in any way including several major water takings upgradient and several major below water table extraction areas. There is great concern from the Township that the cumulative impact has not been addressed in any meaningful manner.

Maximum Predicted Water Table Report, Aberfoyle South Expansion WSP Canada November 2023		
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P1 S 2.2	Minimum 30 from wetlands and water courses and 60 m from Mill Creek.	The effects of below water table mining and permanent lake levelling extend beyond 30 m and 60 m. Justification for these setbacks must be provided.

P2 S 2.2	5.5 million tonnes, 95% below water table, max depth 20 m below water table.	Justification for the maximum extraction depth of 20 m must be provided. Both bedrock and significant thicknesses of fine-grained glacial till, silt and clay occur at less than the 20 m depth. There has been insufficient characterization of the vertical hydraulic gradients above and below the silt layers to determine the potential impacts of depressurizing the aquifer. Significant upward hydraulic gradients occur in this area as shown by the permanent flowing artesian condition at SP18-03, recognition in the Tier 3 Model as being an area of significant groundwater upward gradients and the significant event of flowing artesian well on the Reid Heritage Homes site. Mining blindly through silt layers will have unknown consequences given that none of the monitoring wells constructed at the site for the purpose of evaluating the overburden groundwater system extend to a depth greater than 11.89 m.
P 2 S 2.3	Pond level final is 302 m AMSL plus / minus.	The final predicted pond level of 302 m AMSL (plus or minus) does not adequately represent the lake level at all seasons of the year. This is inadequate given that the ground elevation at the southwest and west ends of the proposed lake also have an elevation of 302 m AMSL. Seasonally, the lake will overtop the native ground and flood into neighbouring properties.
P2 S 3.0	Note: Water table is not static and is expected to vary from location to location over time.	We concur with this statement, and it should have been recognized during the modeling process that the water table does not occur at one elevation throughout the year.
P3 S4.0	All monitors completed in the water table aquifer.	The veracity of this statement should be considered. The highest on-site readings at the site occur at MW18-05 which appears to occur in a confined condition. The water chemistry for water obtained from MW18-05 is very different than that obtained at the other monitoring wells and the seasonal rise and fall in the water level in this well suggest different conditions than occur at other stations. Had the other monitoring wells or additional monitoring wells been installed at a greater depth, would they also exhibit confining conditions?

P 4 S5.0	Max predicted water table measured on Jan 12, 2020.	No water level measurements were made on January 12, 2020. Figure 2 shows data for water level measurements made on March 12, 2020. The highest water level occurs at MW18-05 at 304.33 m AMSL.
P4 S5.0	Also presented Well 16-79, 9 m deep and screened in water table aquifer, max 303.76 m AMSL April 2018 to Dec 2022 vs 303.88 m AMSL since 1989. MW18-04 max level is 303.95 m AMSL.	Why is the water level at MW18-04 higher than Well 16-79? MW18-04 is downstream of Well 16-79. The location of Well 16-79 is not shown on any figure. The highest groundwater elevation at the site occurs at MW18-05. The borehole log suggests potential upward gradients.

Model Report. Appendix G of the Water Report		
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P1 S1.1	Of specific interest is the assessment of potential changes to baseflow and potential changes in groundwater temperature on nearby Mill Creek and its tributaries.	If this was the interest, then why not ensure that the on-site calibration met with industry standards? The Normalized Root Mean Square Error for on-site wells is 32%. This is unacceptable. The water level at MW18-05 is underpredicted by 1.16 metres and the water level data for MW18-01 is not mentioned in the calibration statistics. It appears that the calibrated value for MW18-01 when compared to the March 2021 calibration date is also off by more than 1 m. With Mill Creek being nearby and the reliance on the model for the impact analysis, there should have been better on-site calibration.
S 3.51	No-flow boundaries at northern edge.	A review of Figure 10 shows that a number of wells with predicted groundwater potentials between 313 and 317 m AMSL have higher than observed groundwater potentials. This occurs not that distant from the site towards the north, and is likely a result of the no flow boundary constraint. The calibration of the model is very germane to the predictive accuracy of the model and in the immediate area of the site all wells are predicting lower than the observed and near the model boundary the potentials are predicted to be higher than observed. Figure 3-10 of the Tier 3 study shows groundwater flow to be parallel to the

Model Report. Appendix G of the Water Report		
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		surface water divide on the Paris Moraine north of the site, rather than perpendicular as shown on the WSP model.
S 3.5.2	Ratio of Overburden thickness used from Tier 3 model.	There is no indication that on-site geological conditions were used to determine the position, absence, presence of lower permeability layers. It is clear from the borehole logs that silty sand, silt, silty clay or clay layers occur throughout the site. Cross sections showing the model layers through the site and surroundings should be presented.
S 3.5.2	Uppermost hydrologic unit is subdivided into two numerical layers, a 0.5 m thick upper layer defined by topography.	Is this the 0.5 m thick layer where the Type 1 Dirichelet Condition was applied?
S 3.5.2	Unit B, basal till aquitard Wentworth and Port Stanley 0.3 to 25 m thick.	The on-site drilling confirms that silt, clay or lower permeability glacial till occurs throughout the site. The Tier 3 model recognizes this area as having significant upward hydraulic gradients. The productive fishery in Mill Creek is in part because of the upward hydraulic groundwater conditions. The role of the fine grained layers in directing and creating the important upwellings in Mill Creek has not been explored nor included in the model.
S 3.5.2	Competent bedrock is Guelph Fm to the west and north and Reformatory to the east. These are two numeric model layers totaling 35 m. The bottom of this layer is no flow to reflect the material properties of the deeper bedrock units.	Figure 2.2 of the Tier 3 Study shows that only the Guelph Formation underlies the model area and is underlain by relatively thin layer of Reformatory Formation, Vinemount Formation and relatively thick layers of the Goat Island and Gasport Formations. The Vinemount Member is a regionally significant aquitard that is influential to groundwater flow and is not included in the bedrock layers. The Guelph Formation, a known regional aquifer is modeled at a K of 7×10^{-7} m/s and the Reformatory an aquifer/aquitard is modeled at 6×10^{-7} m/s almost the exact same value. The Tier 3 model suggests a 10^{-4} to 10^{-6} m/s for the Guelph and 5×10^{-7} to 5.3×10^{-6} for the reformatory. The modelled competent bedrock layer is 35 m thick and represents the Guelph,

Model Report. Appendix G of the Water Report		
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		Reformatory, Vinemount, Goat Island and Gasport formations which have vastly different hydraulic properties. Given that regional groundwater models indicate that Mill Creek influences hydraulic potentials in all of the underlying bedrock aquifers above the basal shale unit, a better definition of the bedrock layer(s) is warranted.
S3.5.3	Within surface layer tributaries, ditches and wetlands are Type 1.	The surface layer is only 0.5 m thick. Were all tributaries, creeks, wetlands and ditches modelled in this layer only? How were drawdown values calculated beneath the wetlands if the Type 1 boundary condition was applied? Was a maximum/minimum withdrawal injection rate set for these nodes? How were the initial values for the wetland nodes specified? Why is there a drain modeled on the west side of the Hanlon from County Road 34 up to Maltby Road. There is no such water course. Why was only one branch of Tributary 3 (the west side) modeled north of Concession Road 2.
S 3.5.3	Case 1: Mill is modelled as a drain only.	Are the model calibration statistics based on this version? Was a maximum injection rate assigned to these nodes?
S3.5.3	Case 2: Mill is modelled as a river in and out possible.	Baseflow results were taken from this model. Which model calibration is described in this report? Changing a boundary condition should result in a check on the calibration. How was the hydraulic potential value assigned to Mill Creek?
S3.5.3	Recharge based on Layer 1.	This layer is only 0.5 m thick. Does this affect the ability of the model to accurately represent recharge?

Model Report. Appendix G of the Water Report		
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S3.5.3	Withdrawal wells: Capital total of 281 m^3/day.	There are significant water takings in Aberfoyle that modify groundwater flow in all geological units in this area including bedrock, and overburden. These are ignored in the model. The water taking from Blue Triton extends to the north side of Mill Creek in both bedrock and overburden, this water taking should be taken into account.
P 6 S3.5.3	K of pond is 1 m/s.	There are no figures showing that the hydraulic conductivity of 1 m/s adequately flattens the water table in the area of the proposed pond.
S3.5.5	Baseflow calibration values scaled for Mill Creek to represent that which comes from model area.	This does not make hydrologic sense. The north side of Mill Creek is the main source of groundwater and includes McCrimmon Creek, Pond Creek and the significant groundwater recharge associated with the Paris Moraine. There are significant aggregate resource extraction areas and water takings of the south side that limit groundwater discharge to Mill Creek. A simple scaling of baseflow according to catchment area is not appropriate. The model study area should be increased to include both sides of Mill Creek and calibrated to all of the baseflow occurring to Mill Creek.
p 9 S4.13		The discussion on changes to baseflow does not show that long reaches of Mill Creek and Tributary 3 will no longer have groundwater discharge. See Figure 15, Appendix G, which show the particle tracks (i.e. groundwater flow) that no longer ends at Mill Creek. Table 8 of Appendix G documents that the majority of groundwater flow to Mill Creek and Tributary 3 will be eliminated.
Model Report Fig 7		This bedrock figure does not accurately show bedrock at 292.54 m AMSL in MW18-05 or the other two on-site boreholes that intersect the bedrock. On-site geology should be prioritized.
Model Report Fig 10		The predicted potential at all onsite wells are at the theoretical regression line or below. The on-site calibration targets have a very poor normalized root mean square error of 32%. This suggests that the on-site groundwater flow system is not well represented in the model. This affects estimates such as baseflow

Model Report. Appendix G of the Water Report		
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		contributions, area of influence of the pit and drawdown estimates. Why isn't MW18-01 shown on the inset map as being a calibration target? The March 3, 2021 observation value is 301.84 m AMSL and the model predicted value is approximately 300.9 m AMSL. How does the predicted hydraulic head at MW18-01 compare to the elevation of Mill Creek nearby? What elevation of Mill Creek is in the model?
Model Report Fig 14a		The steady state model represents only a single day of the year. The calibration targets on-site are the March 2021 data for the monitoring wells and it is not clear what data is used for the SP series wells. The majority of the calibration targets are private water wells with notoriously erroneous water levels obtained at different times of the year. There are numerous sources of high-quality monitoring data available in the Township could have been used to calibrate the model. Calibration to on-site targets should be improved.

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S 2.2	27 ha in size for extraction area, total license is 44 ha. 5.5 million tonnes, 95% below water table, maximum depth of resource is 20 m to an elevation of 285 m AMSL.	Bedrock was encountered at an elevation above 285 m AMSL in three on-site wells. Silt/clay/till layers occur in each of the exploration wells at varying depths across the site, but mainly above the elevation of 285 m AMSL. Confining conditions may occur beneath the site as created by the fine-grained layers, thus preventing groundwater discharge in the area of the proposed excavation and resulting in groundwater discharge to Mill Creek farther downstream. The mining through fine grained layers should not be permitted unless the role of the fine-grained layers is understood in this sensitive groundwater flow system.

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S 2.2	Raw aggregate feedstock off-site processing.	Where will the silt be deposited? It is necessary to provide silt generation volumes for all feeder pits and volume calculations for remaining approved sediment ponds.
S 2.3	Final lake level +/- 302 m AMSL.	The final lake level is based on a poorly calibrated model for the area around the site and represents only one day of the year. Please provide the seasonal hydraulic potential range for the lake level.
S4.1	Ground surface elevation ranges from 303 to 304 m AMSL.	At MW18-01 the ground surface elevation is at 302.66 m AMSL and at TW11-16 the ground surface elevation is at 302.39 m AMSL. The Geo Optic based ground contours at the southwest and west ends of the lake are at 302 m AMSL and one wetland in the southwest corner is shown at 301 m AMSL. These elevations are very close to or below the proposed lake level. Any seasonal increase or increase from a flooding event will result in overland surface water from the west end of the lake.
S4.5	Competent bedrock: Guelph Formation and Reformatory Quarry Member.	Figure 2.2 of the Tier 3 Study shows that only the Guelph Formation underlies the model area and is underlain by relatively thin layer of Reformatory Formation, Vinemount Formation and relatively thick layers of the Goat Island and Gasport Formations. The Vinemount Member is a regionally significant aquitard and is not included in the bedrock layers. The Guelph Formation, a known regional aquifer, is modeled at a K of 7 x 10^{-7} m/s and the reformatory an aquifer/aquitard is modeled at 6 x 10^{-7} m/s almost the exact same value. The Tier 3 model suggests a 10^{-4} to 10^{-6} m/s for the Guelph and 5 x 10^{-7} to 5.3 x 10^{-6} m/s for the reformatory. The modelled competent bedrock layer is 35 m thick and represents the Guelph, Reformatory, Vinemount, Goat Island and Gasport formations which have vastly different hydraulic properties. Given that regional groundwater models indicate that Mill Creek influences hydraulic potentials in all of the underlying bedrock aquifers above the basal shale unit, a better definition of the bedrock layer is warranted.

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Section</th><th>General Statement from Report</th><th>Harden Comment</th></tr>
<tr><td>S4.7</td><td>Nearby aggregate sites are recognized.</td><td>No cumulative impact assessment has been made of proposed pit as an addition to other pits. The cumulative impact of all below water table extractions and water taking in the area should be determined from the groundwater model.</td></tr>
<tr><td>S4.8.1</td><td>Water well survey required.</td><td>Given the stated potential for off-site impacts, private wells on the immediately adjacent properties should be surveyed as part of the initial assessment to confirm the depth, location and source of local water wells.</td></tr>
<tr><td>S4.9</td><td>Site is identified as an area of downward hydraulic gradients.</td><td>This is not representative of conditions at MW 18-05. Water levels at MW18-05 are approximately 1 m above the nearby stream. Also, Figure 3-16 of the Tier 3 study recognizes this area as being a regional area of upwards gradients. SP18-03 is described as permanently flowing, another indication of upward groundwater movement. A significant flowing artesian well occurred nearby at Reid Heritage Homes on the east side of the Hanlon Expressway. The importance of upward flowing groundwater discharge to Mill Creek cannot be overstated in this area.</td></tr>
<tr><td>S5.1.1</td><td>Each of the onsite observation wells have 2m to 3m long screens.</td><td>
<table>
<tr><th>Monitor</th><th>Screen Depth (mbgs)</th><th>Bottom of Screen Elevation (m AMSL)</th></tr>
<tr><td>MW18-01</td><td>6.25</td><td>296.41</td></tr>
<tr><td>MW18-02</td><td>10.37</td><td>292.98</td></tr>
<tr><td>MW18-03</td><td>10.37</td><td>293.29</td></tr>
<tr><td>MW18-04</td><td>11.89</td><td>291.92</td></tr>
<tr><td>MW18-05</td><td>11.89</td><td>295.28</td></tr>
<tr><td>MW18-06</td><td>9.14</td><td>293.93</td></tr>
</table>
None of the screened depths in on-site monitoring wells are installed to the depth of the proposed extraction. The potentially confining nature of the natural silt/clay/glacial till layers has not been evaluated.
</td></tr>
</table>

Water Report Level 1 / 2 Aberfoyle South Expansion November 2023		
Page **S**ection	General Statement from Report	Harden Comment
S5.12	Silt layers less than 1 m thick in Sand and Gravel.	The continuity of low permeability layers within the sand and gravel deposit should have been evaluated. The water level at MW18-05 and water quality do not represent the water table aquifer and appear to be artesian (not flowing artesian). The mining of the aggregate could have farther ranging impacts than predicted under unconfined conditions.
S5.12	12 boreholes drilled deep enough to encounter underlying silt unit found to vary 2 to 7 m thick	The top of silt/till/clay should be recognized as the minimum elevation for extraction and not an arbitrary 285 m AMSL. Where the resources is known to be greater depth, this can be recognized on the site plans. The role of the silt/till/clay layers in maintaining hydraulic head in lower aquifer layers is unknown and has not been evaluated with the exiting monitoring network.
S5.12	Confirmed depth of resource is 294 to 287 m AMSL.	It is not appropriate to set minimum mining elevation based on a bump and grind feel of the dragline bucket. Where the resource is known to be shallower, the pit floor should be raised.
S5.2.2	Groundwater Levels	There is no discussion of the highest groundwater levels being observed in MW18-05. Confined levels at MW18-05 or any other stations are not recognized. Model does not accurately predict MW18-05 levels.
S5.5		The water quality at MW18-05 is significantly different than at other wells. Artesian conditions are likely as no chloride observed at this station.
S5.6.3		SW3 is located 40% of the way along the property line and about 40% along Mill Creek, the reach of Mill Creek that is adjacent to this site. The overall impact to streamflow along the whole reach of Mill Creek should be assessed and compared to existing conditions.
Figure 14a		The final impact scenario does not have sufficient detail on groundwater levels, only a one metre contour interval isused to determine how 1 m/s hydraulic conductivity assigned to the Lake affects hydraulic potentials through the lake.

Water Report Level 1 / 2 Aberfoyle South Expansion November 2023		
Page **S**ection	General Statement from Report	Harden Comment
		Please also confirm that the hydraulic conductivity of 1 m/s was assigned to all overburden layers, given that the proposed base level of 285 m AMSL extends to the bedrock in several areas beneath the site.
Figure 12a		End of Year 1, when the pond is just being created and the rate of extraction is the same as all other years will have the greatest potential drawdown. The impact of this year should be evaluated and shown.
Figure 13		These baseflow simulations confirm that there will be a permanent decrease in groundwater discharge to both Mill Creek and Tributary 3. During the years of extraction, there will not be a recovery of water levels during the winter period. It will take approx. nine months to recover post extraction.
S5.7.1	SW3 and SW4 both show upward gradient.	Contradiction to downward gradient discussed in Section 4.9.
S5.7.1	SP18-03 flows continuously.	Not a downward gradient at SP18-03. This is consistent with Tier 3 characterization of this area.
S5.71	SW5 upward gradient when surface water is present.	This indicates upward hydraulic gradients and also suggests that the surface water is present because of discharge of groundwater at this location.

Planning Report		
Page **S**ection	General Statement from Report	Harden Comment
	Processing at the McNally Pit.	A full accounting of volumes of sediment expected from Lanci, Neubauer and Lake Pits compared to approved silt ponds must be undertaken to confirm that the proposed silt has an approved sediment pond.
P37 S7	The effects on groundwater will largely be confined to the license area and surrounding CBM owned property.	We refer you to: Figure 16 and Tables 7 and 8 of Appendix G in the Water Report. There are significant off-site groundwater reductions in wetlands, creeks and tributaries off-site including Zone, 1, Zone 2 and Zone 5. In addition, there are

Planning Report		
Page **S**ection	General Statement from Report	Harden Comment
		groundwater level increases off-site that may inundate wetlands off-site.
P37 S7	There will be a small area immediately northeast of the site, west of Mill Creek where the temporary groundwater table reduction is up to 2.5 m.	The effects of drawdown extend at least 720 m offsite and there are permanent reductions in groundwater discharge to Mill Creek. Zone 1 will have a permanent groundwater table reduction, reduction in groundwater discharge to the wetland and reduction in baseflow to Mill Creek. There will be a permanent increase in groundwater elevation extending onto private lands west and southwest of the site.
P38 S7	Upon rehabilitation there will be a decrease of 1 m at northern end of pond and increase of 0.9 m at southern end of pond.	There is very little unsaturated zone at the south end of the pond and it is likely that overland flow will occur. This will increase the permanent drawdown east of the pit. The estimated final lake level of 302 m AMSL only represents a single day and does not represent high or low expected groundwater conditions.
P 28 S7	Zones 2,3,4 and 7 show gains in groundwater discharge up to 489 mm/yr.	This is incorrect. The statement in the Water Report in Section 7, Page 38, Section 10.1, P 51 and in the Groundwater Model Report Section 5, Page 15 incorrectly lump Area 2 as being an area of net groundwater gain as Tables 7 and 8 of the groundwater model report state that there will be loss of water to this area of the PSW and Mill Creek. This error also led to incorrect assumptions in the Natural Heritage report.
P38 S8.1.1	Temporary reductions in localized water table elevations which will be mostly confined to the proposed license area and immediate surrounding CBM owned property.	We refer you to: Figure 16 and Tables 7 and 8 of Appendix G in the Water Report. There are significant off-site groundwater reductions in wetlands, creeks and tributaries off-site including Zone, 1, Zone 2 and Zone 5. In addition, there are groundwater level increases off-site that may inundate wetlands off-site. CBM does not own the McNie property where water levels are expected to rise. CBM does not own the wetland located within the 720 m north of the pit belonging to Mr. Johnson where much of the impact will be concentrated.
P 39 S8.1.1	Post-Rehabilitation Impacts.	There is no mention of the permanent lowering of the water table at the north end of the site and permanent increase in water level at south end of

Planning Report		
Page **S**ection	General Statement from Report	Harden Comment
		site, no mention of permanent reduction in groundwater flow to Mill Creek along a 1,500 m reach and permanent loss of groundwater discharge to Mill Creek Puslinch PSW.
P39 S8.1.2	This reduced variability is likely to lead to higher baseflow to Mill Creek and its tributaries during dry periods and lower baseflow during wet periods.	This statement fails to acknowledge the permanent reduction in baseflow to a 1,500 m reach of Mill Creek regardless of variability in water level. The water table elevation variability post extraction will result in overland flow from the site onto private lands.
P41 S8.4	The site would provide additional temporary storage capacity for water to Mill Creek to reduce flooding effects downstream.	This is not accurate. The water level in the future lake is at or just below the ground surface at the southwest and west end of the pit. Any increase in lake level will cause the lake level to flood overland. The existing condition has more unsaturated soil to fill before flooding overland and has the potential to store water in local depressions.

Site Plans		
Page **S**ection	General Statement from Report	Harden Comment
Note B1		How does the Geo Optic elevations compare to elevations obtained by Van Harten Surveys for the monitoring wells. A table of monitoring wells should be included on the site plans.
Page 1		Not all monitoring stations are located on the plan. The BR well is identified differently in the reports as TW11-16.
Note C1		Flow directions of tributaries not shown or for Mill Creek.
Note D1		SW4 is a surface water station and should not be used to indicate groundwater elevations. The highest groundwater elevation in the southwest area is reported as 302.05 m AMSL at station MW18-01B on more than one occasion.
Note D1		The maximum predicted water table occurs MW18-05 at an elevation of 304.34 m AMSL as shown on

		Figure 2 of the Maximum Groundwater Elevation Report.
Rehab Page		The predicted lake level of 302 m AMSL is based on a steady state model and does not represent the seasonal high or low potential water level.
Rehab Page		There are no flood control measures on the plan for the Southwest area or near to west end of Tributary 3 where the ground elevation and lake level are the same.

We appreciate the opportunity to provide these comments. Other comments may arise as additional information about the site is provided. Should you have any questions or concerns, please do not hesitate to contact the undersigned.

Respectfully Submitted,

Harden Environmental Services Ltd.

[redacted]

Stan Denhoed, P.Eng.

ABOUD & ASSOCIATES INC.
Consulting Arborists • Ecologists • Landscape Architects

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February 8, 2024

Our Project #: AA21-049A-004D
Sent by email: jbrotherston@puslinch.ca
lbanks@puslinch.ca

Lynne Banks
Township of Puslinch
7404 Wellington Rd. 34
Puslinch, ON N0B 2J0

Re: Natural Environment Report, Proposed Aberfoyle South Pit Expansion (Prepared by: WSP Canada Inc., November 2023)
Peer Review – Ecology OPA submission documents

Dear Ms. Brotherston:

Aboud & Associates Inc. has been retained by the Township of Puslinch to complete a Peer Review of the Natural Environment Report (NER) and the Site Plans for the proposed Aberfoyle South Pit Expansion, Puslinch, ON. As part of our review, the planning report, and water report level 1 & 2 were also reviewed for context.

Based on our review of the provided information, Aboud & Associates (AA) provides the following comments and attached checklist (*Appendix A*) related to the NER and Site Plans. These comments should be reviewed and addressed in an updated or addendum report.

Methodology

The Peer Review was completed based on company experience and knowledge, standards for Environmental Impact Assessments in Wellington County and the GRCA, and the requirements of provincial and municipal policy documents. The review also cross-references the work completed with the accepted Terms of Reference, AA's comments on the Terms of Reference (dated October 26, 2021), and AA's comments on the Pre-Consultation Request (dated August 17, 2023) to ensure all requirements of the ToR have been met. Our review has been broken down by the sections included in the NER for clarity purposes, and each comment includes the section to be addressed.

Natural Environment Report

Section 1: Introduction

1. The study area should include lands outside of 120 m when considering linkages and cumulative impacts.

2. The study area should include the area outside of 120m when considering impacts to natural heritage features due to drawdown impacts to groundwater, per the water report level 1 and 2, impacts are expected as far as 720m from the extraction area by the end of year 6, this has significant potential implications for all sensitive natural heritage features up to 720m.

Section 2: Environmental Policy Context

3. Section 2.8: fish habitat is listed as both Greenlands and Core Greenlands. Please clarify.

4. Section 2.9 does not reference any of the relevant GRCA policies or regulations regarding wetlands or watercourses. Please include relevant polices to this section.

Section 3: Description of Proposed Development

No comments.

Section 4: Methods

5. Table 1: please include weather conditions, names and qualifications of staff members undertaking these assessments, particularly for the ELC and wetland delineation.

6. Table 1: most of these surveys occurred in 2018, which is close to the five year limit of validity of information. Surveys to update 2018 information should be completed prior to any site clearing for amphibians, breeding birds and botanical inventories, should the project begin later than December 2024.

7. Section 4.3.3: Please identify the sampling protocol used to complete the Turtle Habitat Assessment.

8. Section 4.3.1 identifies that an early summer, late summer and fall botanical was completed, this contradicts references elsewhere, identifying the first survey as a

spring botanical. Early summer is more appropriate terminology per the timing of the survey.

9. Section 4.3.6 identifies that the assessment protocol followed the MNRF 2017 protocol, given that the protocol has had several iterations since 2017 including most recently, changes in guidance provided by the MECP, please clarify that all trees greater than 10cm were reviewed for suitability and survey parameters met the requirements for assessment per the most recent MECP guidance documents (2022).

10. Per AA's Pre Consultation peer review, visual encounter surveys for snakes should have taken place alongside other herptile surveys.

11. Per AA's Pre Consultation peer review, a linkage and connectivity assessment needed to take place. This appears not to have been done, and the results of such an assessment are not discussed in this document.

12. Per AA's Pre Consultation Peer Review, headwater drainage feature assessments were required for the site, these surveys are not identified or discussed in the report. This survey is particularly important to determine the regime for tributary 3 as well as to identify any HDF's that occur within the agricultural areas.

13. Per AA's Pre Consultation Peer Review, Fish Community Sampling was required for the on-site watercourses to determine species present, these surveys were not identified or discussed in the report.

14. Per AA's Pre Consultation Peer Review, a feature-based water balance assessment of the wetlands present on/adjacent to site (TRCA wetland water balance risk evaluation (2017), or equivalent), discussion of impacts to the wetland due to the proposed changes to the quantity of water, including the proposed significant changes in the groundwater elevation, should be included in the report.

Section 5: Existing Conditions

15. Section 5.5.3: A valid spring botanical was not undertaken, the generally accepted spring botanical window is from Late April through early June, ideally taking place in May where ephemeral species are present. As the first botanical inventory took place June 26 and June 29, spring ephemeral species may not

have been identified, as ephemeral species that would no longer be physically present by late June are not identified in the species lists (e.g. trout lily (*Erythronium americanum)*, bloodroot ***(****Sanguinaria canadensis*), wild leek (*Lilium tricoccum*)). Jack-in-the-pulpit, red trillium and Virgina waterleaf persist well into summer.

16. A three season botanical was listed in the studies to be performed in the Terms of Reference, including a spring study.

17. Table 3: please provide this data in the form of call level codes, per the Marsh Monitoring Program's protocol.

18. Section 5.6.1, please include a summary column outlining whether the habitat meets the threshold for significance.

19. Section 5.6.2: please identify which of the 52 observed species were considered to be breeding (possible, probable, and confirmed), and provide the highest breeding evidence for each species identified during the point counts.

20. Section 5.6.4: please include a text summary of the fish habitat survey results here.

21. Section 5.6.5 – Per communication with the MECP on a nearby municipal project, Blanding's turtle habitat likely occurs in the vicinity of the study area and should be considered for this project. Please reach out to MECP for details on the observation and how it may impact the work.

Section 6: Assessment of Significant Natural Heritage Features

22. Section 6.1: Blanding's turtle habitat should be included in the assessment of significance.

23. Section 6.1 Black Ash requires updating due to recent changes, including Black Ash protections under the ESA having been implemented.

24. Section 6.2: fish habitat significance within the study area requires significant additional detail, including the significance of each tributary, their thermal regimes and if they have been identified as permanent or intermittent. Mill Creek is a known important Trout spawning area, and this information should be discussed in the report, as it pertains to changes in groundwater flow to Mill Creek and identified tributaries.

25. Section 6.4: the use of on-site and off-site is unclear, recommend that text in the report is consistent with figures in the use of license boundary/site boundary and study area.

26. Section 6.7.2 identifies that SWH for Seeps is present in the study area, and that impacts to seeps are discussed in section 7. Impacts to Seeps are not carried forward to the impact assessment sections 7.1 or 7.2, this must be addressed as it has implications to negatively impact the SWH per the impacts to groundwater levels.

Section 7: Impact Analysis

27. Overall, the Impact Analysis section is lacking in carrying forward significant features identified in the existing conditions, including the presence of significant wildlife habitat on site in the form of Seeps, habitat for species of conservation concern, and deer wintering as well as the potential to impact Species at Risk, particularly Black Ash, which is a facultative wetland species. Impacts to the groundwater extend significantly further than the identified study area and have significant implications for impacts to SWH and SAR, in particular Seeps are important components of habitat for winter wildlife and any changes to the water table may impact black ash at a significant distance from the site.

28. Section 7:1: Per Water Reports level 1 & 2, a permanent change in groundwater gradients is expected as a result of the pond, including an increase in groundwater level in the southwest corner of up to 1m, and a decrease in groundwater level in the north east corner of up to 1m, impacts to fish habitat as a result of these changes are not discussed in detail in the report.

29. Section 7.1: Per the groundwater monitoring report included as Figure 15 in Appendix G of Water Reports level 1 & 2, a section of Mill Creek totalling ~1600 m in length will see dramatic decreases in groundwater input, while a ~900 m length of this area will no longer receive any groundwater input at all. This will have repercussions for the thermal regime of the creek and Brook and Brown Trout spawning. Impacts to fish habitat due to these changes are not discussed in detail in the report. These changes to the groundwater input to Mill Creek and its tributaries likely constitutes a harmful alteration, disruption and destruction (HADD) of fish habitat. Fish habitat is protected from HADD under the Fisheries Act. Impacts to fish habitat because of these changes are not discussed in detail in the report.

30. Section 7.1: the discussion of Tributary 3 identified the watercourse as perennial, while earlier in the report it is identified as intermittent, please identify which is correct.

31. Section 7.2: per the Water Report Level 1 and 2 (modelled groundwater drawdown, year 6), the PSW's north of concession road 2, up to 720m from the site, will see drawdown impacts of 1m to 0.1m because of the creation of the pond. Further discussion of this impact is warranted, as a potential reduction in hydroperiod may adversely impact the vegetation communities in these features, particularly any vernal pools that may occur within the area that were not assessed for amphibians, as they are located off site.

32. Section 7.2: impacts related to the increase in groundwater level at the southwestern limit of the site require consideration as part of the impact assessment, upland communities are present directly south of the limit, and an increase in the groundwater level may cause negative impacts to this vegetation community.

33. Section 7.2: This discussion identifies that berms may be included within the 30m setback area, this has not been discussed or included on any figures as part of the application within the NHE report, construction and location of any proposed berms should be included and discussed in figures and reports as part of the proposed development as well as discussion regarding impacts to the adjacent PSW due to the installation and management of berms.

34. Section 7.2: the use of 70% coniferous trees within the buffer planting is not appropriate for the site, any rehabilitation should consider the directly adjacent existing vegetation community and upland species assemblages present in the study area and create a contiguous native species assemblage that increases the area and contiguity of the existing community.

35. Section 7.4: Please include details of the cumulative effects assessment. Only the results are discussed with no context of what was reviewed or considered. This should include discussion of groundwater drawdown impacts outside of the 120m study area.

36. Please include a new section between sections 7 and 8 that addresses whether the work will conform with the policies identified in section 2.

Section 8: Rehabilitation/Mitigation/Monitoring

37. Section 8.1 includes a recommendation of the use of European larch and Norway spruce in the buffer plantings, these non-native species do not provide any ecological benefits and should be removed from the proposed planting list.

38. Section 8.1 of the NHE requires additional details, which must be carried forward to the Site Plan Drawing no. 4. Per the Wellington County OP, the rehabilitation plan is to be prepared in detail by a recognized expert. Please include information on the plan identifying that it was prepared by a recognized expert. Additional information regarding the density of nodal plantings should also be included.

39. Section 8.2.1: Active season for birds is April 1-August 31 per Environment Canada guidelines. It should also be noted that while nesting is less common, active nests of migratory birds continue to be protected outside of the active season.

40. Section 8.2.2: due to the presence of wildlife within the study area, and potential for wandering wildlife entering the extraction area, the entirety of the extraction area should be appropriately fenced to exclude wandering wildlife within the site prior to any site clearing and throughout extraction. The site limits should also be reviewed for wildlife within these limits prior to any site clearing.

41. Section 8.3: A long term monitoring plan to review the site for potential impacts to vegetation and wildlife must also be implemented to ensure unexpected impacts are addressed over the course of the extraction.

    This monitoring should include at minimum the following studies:

    1. Three season vegetation plot monitoring to assess for changes in vegetation communities, including floristic quality index and average wetland plant coefficients.
    2. Amphibian surveys to determine changes in populations due to changes in hydroperiod.
    3. Assessment of changes to the length of the hydroperiod of the adjacent wetlands and impacts to the vegetation communities.
    4. Fisheries assessments to monitor for impacts to redds as a result of changes in groundwater availability.

42. Results of the monitoring are to include an annual summary report outlining the results, changes from pre-extraction conditions, proposed thresholds to identify impacts are occurring, and adaptive management of unforeseen impacts.

Section 9: Summary and Recommendations

43. Updates to section 9 are required per the comments identified above.

44. As noted in the ToR comments, a pre, during, and post development comprehensive monitoring plan, which includes adaptive management and appropriate triggers for additional investigation Is required.

Figures

45. The location of proposed berms have not been included in any NH figures, construction equipment within the buffer and creation of berms is also considered development and should be included and considered in all aspects of the proposals impacts.

46. Figure 2: the ELC boundary near ACC#2 Is identified as wetland/meadow mix and is contiguous with the PSW limit, if this area is wetland, it should be included as part of the wetland limit per OWES and removed from within the extraction limit.

47. Figure 2: The ELC communities identified at the south western limit are wetland communities (SWM/SWC), their limits do not match the limits of the mapped PSW, wetland limits should be updated and integrated to match the limits of identified wetland communities.

48. Figure 4 does not include a legend for the numbers noted on the map. The legend included includes many items which are not present on the map.

49. An additional figure should be created that includes the area of the cumulative impact assessment, including the limits of changes to groundwater levels at the 6-year mark included in the water reports in comparison to natural heritage features within these limits.

Appendices

50. Appendix A: please include the communication with the County, Township, and GRCA regarding acceptance of the ToR.

51. Appendix B: please include the request for information sent to MECP by WSP, including any follow up communication.

52. Appendix D: please include the sources from the background review that identified the possible presence of the species listed in the SAR screening.

53. Appendix D: Blanding's turtle rationale only considers overwintering habitat, overland movement potential and nesting must also be considered for the site. Additionally, this species is ranked low potential, while other turtle species with similar habitat requirements have been listed as moderate.

54. Please include an ELC data card for each community inventoried on site, including representative photos of each community.

55. Please include an appendix with a list of species identified during the background review and their sources.

ARA Site Plan Document – Aberfoyle South Pit Expansion drawings 1-5s

Drawing No. 3 of 5 Section L. Report Recommendations

56. Point a: include additional details on best management practises, or a citation to a specific document.

57. Point a: BMP's must include consideration for wandering wildlife and wildlife rescue due to entrapment within the construction/ESC area, and regular review of equipment on site for wildlife such as snakes or turtles.

58. Point a.ii: The active nesting season is April 1-August 31. Nest searching is not recommended in heavily vegetated areas, such as the unevaluated wetlands within the extraction area.

59. Point b.i: The 30 m setback should not contain berms; this impact has not been properly addressed in the NHE or site plan documents.

60. Point b.ii: There should be ESC fencing erected around the entire site, not just at certain points. A more detailed ESC plan needs to be included. Please define "actively monitored and maintained".

61. Point b.vi: see comment 59.

62. Mitigation is not included for potential impacts to SAR/SWH

63. Point c.i: Given the potential impacts to all the watercourses within the study area and within the vicinity of the site, the DFO RFR should include not only tributary 3, but also tributaries 1, 2, 4, and 5, as well as the entire stretch of Mill Creek running along the property boundary, and downstream of the site as far as the groundwater impacts will occur, as they will all be affected by changes to the water balance at the site.

64. Point e.i: include full natural heritage monitoring plan as described in point 39 of this review or refer to the updated NER section.

Drawing 4 of 5 – rehabilitation plan

65. Note D1(Tree Planting areas), noted within the drawing is not listed on the page. See section 8 comments of the report for additional direction regarding the rehabilitation plan.

In conclusion, our review of the submitted report has determined that additional details are required in the form of an updated report prior to approval of the NER and the Site Plans. This additional information will include confirmation of approval of the Terms of Reference via inclusion of the correspondence between the municipalities, confirmation of the completion of all required studies per an accepted Terms of Reference and the Pre-Consultation Peer Review, results of the breeding bird surveys, a list of wildlife species identified in the background review, discussion of the effects of the reduction of groundwater impacts on the watercourses on/adjacent to the site and their fish communities, and details of an adaptive mitigation and monitoring plan for the site.

Please contact the undersigned should you require additional information of the above.

Yours truly,

ABOUD & ASSOCIATES INC.

[redacted]

Cheryl-Anne Ross, B. Sc., F.W.T.
MNRF Certified ELC & OWES
Ecology Lead & Wildlife Ecologist

&

[redacted]

Heather Dixon, PhD
Aquatic Ecologist

Attachments:
Appendix A NER Checklist

S:\A+A Projects\2021\Approved\21-049A Puslinch Peer Review\AA File\21-049A-004 CBM Aberfoyle South Pit Expansion\part 4- pre-submission and OPA submission\AA21-049A-004 CBM Aberfoyle South Pit Expansion Ecology Peer Review OPA submission documents.docx

Appendix A. NER and Site Plan Checklist and Report Review
Project Title: Proposed Aberfoyle South Pit Expansion, Puslinch, ON

Applicable Legislation Assessment:

LEGISLATION	APPLICABLE	COMPLETE
Fisheries Act	x	x
SARA (Species at Risk Act)	x	x
ESA (Endangered species Act)	x	x
PPS (Provincial Policy Statement)	x	x
Fish and Wildlife Conservation Act	N/A	N/A
Growth Plan for the Greater Golden Horseshoe	x	x
Specific provincial legislation (Aggregate Resources Act)	x	x
GRCA policies	x	Not adequately discussed
Township of Puslinch Zoning By-Law 023-18	x	x
County of Wellington OP	x	x
MBCA (Migratory Bird Convention Act)	x	x

Background Review Assessment:

SOURCE	INCLUDED IN REPORT
NHIC (Natural Heritage Information Center)	x
MNRF Request for Information	x
Ontario Breeding Bird Atlas	x
MNRF District Species Lists	Not identified
Ontario Reptile & Amphibian Atlas	x
Ontario Mammal Atlas	x
DFO Aquatic species at risk mapping	x
Locally significant species lists: • A checklist of Birds Within the Grand River Watershed, Grand River Conservation Authority, date unk. • List of Significant Wildlife in Wellington County, Dougan & Associates, 2009.	Not identified
GIS sources: LIO woodlands, wetlands, Fish dot mapping etc.	x
Subwatershed study/natural heritage strategy (if available):	x
Citizen Science: eBird, iNaturalist, Butterfly Atlas	x

Field Studies Assessment:

STUDY	REQUIRED	COMPLETE
Ecological Land Classification	x	x
Generalized Habitat Assessment & Visual Encounter Surveys	x	x
Spring Botanical	x	Did not occur in the appropriate window
Summer Botanical	x	x
Fall Botanical	x	x
Breeding Birds	x	Please provide the results of these surveys
Grassland Breeding Bird		

STUDY	REQUIRED	COMPLETE
Amphibian Call	x	x
Wetland Delineation per OWES Methodology	x	Agreed with GRCA that GRCA boundary was accurate
Aquatic Habitat Assessment	x	x
Fish community composition surveys	x	Not completed
Headwater Drainage Feature Assessment	x	Not completed
Woodland Dripline Delineation	x	x
Bat Maternity Habitat Assessment	x	x
Bat Acoustic Survey	x	x
Snake surveys	x	Not completed
Turtle Overwintering/nesting		
Turtle Visual Surveys	x	Not completed
Salamander egg-mass/breeding	x	x
Winter Raptors		
Songbird Migration		
Waterfowl Migration		
Woodland Significance	x	x
Significant Wildlife Habitat Screening	x	x
Species at Risk Habitat Screening	x	x
Species at Risk Specific Surveys -Black Ash -Butternut -Species at Risk Bats	x	x

Ecological Report Assessment:

COMPONENT	COMPLETE
The report adequately describes the proposed development	x
All sources included and documented in references	See comments
Field work completed within last 5 years	See comments
All applicable policy is included, and justification provided for meeting policy objectives for each feature.	See comments
All field surveys were completed following an acceptable protocol (e.g., OBBA Breeding Bird Protocol, Marsh Monitoring Protocol for Amphibians, OWES, MNRF species-specific protocols).	See comments
Buffers to natural heritage features are included, and justified	See comments
Constraints on site have been adequately described, assessed, and impacts mitigated using acceptable methods	See comments
Figures are concise and display all necessary information for the site.	See comments

Consistency between results and conclusions or missing information between the data collected and the report (e.g., observed a species of conservation concern, but no discussion).	See comments
Ensure all potential impacts to natural features or ecological functions are discussed	See comments
Ensure justifications of impact are adequately supported by sources	See comments
Review for internal contradictions	See comments
The report adequately mitigates any impacts	See comments
All potential impacts are discussed and referenced appropriately	See comments

Stovel and Associates Inc.
Planners, Agrologists and Environmental Consultants

April 19, 2024

Township of Puslinch
C/O Ms. Lynne Banks
7404 Wellington County Road 34
Puslinch, ON
N0B 2J0

RE: Aberfoyle South Pit Expansion – Development Review Request
Part of Lots 18, 19 and 20
Concession 1
Township of Puslinch
County of Wellington

Dear Ms. Lynne Banks:

Stovel and Associates Inc. ("SAI") was retained by the Township of Puslinch to review the proposed Aberfoyle South Pit Expansion Application. The proponent is CBM Aggregates ("CBM"), a Division of St. Marys Cement Inc. (Canada).

SAI reviewed several documents that were submitted in support of this proposal, including:

- Aggregate Resource Evaluation, WSP Canada Inc. November 2023
- Proposed Aberfoyle South Pit Expansion: Agricultural Considerations, MHBC. September 2023
- County of Wellington Official Plan Amendment Application. November 2023
- ARA Site Plans – Aberfoyle South Pit Expansion – MHBC. November 2023
- Best Management Practices Plan for the Control of Fugitive Dust at Aberfoyle South Pit Expansion, WSP Canada Inc. October 2023
- CBM Aberfoyle South Pit Expansion - Planning Act Applications Letter. MHBC. November 29, 2023.
- Review and Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "Stage 1 and 2 Archaeological Assessment Aberfoyle South Pit Expansion (CBM Lake Pit), 6947 Concession Road 2, Puslinch, Part of Lots 18, 19, 20, Concession 1, Geographic Township of Puslinch, County of Wellington, Ontario", Dated Aug 28, 2023. MCM. November 2023.
- Land Ownership – LRO#61. March 2018.
- Maximum Predicted Water Table Report. WSP Canada Inc. November 2023.

- Noise Impact Assessment. WSP Canada Inc. November 2023.
- Planning Report & Aggregate Resources Act Summary Statement. MHBC. November 2023.
- County of Wellington – Public Consultation Strategy Requirement. November 2023.
- Wellington Drinking Water Source Protection Screening Form. November 2023.
- Stage 1 and 2 Archaeological Assessment. Golder Associates Ltd. (now WSP Canada Inc.). August 2023.
- Stage 3 Archaeological Assessment. Revised Report. WSP Canada Inc. June 2023.
- Stage 3 Archaeological Assessment. Original Report. WSP Canada Inc. June 2023.
- Transportation Impact Study. TY Lin International Company. November 2023.
- Water Report Level 1 / 2. WSP Canada Inc. November 2023.
- Visual Impact Assessment ("VIA") - MHBC. March 2024.

The focus of SAI's review was primarily on the Aggregate Resources Act ("ARA") Site Plan, Agricultural Considerations Report, and Planning Report & Aggregate Resources Act Summary Statement ("Planning Report"). We defer to the other members of the Township's Planning and Development Review Team on the other technical matters of the submission, but it is recognized that each of these reports will either be implemented on the ARA Site Plan and/or summarized in the Planning Report. As a result, an update of the Planning Report will be required.

SAI has also reviewed and commented on the VIA that was recently submitted by the applicant. The Township may retain a Landscape Architect to peer review this report.

Our comments are set out in the following paragraphs. Several of the comments related to the Site Plan are also related to the Planning Report. Table 1 has been included to summarize the comments related to the Site Plan.

ARA Site Plan

The proposed licence limits are irregular in shape. SAI requests a copy of the digital survey file for the licence and extraction limits and clarification as to how these limits were determined. Given the irregular shape of the proposed licence and extraction limits, it is important to ensure that the limits can be replicable in the field and on the Site Plan.

It is noted that the proposed pit licence does not include the existing residential structure, yet a small agriculture field (that includes the archaeological resource area AiHb-374) is included within the proposed licence limits. Clarification of the rationale for the proposed licence limits should be provided.

If this structure remains, site-specific zoning will be required to recognize the use of this

building. We understand that the Township's acoustic consultant has identified a potential concern about the existing house not being included in the assessment.

If no extraction or processing is proposed for the lands surrounding AiHb-374, why is this area included in the Licence?

The Site Plan illustrates water monitors located beyond the proposed licence limits. These monitors are referenced in the Hydrogeological Technical Recommendations. Monitors located beyond the proposed licence limits may need to be incorporated into a monitoring program implemented via a Development Agreement.

The proposed pit entrance is in proximity to residential receptors north of Concession Road 2. SAI reviewed the VIA. The results of the VIA are that sight lines into the proposed pit are evident in both the private and public realms. The VIA report concludes that proposed berms and tree plantings provide for screening of the operation.

SAI recommends that the applicant seek the assistance of a Landscape Architect to improve the visual characteristics of this entrance and the sight lines along the municipal road. Additional vegetative plantings and sculpted berms are measures that could be considered. The Landscape Architect should develop schematics and a vegetation planting concept that can be implemented in the Site Plan. If the berms are to be seeded with grass mixture, it is recommended that berm sloping should be made gentler to ensure that the berms can be mowed and maintained. The preference would be to have a landscaped entrance that is aesthetically appealing, especially in areas immediately adjacent to existing rural residences.

The berm schematic illustrates a berm height of 1.5 m yet the acoustic berms require a height of 4 m. A revised schematic should be presented to illustrate how the berm will be developed within the 30 m setback. As previously noted, revised side sloping along the municipal road may be required to allow for regular maintenance. Conversely, input from a Landscape Architect may be needed to ensure that the berms are aesthetically appealing and vegetated in a manner that effectively blends into the surrounding landscape.

It is recommended that the authors of the VIA provide clarification concerning the potential sight lines into the pit from 6927 Concession Road 2. What sight lines are visible into the pit from this adjacent property? Will equipment be visible and from where?

It is recommended that the applicant consider the use of a scale to ensure proper truck weights before entering the municipal road. The scale will also assist the applicant in tracking volumes being shipped from the proposed pit.

We have reviewed the comments from the Township's Ecological and Hydrogeological Peer Review consultants. Concerns were expressed related to the following (amongst

others):

- Are the setbacks next to natural heritage features sufficient?
- Should berms be located close to adjacent natural heritage features?
- Is the depth of extraction justified given that boreholes were terminated 5 m above the proposed pit floor?
- Will the future pond overflow its banks and flood adjacent land and environmental features? A detailed topographic survey may be required to determine the existing elevations between the proposed extraction area and the adjacent natural heritage features.

Modifications to the Site Plan may be required to address these types of concerns.

In reviewing the Operations Plan, it was noted that as extraction proceeds to the final phase, the area for stockpiling/loading and extraction will be reduced to a point where there appears to be limited room left for the operation of equipment. It would be beneficial to provide a schematic illustrating in greater detail how the final phase will be operated given that there appears to be limited room to extract, then stockpile, then load and scale trucks before exiting the pit. The truck turnaround area should be shown with safe operating distances between the dragline excavator, loaders, and trucks. Sufficient room must be provided to ensure that truck queuing on the municipal road does not occur. SAI requests that this detailed schematic be provided to illustrate how the final phase will be extracted.

It is understood that the applicant prepared and submitted a BMPP for fugitive dust emissions. An Air Quality/Dust Emissions Study typically precedes the preparation of the BMPP. Regardless, the key recommendations of the BMPP should be recorded on the Site Plan. Similarly, the complaint protocol should be included (and address complaints related to water, trucking, dust, and noise).

Agricultural Considerations Report

It is our understanding that the County has determined that the subject property has an underlying designation of Secondary Agriculture. We also note that the County has requested that the applicant address the Agricultural Impact Assessment provisions (4.6.5) set out in the County of Wellington Official Plan. In reviewing the assessment criteria, the "*potential interference with the movement of agricultural machinery on roads*" has not been documented in the Agricultural Considerations Report. Consultation with adjacent horse operations should also occur to determine the use (if any) of Concession 2 for horse-riding activities.

Planning Report & Aggregate Resources Act Summary Statement

It is understood that the Planning Report is reliant, to some extent, on the findings of other technical reports. Given this fact, an update of the Planning Report may be required

following technical report updates that are the result of the peer reviews completed by the Township's Planning and Development Review Team.

The following comments outline matters that relate to the future submission, including the application to amend the Township of Puslinch's Zoning Bylaw.

- As previously noted, the applicant should clarify the rationale for the proposed licence limits in proximity to the existing house and the irregular licence boundary.
- Also, the rationale for the use of the term "Expansion" should be provided, as there are policy implications with interpreting the proposal to be a pit expansion.
- At this stage, it is recommended that a Holding Bylaw be required to implement considerations related to the haul route. A Development Agreement with the municipality will be required.
- The future Zoning Bylaw Amendment ("ZBA") will need to address the use of the existing house and other structures. The use of these structures may need to be recognized in the ZBA.
- The delineation of the proposed site-specific Natural Environment – XXX zone may need to be revised based on the outcome of the Natural Heritage and Hydrogeological concerns set out in the Township's peer review comments.

The Planning Report should address the need for imported fill/excess soil. Also, a volume estimate of existing soil resources that would be stripped from the proposed extraction area should be prepared. A soil budget that compares existing available soil resources versus soil needed for rehabilitation should be prepared. In general, given that the pit is to be extracted below the water table, there appears to be sufficient onsite resources available for rehabilitation and this proposed pit would not represent a good candidate for imported fill/excess soil and it is recommended that the notes related to the importation of fill/excess soil be removed from the Site Plan.

An estimated volume of the mineral aggregate resource was provided by the applicant's consultant and summarized in the Planning Report. The volume calculations should be reviewed based on the proposed extraction plan, given that the depth of the proposed pit is to the elevation of 285 masl. This represents a 20 m depth of extraction; however, an extraction depth of 12.5 m was reported in the WSP Aggregate Resource Evaluation. It is recommended that the proposed pit floor depths be adjusted to an elevation that has been substantiated by borehole results and suggested by WSP.

It is understood that the future intended rehabilitated end use for the site is a small lake with ecological enhancements. Will the rehabilitated property remain in private ownership, or will the lands be deeded to the municipality, should the Township want the lands?

In terms of future consultation, it is recommended that the applicant copy the Township with communications with the Department of Fisheries and Oceans and Indigenous communities.

It is understood that geotechnical work needs to be scheduled on the municipal road. It is recommended that the applicant contact the Township directly to arrange for this work program, including the preparation of a borehole map and schedule. The details of this program can be worked out with municipal staff.

Page 32 of the Planning Report indicates that: "*Best management practices and a spills protection plan will be in place for on-site fuel storage*". The Site Plan indicates that there will be no fuel storage onsite (Page 3 of 5, Note J-1). This should be clarified. The applicant should be advised that the Township will require a copy of the Best Management Plans for Spills Control and Fueling Activities.

It is also recommended that the applicant consider a Trucking Policy. This policy would address concerns related to truck movements and complaints from the public. A copy of the Trucking Policy should be provided to the municipality.

The Planning Report should address the following policy of the PPS, 2020:

> *'2.5.3.2 Comprehensive rehabilitation planning is encouraged where there is a concentration of mineral aggregate operations."*

In summary, CBM has proposed to establish a mineral aggregate operation (a pit) at part of Lots 18, 19, and 20, Concession I in the Township of Puslinch. The application proposes to extract sand and gravel, both above and below the water table. The site is located in proximity to Mill Creek and associated wetlands/forests. Input from the Township's peer review consultants (i.e., hydrogeologist, engineer, and ecologist) will be important to determine potential impacts on the natural environment and township resources.

SAI has reviewed the Planning Report, Site Plan, and Agricultural Considerations Report. Several comments/concerns were noted with these documents. We trust that you will find these comments to be of assistance.

Yours truly,

[redacted]

Robert P. Stovel, M.Sc., M.C.I.P., R.P.P., P. Ag.

cc. Courtenay Hoytfox

Table 1: Review of Site Plan

Page No.	Note	Question/Comment
1.	General: Licence Limits are irregular in shape.	How were the licence limits established? Were the proposed limits surveyed?
1.	House is not included in Licence.	Explain why the house was not included in the licence. Explain the future use of the house.
1.	Archaeological Resource Area – AiHb-374	Explain why this resource was included in the licence.
1.	Water Monitors	Monitoring stations are included on lands owned by the applicant beyond the licence limit. Explain why. Also, will the ARA requirements ensure that wells located beyond the licence limits are monitored properly and maintained/abandoned under the control of the ARA?
1.	2nd Entrance to the house	Is the applicant seeking two entrances to the proposed pit?
1.	Vegetation Limits	It is unclear how the vegetation limits shown on the Site Plan were demarcated. Do these limits reflect the surveyed dripline limits for adjacent woodlands and trees?
2.	Extraction depth	The depth of extraction extends deeper than the aggregate deposit shown in geological cross-sections. Recommend revising extraction depth.
2.	Scale	Recommend that the applicant include a scale to ensure that all trucks are scaled before they enter the municipal road.
2.	Main Pit Entrance	Entrance enhancements are recommended.
2.	Berming along township road.	Additional input from a Landscape Architect is recommended to assist in creating an aesthetically appealing sight line from the municipal road.
2.	Typical berm schematic	Recommend that the schematic be revised to illustrate a 4 m high berm (as recommended by the acoustic engineer) and a gentler slope next to the municipal road to ensure that it can be maintained/mowed.
2.	Phase 4	This is the final phase of the pit. It is recommended that a detailed phasing diagram illustrate how the final stages of this phase will be extracted.
3.	Note 2 – Processing will be carried out at other CBM licences.	It is not clear what other licences will receive the aggregate from this site for processing, or if aggregate will be shipped to market without processing. It is recommended that this note be revised to specify which licences will receive aggregate from this proposed pit and that a scale be installed at this pit.

3.	M. Variations from Control and Operation Standards #2	What is the adjacent residential use? Is the applicant considering using the existing house as a residence? If not, remove this variation. If yes, the acoustic analysis will need to be updated to include this house as a receptor.
3.	Extraction depth – H1	The depth of extraction extends deeper than the aggregate deposit. Recommend revising related notes.
3.	Traffic – L5	It is not clear if this note should be inserted into the Site Plan as the recommendation deals directly with the municipal road which is beyond the jurisdiction of the MNRF and ARA, and the Transportation Impact Study is not a documentation requirement of the ARA.
3.	BMPP	Include these notes on the Site Plan.
3.	Complaint Protocol	Protocol to address noise and trucking complaints, not just water. Include the complaint protocol on the Site Plan.
4.	Importation of Fill – C2	Recommend removing the notes related to the importation of fill.
4.	Rehabilitated Contours	The depth of extraction extends deeper than the aggregate deposit shown in geological cross-sections. Recommend reducing the depth of extraction and the rehabilitated contours.

SALVINI CONSULTING
Transportation Engineering and Planning

Salvini Consulting Inc.
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Kitchener, ON · N2P 2K5
519-591-0426
julia@salviniconsulting.com

March 12, 2024

Lynne Banks
Development and Legislative Coordinator
Township of Puslinch
7404 Wellington Road 34
Puslinch, ON · N0B 2J0

Re: CBM Aberfoyle South Pit Expansion Transportation Impact Study (TIS)
November 2023, TYLin
Township Peer Review Comments

Dear Lynne,

I've reviewed the November 2023 TIS prepared by TYLin for the proposed feeder site on Concession Road 2 and provide my comments below:

- Better information is required to provide context for this study. The context information should provide an overview of how much material is being produced and processed by the applicant locally and how this new site fits into their broader operations in the area.
- The traffic analysis in the study is based on a 2018 turning movement count at the Concession 2 intersection with Sideroad 20 S. While that may have been an appropriate approach in early 2021 when the study began, the data now needs to be updated to reflect "new normal" traffic conditions in the area. The counts should be undertaken when the area aggregate operations are up and running for the season again at typical levels.
- There are a number of driveways between Sideroad 20 S and the Aberfoyle South pit entrance that impact traffic flows along Concession 2. In addition, it is a four-leg intersection with a pit driveway on the south leg. This intersection should be counted separately from the Sideroad 20 S intersection to establish base traffic conditions.
- A five-year future horizon was chosen for study. What is the operational timeline for the proposed site and will it be fully operational in five years?
- The background growth rate of 2 percent per year is appropriate and consistent with other studies in the area.
- The site trip generation is estimated at 28 trips in the weekday peak hours (14 trips in and 14 trips out) based on a loader constraint of 14 trucks per hour. Additional traffic related to staff on-site was not included at either the site driveway or the driveway serving the Aberfoyle South Pit. How many staff are expected to be working at the site? How does the loader constraint relate to the requested extraction rate for the site?

- The study identifies that all of the trucks from the subject site will go directly to and from the Aberfoyle South pit. However, it is our team's understanding that some trucks go to the applicant's other processing pit on the north side of Highway 401 and that some trucks go directly to market. Please clarify your understanding of origins and destination for trucks.
- Recommendations are needed for regulatory signage to keep trucks to the identified haul route. For example, a no left turn sign is needed at the site exit and additional signage is likely needed at the Concession 2/Sideroad 20 S intersection. Please include these recommendations in the updated TIS
- The consultant indicated that a "desktop" sightline assessment was completed for the proposed driveway. What does this mean? Were the sightlines reviewed during the field visit in July 2021?
- There is information about the road conditions in the study that will be reviewed by GM BluePlan. We agree that the haul route should be extended along Concession 2 westerly to the site driveway. However, daily traffic volumes for existing conditions, background growth and site traffic are needed from the transportation consultant to support the road conditions assessment as well as the noise study. Base daily traffic volumes should be collected over no less than a week during a time when the aggregate industry in the area is operating at typical peak levels. This data may be used to help understand the variability of traffic throughout the week on the area road network as well and the consultant should comment on that.
- The Township is looking for a complaint protocol that could be tied to a trucking policy. This may come through the updated transportation study or from elsewhere on the development team.

Please let me know if there is anything further to discuss on this application or if you have any further questions. The applicant's consultant is welcome to reach out to me to discuss any of these comments.

Sincerely,

Julia Salvini, MEng, PEng, FITE
President

Cc: Mike Fowler, Township of Puslinch
Courtenay Hoytfox, Township of Puslinch
Rob Stovel, Stovel and Associates Inc.
Steve Conway, GM BluePlan Engineering
Parth Lad, GM BluePlan Engineering
Kevin Thompson, SV Law

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March 11, 2024

Township of Puslinch
7404 Wellington Road 34
Puslinch, Ontario
N0B 2J0

Attention: Lynne Banks
lbanks@puslinch.ca

VIA E-MAIL

Re: Peer Review of Noise Impact Study
Aberfoyle South Pit Expansion
Puslinch, Ontario
VCL File: 123-0460

Dear Ms. Banks:

We have completed our review of "*Report - Noise Impact Assessment, Aberfoyle South Pit Expansion, CBM Aggregates, a division of St. Marys Cement Inc. (Canada)*", dated November 2023, prepared by WSP Canada Inc. (WSP). The Site Plans are included as Appendix D.

Our comments are outlined herein.

a) The report states that it was prepared in support of the proposed expansion to the Aberfoyle South Pit. However, no information regarding the existing pit (i.e. location, operations, how the two will interact, etc.) is provided. Additional detail is requested. Since the proposal is indicated as being an expansion to the existing Aberfoyle South Pit, both the existing pit and this proposed expansion should be considered as a single stationary noise source whose sound emissions must comply with the applicable sound level limits. It does not appear that the operations within the existing pit have been included in the assessment.

b) Even though the movement of material from the expansion area to the existing pit is being done on a public road, these truck movements should be included as part of the stationary noise source since this appears to be part of the pit operation and not simply shipping the final product off-site.

c) The study also includes an assessment of the off-site haul route that is to be used to ship aggregate from the site to the market. However, no information regarding the proposed haul route or any alternatives (as required by the landfill guideline) is presented within the report. Additional detail is requested.

d) The noise study has appropriately applied the Ministry of Environment, Conservation and Parks (MECP) noise guidelines. Most of the noise sensitive receptors are deemed to be in a Class 2 area. Noise sensitive receptor locations POR001, POR009 and POR010 are deemed to be in a Class 3 area. This is considered appropriate.

e) The noise study should also discuss the requirements of the Township of Puslinch Noise By-Law No. 5001-05 and confirm those requirements are also met.

f) There are a few items that require some additional clarification before we can agree with the findings and recommendations of the noise impact study:

a. Regarding Table 1: Facility Noise Source Summary, it should outline the maximum amount of equipment that can be used and their maximum emission levels. Instead of simply referencing the table on the Site Plans, the table (as modified) should be included on the Site Plans. In addition:

(1) What is the source of the sound data that is being used to complete the assessment? If sound level measurements of existing equipment were done, please include the measurement data.

(2) The highway truck sound power level of 102 dBA is lower than what we typically use and is lower than what we have seen WSP use for other similar applications.

(3) The noise data for Loader 2 presented in Appendix C of the report is 112 dBA which is inconsistent with the 107 dBA stated in the table.

(4) A minimum 5 dB of attenuation is recommended for the dragline. Additional detail about the mitigation measure(s), its practicality of implementation and a detailed procedure that is to be used to confirm the mitigation effectiveness is requested.

(5) How is the 45 minute operating restriction provided for the drag line and loaders going to be monitored/enforced?

(6) The sound levels used for the drag line and front-end loaders when operating at “low rev” conditions are missing.

(7) Note 1 indicates that adjustments that were used in the noise modelling are not included in the table. Other than time weighting, what other adjustments were included?

(8) Note 2 indicates that the sound levels already account for average operations and not continuous maximum sound emissions. Is the reduced operating time scenario being doubly accounted for since the sound data already accounts for an average activity level?

(9) The noise sources operating in the existing pit are missing from the table.

b. Section 4.0 lists the Points of Reception (PORs) that were included in the assessment. The PORs all appear to be existing residential dwellings. NPC-300 indicates that vacant lots that can accommodate a noise sensitive land use should also be included as a POR. Have vacant lots been considered in the noise impact assessment?

c. There is an existing residential dwelling located on the gravel pit site that appears as though it will remain in place over the life of the gravel pit operation. Why was this dwelling not included as a POR?

d. How were the predictable worst case operational locations determined for each receptor location?

e. The description of the operations indicates that one front end loader will operate close to the drag line and the other will operate further (maybe 200 m) from the dragline:

    (1) What material is the front-end loader further from the drag line handling?

    (2) Which loader location are the haul trucks travelling to/from?

    (3) Recognizing the MECP requirement for a predictable worst-case assessment, what noise source locations were used in the modelling?

f. Other than the ground absorption coefficient of 0 for ponds, the 0.5 absorption coefficient for the pit floor and 1.0 for all other areas are not conservative and likely result in an underprediction of the off-site sound levels.

g. The proposed noise controls indicated in Section 6.1.3 indicate stockpiles or other methods could be used. Detail on how stockpiles will be used to provide the required noise mitigation and how the stockpiles will be maintained is needed. Also, what other mitigation methods will be used?

h. The report recommends a 4.0 m high berm be constructed along the northern edge of the extraction area to the west of the site entrance gate. The sample calculations in Appendix E indicate a 6 m high north berm and 4 m high south and west berms. This discrepancy requires clarification.

i. Regarding the haul route noise analysis:

    (1) Why is only one dwelling included in the haul route noise impact analysis?

    (2) Sample calculations for the haul route noise impact analyses should be included in the report.

    (3) Where is the actual analysis point at the receptor location?

    (4) What, if any, acoustical screening, particularly for Highway 401, was accounted for in the analysis?

j. The Site Plan Noise Control Notes:

(1) Should also include a recommendation that the drag line and excavator/backhoe do not operate at the same time.

(2) The western and eastern regions of the extraction area where the additional dragline noise controls are required should be clearly shown on the figures in the noise impact assessment and on the Site Plans.

(3) Since the excavator/backhoe sound emission limit is 112 dBA, the excavator and/or backhoe should not be permitted to operate in the western and eastern regions of the extraction area where the additional dragline noise controls are required.

Based on our review of the noise study prepared in support of the Aberfoyle South Pit Expansion, there are a few items, as outlined above, that require further clarification.

If there are any questions, please do not hesitate to call.

Yours truly,

VALCOUSTICS CANADA LTD.

Per: [redacted]
John Emeljanow, P.Eng.

JE\
J:\2023\1230460\000\Letters\2024-03-11 Peer Review V1.0.docx

02/08/2024

Memorandum

To: Lynne Banks – Development and Legislative Coordinator, Township of Puslinch

Cc: Meagan Ferris – Manager of Planning and Environment, Wellington County

From: Kim Funk – Source Protection Coordinator, Wellington Source Water Protection

Reviewed By: Kyle Davis – Risk Management Official, Wellington Source Water Protection

RE: 6947 Concession 2, Township of Puslinch
Official Plan and Zoning By-law Amendment

Wellington Source Water Protection (WSWP) staff have had the opportunity to review the submitted documents in support of the above noted application. WSWP has concerns regarding the impact on water quantity and quality, as discussed below.

The property is not located within a Wellhead Protection Area (WHPA) for quality or quantity but is located within a Significant Groundwater Recharge Area (SGRA). In addition, the majority of the property is in an area with a medium Intrinsic Vulnerability score. There are no applicable Source Protection Plan policies regarding SGRAs in the Grand River Source Protection Plan. Therefore, consideration, and if necessary, protection of the SGRA and the recharge function, is subject to the Planning Act. The Provincial Policy Statement (PPS) restricts development in or near sensitive groundwater features. The definition of development in the PPS includes “change of use”. Section 6.6.9 of the Wellington County Official Plan states that extraction below the water table only be allowed if impacts on the quality and quantity of water are minimal. It is recommended that impacts to the SGRA be considered in the approval of this Licence.

A review by the Township's Hydrogeologist indicates significant concerns related to the impacts of this pit to private property, Mill Creek, Puslinch Provincially Significant Wetland, as well as the use and applicability of the groundwater model including differences from the Tier 3 model, the lack of bedrock delineation and differentiation of geological units and the lack of consideration of the cumulative impacts from other aggregate operations in the area. Wellington Source Water Protection shares these concerns and supports the request for additional documentation that the proposed extraction will have minimal impacts on groundwater quality and quantity.

Although the property is located outside of a quantity WHPA (WHPA-Q), it is located within 500m of the City of Guelph draft WHPA-Q with a significant risk level. Additional water taking occurring at the property, potentially including excavation water drawdown or changes to the Permit To Take Water applications at nearby properties may impact the delineation of the WHPA-Q. If the boundary of the

WHPA-Q is adjusted and encompasses the subject property, Source Protection Plan policies will apply including policies applicable to Aggregate Resources Act applications (ARA). Wellington Source Water Protection staff will engage MNRF and MECP in relation to this application and the potential applicability of WHPA-Q policies.

For more information, please contact sourcewater@centrewellington.ca.

Sincerely,

[redacted] Feb. 8, 2024

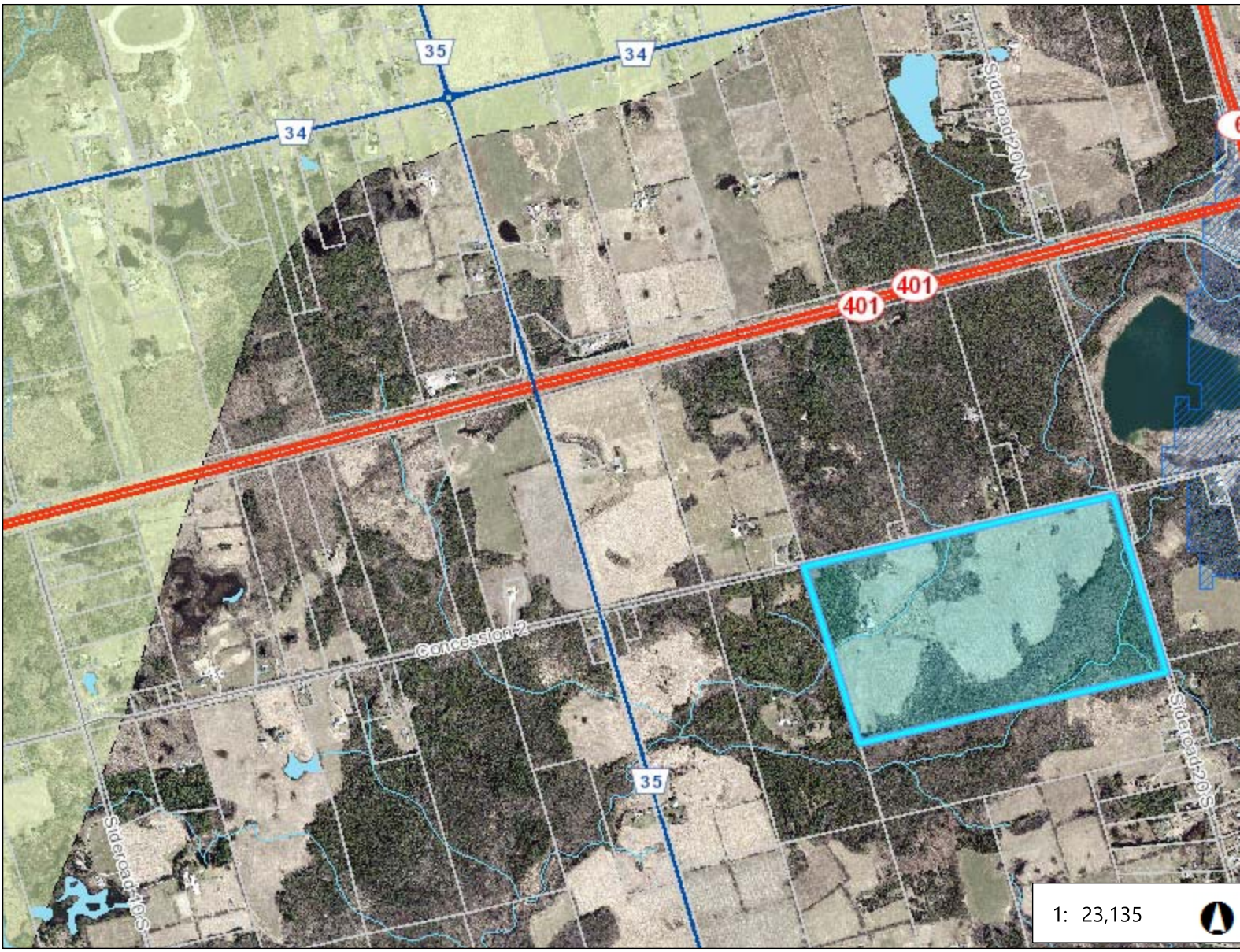
Kim Funk
Source Protection Coordinator
519-846-9691 ext 283
kfunk@centrewellington.ca

[redacted] Feb 8, 2024

Kyle Davis
Risk Management Official
519-846-9691 ext 362
kdavis@centrewellington.ca

Explore Wellington

6947 Concession 2, Puslinch



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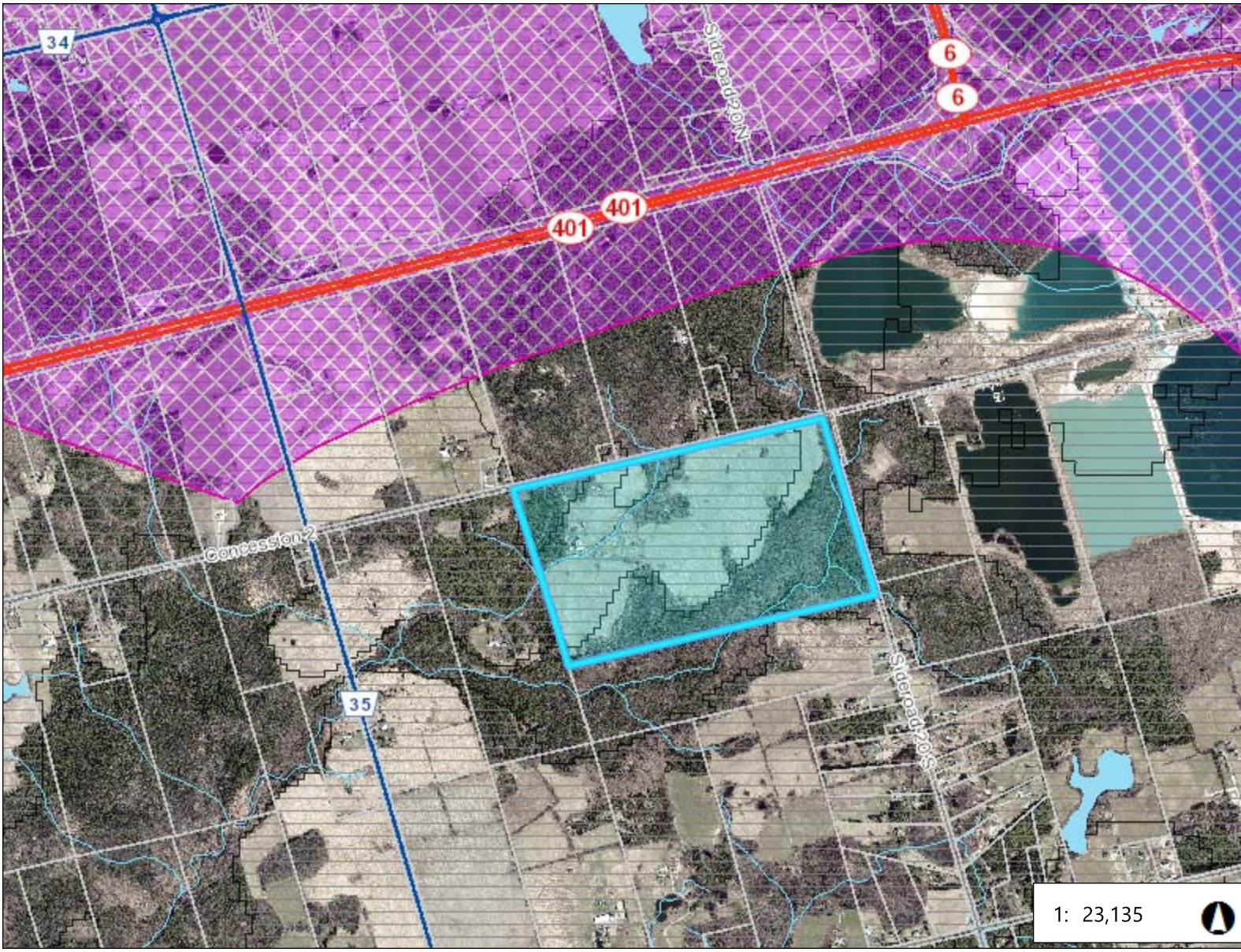
6947 Concession 2, Puslinch - Quantity



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Final Audit Report 2024-02-08

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Administration Centre: 400 Clyde Road, P.O. Box 729 Cambridge, ON N1R 5W6

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January 31, 2024
Via email

Lynne Banks, Development and Legislative Coordinator
Township of Puslinch
7404 Wellington Road 34
Puslinch, ON, N0B 2J0

Dear Ms. Banks,

Re: Aggregate Extraction Pre-Consultation Request – Second Submission
6947 Concession Road 2, Township of Puslinch
Owner – CBM Aggregates
Agent – MHBC Planning c/o Neal DeRuyter

Grand River Conservation Authority (GRCA) staff has reviewed the above-noted pre-consultation request to permit aggregate extraction on lands located at 6947 Concession Road 2 in the Township of Puslinch. The proposed aggregate extraction operation is referred to as the 'Aberfoyle South Pit Expansion.' It is understood that the area proposed to be licenced is approximately 44.8 hectares, with 27.5 hectares proposed for extraction and that the pit is proposed to operate above and below the water table.

Documents Reviewed by Staff
Staff have reviewed the following documents submitted with this pre-consultation request:

- Natural Environment Report: Proposed Aberfoyle South Pit Expansion, WSP Canada Inc., November 2023
- Water Report Level 1/2: Aberfoyle South Pit Expansion, WSP Canada Inc., November 2023
- Maximum Predicted Water Table Report: Aberfoyle South Pit Expansion, WSP Canada Inc., November 2023
- Site Plan Drawings (1-5), MHBC Plan, November 2023

Appended to this letter are GRCA pre-consultation comments dated September 28, 2021. GRCA confirmed the wetland feature boundary on September 12, 2023. It was agreed that the existing mapped GRCA wetland GIS boundaries were accurate.

GRCA Comments
Information available at this office indicates that the entirety of the subject property is regulated by the GRCA due to the presence of Mill Creek and unnamed tributaries, their associated floodplains, the Mill Creek-Puslinch Provincially Significant Wetland (PSW), and the regulated allowance to these features.

The GRCA offer the following comments for this pre-consultation request:

1. GRCA pre-consultation comments dated September 28, 2021 requested that the proponent determine what impact (if any) the proposed site changes will have on flood elevations onsite and upstream / downstream. The Terms of Reference for Natural

Environment and Water Resources Technical Studies (WSP, September 2023) states that a Surface Water Resources Assessment will be appended to the Level 1 and 2 Water Report. This report, hydraulic modelling or a discussion of hydraulic modelling has not been provided. Note that a demonstration of whether there will be an impact to flood elevations should be done with respect to all storm events (2-year to 100-year and Regional). As the results of the modelling may trigger amendments to other submitted documents, a comprehensive engineering review has not been completed and additional comments may be provided for subsequent submissions.

2. NER Section 6.8 Core Greenlands Area – the report states "*As previously discussed (Section 5.4) the flood storage function provided by these agricultural fields will be replaced by the pond that will be created as part of the proposed extraction. Further, the pit pond is expected to provide additional storage for water to prevent increased flooding downstream of the site*". It is unclear how flood storage or capacity will be increased if the excavated pit is intended to be filled with groundwater. Section 7.2 identifies that berms may be proposed within the 30m setback area. Berms would occupy the floodplain and displace flood waters. The incorporation of berms will need to be identified in the floodplain analysis.

3. NER Section 6.3 Significant Wetlands, the NER should be amended to directly address GRCA Policy 8.4.4.(a-j) for the proposed development or interference with the identified wetlands (unevaluated wetlands #1-6). Section 7.3 Non-Significant Wetlands identifies that 0.3 hectares of thicket swamp (SWT2 and SWT2-1) in the northeast corner of the site is expected to be removed. This feature should be screened for compliance with GRCA Policy 8.4.4.(a-j).

4. NER Section 7.1 Fish Habitat – Mill Creek, the report states "*Aggregate extraction will result in a gradual drawdown of the water table at the site boundary of up to 2.5m. Water table drawdown along Mill Creek during the final three years of extraction will be in the range of 1 to 2m*". The report goes on to say, "*The water table will be lowered by approximately 0.8m at the northern extent of the pond and will increase by approximately 0.65m at the southwestern extent of the pond*". These identified impacts to Mill Creek would first be realized within the adjacent Provincially Significant Wetland located between the proposed extraction pit and the watercourse. *The water balance assessment (WSP 2023) determined that overall, there will be a decrease in water surplus of 9.9% per year for the site under operational conditions.* Runoff volumes to Mill Creek are expected to decline but would be offset by projected increases in infiltration contributions. Additional information is required to interpret the hydrological impacts to the wetland and watercourse. Modifications to the extraction extent and pit wall slope should be investigated to reduce identified impacts to groundwater elevations that support the wetland and watercourse.

5. NER Section 7.1 Fish Habitat -Tributary #3, the proposed extraction will reduce runoff contributions by reducing the existing catchment area. Localized groundwater drawdown during operations is expected to result in a temporary reduction in baseflow to Tributary #3 during operations by approximately 29%. Drawdown associated with the proposed extraction is expected to extend seasonally dry periods in Tributary #3 during operations but will not result in permanent drying. The identified reduction of contributions to Tributary #3 would first be experienced by the adjacent Mill Creek-Puslinch Provincially Significant Wetland and would result in an adverse effect on the hydrologic function of the wetland.

This impact should be further investigated, and additional mitigation measures proposed to offset impacts identified.

6. NER Section 7.2 Significant Wetlands and Significant Woodlands, as identified in Section 7.1, the proposed extraction would result in the lowering of the water table of 1 to 2m which would have an adverse impact on wetland hydrology. Additional measures are required to interpret indirect impacts to the wetland. The report states "*Setbacks should be of a sufficient distance to protect wetland form and functions (e.g., hydrological, hydrogeological, wildlife habitat) and woodland form and function (e.g., hydrological, hydrogeological, from potential development impacts, including direct removal, edge effects, and screening of human disturbances (e.g., noise, light (Beacon 2012)".* The proposed 30m wetland setback may not be adequate to protect the wetland from indirect impacts from the proposed extraction and pit creation. Modifications to the proposed extraction should be explored to reduce the identified impacts to the wetland hydrology.
7. WR Section 8.1.2 Potential Groundwater Impacts to Baseflow – Short Term Operational Impacts, the report states "*The baseflow reduction along Tributary #3 is expected to reach 29% at SW-4 along Tributary #3 on the Site, but a decrease of only 1.7% is predicted at SW-3 along Mill Creek.*". The reduction of baseflow to Tributary #3 is expected to be localized but additional mitigation measures should be identified to address the reduction. Options such as, but not limited to, design modifications such that groundwater flow directions and hydrologic function/baseflow to Tributary 3 can be maintained, increased buffer setback to the tributary and wetland, modification of pit wall slopes, and reduction to pit floor depths, should be explored.
8. WR Section 8.2.1 Potential Impacts to Surface Water, states that there will be a reduction in direct runoff plus a reduction in baseflow to Tributary #3. Please describe how the hydrologic function of Tributary #3 will be maintained given reductions to both baseflow and runoff.
9. WR Section 8.2.1 Potential Impacts to Surface Water, states that the potential impact to the Mill Creek-Puslinch PSW due to reduced runoff are expected to be mitigated by the infiltration surplus from the rehabilitated pit. This statement potentially oversimplifies that the PSW upgradient of the pond will have a decrease in groundwater discharge, while downgradient will have an increase in discharge.
10. Please delineate the approved floodplain limit on all submitted drawings.
11. It is requested that a comment-response matrix be included with subsequent submissions indicating how each of the above comments have been addressed.

<u>Advisory Comments for the Municipality</u>

12. The completion of additional modelling scenarios where the setback to Tributary #3 and the PSW is modified such that the hydrologic function of these features is less disrupted by both the operational phase and the final pond could be considered.
13. NER Section 2.6 Growth Plan for the Greater Golden Horseshoe, the report states "*Notwithstanding the NHS policies, Section 4.2.8.2 states that new mineral aggregate operations within the NHW for the Growth Plan are subject to specific policies. However, the proposed license application is an expansion of the existing extraction operation and is therefore not subject to the environmental prohibitions outlined in the Growth Plan*

4.2.8.2.(a)." The Subject Site is not linked with or physically connected to any existing licensed site. Consideration should be given to treat this application as a new license.

14. WR Section 8.6.3 Data Review and Report, the report identifies that CBM would review the monitoring information quarterly and report to the MNRF annually. If monitoring results indicate potential for adverse impacts, appropriate enhanced monitoring and/or mitigation actions would be developed and implemented. Adaptive management with clear targets and triggers related to impacts to users and ground / surface water features should be identified. The lag time between operational impacts and monitoring / reporting could result in short- and long-term impacts that could be more easily identified / corrected with more frequent reporting and clear mitigation actions. These details could be incorporated into the conditions of license.

15. The development of a robust groundwater/surface water monitoring program to monitor groundwater flow directions towards both Tributary #3 and Mill Creek, and vertical hydraulic gradients at nested sites within the PSW, Tributary # 3, and Mill Creek, is recommended. Monitoring / reporting is recommended at each stage of extraction / pit development. Additional multilevel piezometers (or shallow wells) could be installed in the PSWs where there are predicted to be changes to water levels and groundwater discharge as a part of a long-term monitoring program.

16. It is recommended that trigger thresholds and mitigation measures be developed for monitoring sites to ensure pre-extraction hydraulic function of Tributary #3, Mill Creek and wetlands are maintained.

Should you have any questions, please contact me at 519-621-2236, or clorenz@grandriver.ca.

Sincerely,

[redacted]

Chris Lorenz, M.Sc.
Resource Planner
Grand River Conservation Authority

Enclosed: GRCA Resource Mapping
GRCA Pre-Consultation Comments (September 28, 2021)

Administration Centre: 400 Clyde Road, P.O. Box 729 Cambridge, ON N1R 5W6

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To: Township of Puslinch/County of Wellington

From: Fred Natolochny Grand River Conservation Authority

cc. Neal DeRuyter, MHBC

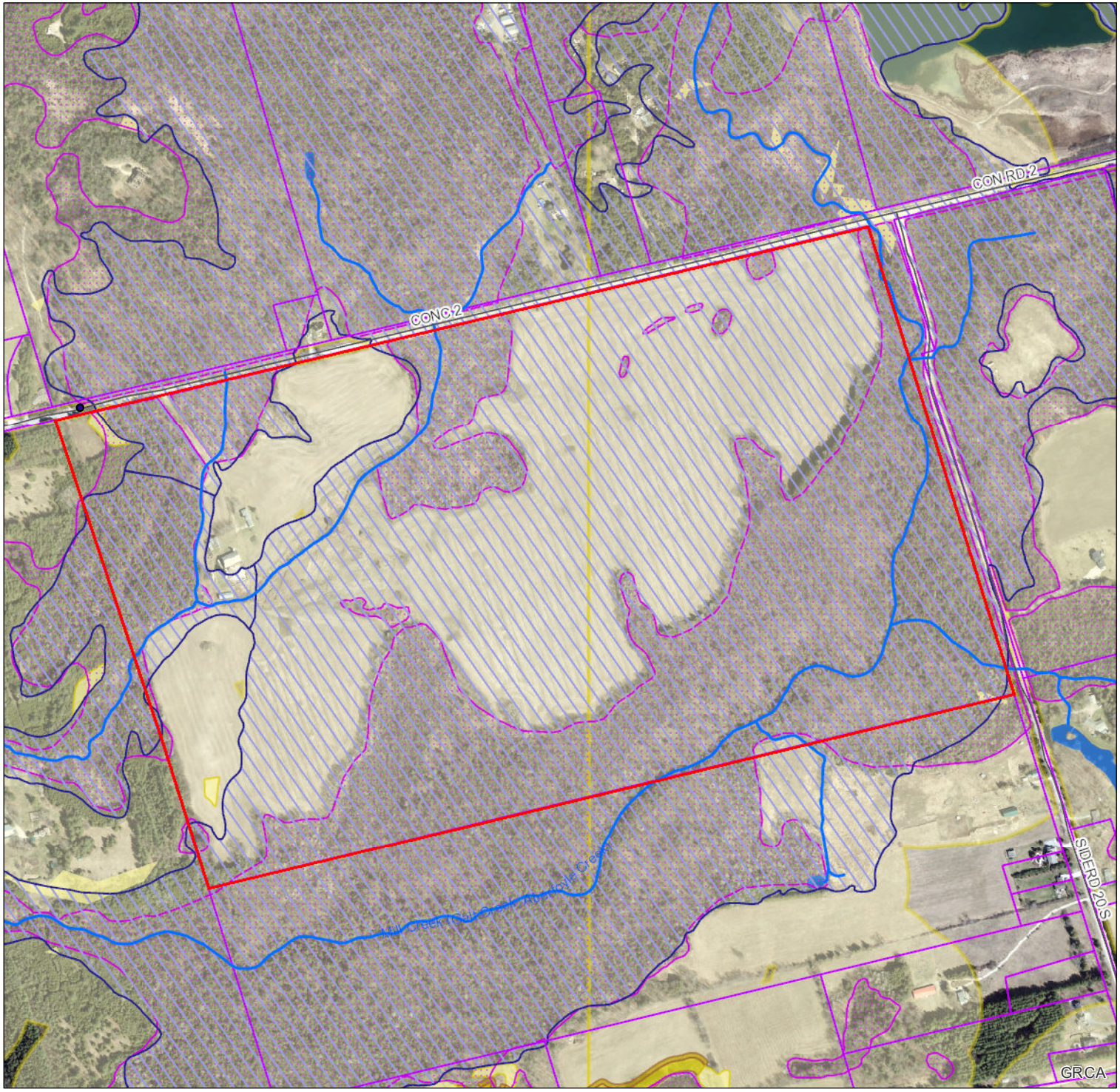
Date: September 28, 2021

Re: CBM Aberfoyle South Pit pre-consultation comments

Comments:

- The site contains Mill Creek and a wetland to the south, and an unnamed tributary to Mill Creek and wetlands to the north and northwest of the proposed extraction area. Mill Creek is a cold water system with sensitive cold water fish community. This site contains both brook trout and brown trout with confirmed spawning areas on the subject lands. Baseline habitat and fish community assessments would be required. The Mill Creek Subwatershed Study should be referenced for studies background. Site contains portions of Mill Creek Provincially Significant Wetland Complex. The wetland/woodland is zoned Core Greenlands in Official Plan. Floodplain covers the majority of the site. Terms of reference/study outlines are requested for the technical reports to be prepared.
- Almost the entirety of the planned excavation extent is in the floodplain. The proponent should determine what impact (if any) the proposed site changes will have on flood elevations onsite, and upstream/downstream.
- Monitoring should be designed to assess the pre-extraction function of the wetlands and streams (groundwater versus surface water supported) and groundwater gradients on a seasonal basis. A detailed analysis should be provided as to how their function and gradients will be maintained both during and post extraction. Technical studies should demonstrate how the proposed development will protect and maintain the sites water balance and contributions to the wetland, woodlands, and watercourses through both surface and groundwater contributions.
- Monitoring and evaluation should also assess thermal impacts to wetlands/watercourses prior to (ie baseline), during, and post extraction.
- The additive impacts to Mill Creek and Provincially Significant Wetlands from below water table aggregate extraction (ie. Changes to groundwater flow and temperature) should be assessed in relation to other water takings and extraction operations in the area as identified in: Cumulative Effects Assessment (Water Quality and Quantity) Best Practices Paper for Below-Water Sand and Gravel Extraction Operations in Priority Subwatersheds in the Grand River Watershed September 2010

Microsoft Word - CW-11-10-107 - Cumulative Effects Assessment for Below-Water Aggregate Operations, etc..docx (grandriver.ca)



Grand River Conservation Authority

Date: Dec 06, 2023
Author: CL

6947 Concession 2, Puslinch

Legend

- Regulation Limit (GRCA)
- Regulated Watercourse (GRCA)
- Regulated Waterbody (GRCA)
- Wetland (GRCA)
- Floodplain (GRCA)
  - Engineered
  - Estimated
  - Approximate
  - Special Policy Area
- Slope Valley (GRCA)
  - Steep
  - Oversteep
  - Steep
- Slope Erosion (GRCA)
  - Oversteep
  - Toe
- Lake Erie Flood (GRCA)
- Lake Erie Shoreline Reach (GRCA)
- Lake Erie Dynamic Beach (GRCA)
- Lake Erie Erosion (GRCA)
- Parcel - Assessment (MPAC/MNRF)

This legend is static and may not fully reflect the layers shown on the map. The text of Ontario Regulation 150/06 supercedes the mapping as represented by these layers.

0 50 100 200 300 Metres

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NAD 1983 UTM Zone 17N

Scale: 8,253

Map Centre (UTM NAD83 z17): 565,596.22 4,809,241.97

This map is not to be used for navigation | 2020 Ortho (ON)