

TECHNICAL MEMORANDUM

DATE November 24, 2021**Project No.** 21457143**TO** Sean Tylee
Port Colborne Quarries Inc.**CC** David Sisco**FROM** Luke Owens**EMAIL** Luke_Owens@golder.com**RESPONSE TO JART COMMENTS ON THE NATURAL ENVIRONMENT LEVEL 1 & 2 REPORT FOR THE PORT COLBORNE QUARRY EXTENSION****1.0 INTRODUCTION**

Port Colborne Quarries Inc. retained Golder Associates Ltd. (Golder) to complete the Natural Environment Level 1 & 2 Report (NEL1/2) for the *Aggregate Resources Act* (ARA) licence application for the Port Colborne Quarry Extension (the project). Comments on the NEL1/2 were received from the Joint Agency Review Team (JART) in Appendix 9 of a comment letter on July 28, 2021. This technical memorandum provides Golder's response to these comments. This technical memorandum is to be considered an addendum to the NEL1/2 and is intended to provide additional information and clarity to the JART in response to the comments received.

2.0 COMMENT RESPONSES**Section 4.4 Field Surveys**

Comment 1.a: According to Table 1, the first breeding bird survey (BBS) conducted in 2018 (June 21st) was conducted late in the breeding season potentially negatively affecting survey results. Song output typically starts to decline by the middle of June. However, this concern was lessened by the fact that the 2017 BBS surveys were well timed, as were the 2019 BBS.

Response: 1.a: No response required.

Comment 1.b: Of lesser significance, the second BBS visit in 2018 (June 26th) did not occur at least a week after the first visit, as is the requirement when assessing territoriality. The same was also true for the 2nd BBS visit in 2019. However, if all species documented are considered confirmed breeders, these aberrations are not of concern.

Response 1.b: All species observed during both of the BBS are considered confirmed breeders.

Comment 1.c: According to the Marsh Monitoring Program, Anuran Call Counts (ACCs) normally take place during the first two weeks of April, May, and June. However, according to Table 1, the only ACC conducted in 2017 took place on April 24th, falling in between the standard survey windows. The same was also true for the

first ACC survey in 2020 which took place on April 28th, and the second ACC survey visit on May 19th, 2020. Deviations in timing may be acceptable due to long stretches of substandard weather conditions that preceded the survey visits, but they should be documented for transparency. Please address.

Response 1.c: The MMP protocol recommends that survey between 43rd and the 47th parallels be conducted between the 15th and the 30th of April. The site is located less than 10 km south of the 43rd parallel at approximately 42.9° latitude. Therefore, it is Golder's opinion that the mid-to-late April dates of the early season anuran call count surveys were appropriate due to the site's close proximity to the 43rd parallel.

Section 4.4.2.1 Habitat Assessment (Bat Surveys)

Comment 2.a: According to the report, an assessment of potential suitable bat maternity roost habitat was conducted. Although some of the results are included in Table 6 in Section 5.5.1.1, a complete assessment does not appear to be included in the report. Please provide for review.

Response 2.a: Table 6 in Section 5.5.1.1 provides the findings of the bat habitat assessment. Additional details are provided in Table 1 below.

Table 1: Updated description of bat maternity roost habitat on the proposed Port Colborne Quarry site

Feature	Description of Suitable Habitat
Deciduous Swamp (SWD3-2)	A high density of large diameter (i.e., greater than 30 cm DBH) trees or snags with cavities, peeling bark, or leaf clumps / squirrel nests. The canopy contained silver maple (<i>Acer saccharinum</i>), pin oak (<i>Quercus palustris</i>), chinquapin oak (<i>Quercus muehlenbergii</i>), swamp white oak (<i>Quercus bicolor</i>), shagbark hickory (<i>Carya ovata</i>), bur oak (<i>Quercus macrocarpa</i>), and red maple (<i>Acer rubrum</i>). The swamp was bisected by a narrow clay road. Ephemeral pools were observed throughout the plant community. The majority of the trees in the swamp were 10 to 25 cm in diameter and approximately 16 m tall. Larger oaks and maples with diameters of approximately 80 to 90 cm, and with heights greater than 20 m were observed scattered throughout the swamp. The swamp was approximately 17 ha in area.
Main Building (Humberstone Speedway)	A large three-story building with several openings in the soffit providing access to the attic. The building is approximately 42 m long and 10 m wide. Bleachers occupy the north east façade of the building. The building is constructed with cinder blocks and has a pitched roof with an attic.
Snack shack (Humberstone Speedway)	An old, one-story building with several openings that may provide entry/exit points for bats. The building is approximately 10 m by 5 m and is constructed of cinder blocks, with a slightly pitched roof with no attic.
1326 Highway 3. House (west side) and cavity tree.	An old, two-story house with several entry/exit points. Resident indicated that bats have previously roosted in the house. There is a large sugar maple (<i>Acer saccharum</i>) adjacent to the house with several cavities that may also provide roosting potential. The building is constructed of red brick and was in poor condition at the time of the survey. Several openings in the soffit and fascia were observed.

Feature	Description of Suitable Habitat
1252 Highway 3. Cavity tree on residential lawn.	A large deciduous cavity tree with a broken top on a residential property.
1252 Highway 3. Shed on residential lawn.	A small wooden shed with several openings that may provide entry/exit points for bats. This shed was located adjacent to an above ground pool. It does not have an attic.

Section 4.4.2.3 Acoustic Surveys (Bat Surveys)

Comment 3.a: Only one acoustic detector was deployed adjacent to a natural vegetation community over the course of the study, i.e., at the south end of the deciduous swamp (SWD3-2) in 2017. It was operational for only six nights, not ten, normally recommended by MNR/MECP. Why were no detectors deployed adjacent to the following locations at the north end of the study area: FOD7, FOD (immediately east of the extraction area), and especially FOD7-2, which is to be removed? Some of the trees in these vegetation communities may have been present in 1934 (based on historical imagery) and given their maturity, would likely provide opportunities for bat roosting.

Response 3.a: Bat acoustic surveys were not completed in the SWD3-2, the FOD7 (east of the SWD3-2) and the FOD7-2 because the extraction will be set back from the SWD3-2 and the FOD7, and the natural environment, groundwater and surface water assessments determined that there would be no adverse impact to these features as a result of extraction on the site. No cavity trees suitable for bat roosting were observed in FOD7-2. To create a fulsome set of data, additional bat acoustic surveys were conducted during June of 2021 in these features. The results of the bat data analysis will be provided in a separate technical memorandum (Golder 2021 in production).

Comment 3.b: Six passive full-spectrum bat detectors were deployed in 2019, at the residential properties on the Humberstone Speedway property. Furthermore, *“The detectors were programmed to record between a half hour before sunset and a half hour after sunset.”* However, according to the *Bats and Bat Habitats: Guidelines for Wind Power Projects* (OMNR 2011), exit surveys (using bat detectors) are to occur from 30 minutes before dusk (i.e., approximately sunset) until 60 minutes after dusk (i.e., approximately 90 minutes after sunset). Please explain. Also, please provide the weather data to confirm how many of the 12 nights of monitoring were carried out under acceptable conditions.

Response 3.b: Stationary bat acoustic surveys (passive monitoring) are not the same as exit surveys which are conducted by a surveyor with a handheld detector and which end 60 minutes after dusk (active monitoring). The longer recording period used for the passive monitoring includes the entire 2-hour recording period described in this comment and additional recording effort throughout the night and early morning. The use of passive monitoring for a minimum period of 10 nights is the standard survey approach for monitoring potential maternity roost habitat in Ontario. The longer recording period provides additional information regarding the use of the habitat by bats throughout the night.

Table 2 presents the weather data for the survey period.

The weather conditions were suitable on 9 of the twelve nights. On the nights of June 10, 12 and 15th, weather conditions were unsuitable.

Table 2: Weather Data for Port Colborne, ON During the 2019 Bat Acoustic Surveys

Date	Weather conditions ¹
June 7, 2019	17 C – 14 C, wind 10 km/h - 7 km/h, clear sky, no precipitation.
June 8, 2019	16 C -15 C, wind 15km/h –13 km/h, clear sky, no precipitation.
June 9, 2019	21 C – 18 C, wind 16 km/h – 11 km/h, partly cloudy to mostly cloudy, light rain beginning around 3 am.
June 10, 2019	12 C -11 C, wind 29 km/h - 21 km/h, overcast, light rain.
June 11, 2019	14 C – 12 C, wind 9 km/h – 10 km/h, partly cloudy to clear sky, no precipitation.
June 12, 2019	18 C – 17 C, wind 13 km/h – 17 km/h, partly cloudy, no precipitation.
June 13, 2019	13 C – 11 C, wind 15 km/h – 25 km/h, mostly cloudy to overcast, light rain.
June 14, 2019	15 C – 17 C, wind 19 km/h – 24 km/h, partly cloudy, no precipitation.
June 15, 2019	16 C – 15 C, wind 22 km/h – 10km/h, overcast, rain.
June 16, 2019	14 C – 13 C, wind 6 km/h -9 km/h-, partly cloudy, no precipitation.
June 17, 2019	16 C, wind 12 km/h – 9 km/h, mostly cloudy, no precipitation.
June 18, 2019	18 C – 17 C, wind 5 km/h – 3 km/h, partly cloudy, no precipitation.

¹. Source: worldweatheronline.com

Section 4.4.3 Breeding Bird Surveys and Bobolink/Eastern Meadowlark Surveys

Comment 4.a: Based on the number of stations surveyed in 2017 (14), 2018 (17) and 2019 (23), and the fact that up to three survey visits were carried out each year, quite a few field sheets appear to be missing from Appendix E. Please provide all field data sheets for review. Also, please ensure that the numbering of the point count stations in the data sheets corresponds with the same numbering on Figure 3. There appear to be a few discrepancies.

Response 4.a: All datasheets were included in Appendix E of the NEL 1/2. Not all stations were surveyed in each year. In 2017, 14 stations were surveyed, in 2018, four stations were surveyed, and in 2019 seven station were surveyed. Stations in grassland bird habitat were surveyed with three rounds of point counts during the breeding season. Stations that were not in grassland bird habitat with two rounds of point counts during the breeding season. In some cases, the numbering of the stations on the datasheets was changed for the reporting to allow for the clearest presentation of the data. Further, at the time of the 2017 surveys it was not anticipated that two additional years of BBS data would be collected. The station names were changed for the 2018 and 2019 surveys to allow the reader to easily identify which surveys were completed in each year.

Section 4.4.4 Amphibian Habitat Assessment and Anuran Call Count Surveys

Comment 5.a: According to the report, an assessment of surface water features was conducted to evaluate their suitability to support breeding amphibians. However, this information appears to be missing. Please provide.

Response 5.a: The assessment of suitability was completed, and anuran call count surveys were conducted in only those features that were deemed suitable. The results of the assessment of surface water features as breeding habitat for amphibians are provided in Table 3.

Table 3: Assessment of Surface Water Features as Breeding Habitat for Amphibians

Anuran Call Count Surveys Station	Feature assessment
ACC01, ACC02, ACC03, ACC12	These stations focused on the silver-maple deciduous swamp at the north end of the site. The swamp contained ephemeral pools of varying depth. The swamp was approximately 17 ha in size. The north channel of the East Wignell Drain flowed through this swamp and along its southern edge through a straightened channel.
ACC04	This station was a roadside survey that surveyed a deciduous swamp / deciduous forest located off the site in the northwest part of the study area. It was not accessible during the surveys. The feature was approximately 5 ha in size. Due to inaccessibility, it was not determined how much of this feature was swamp and how much was upland forest, and no information on surface water features within the feature was obtained.
ACC05	This station was a roadside survey that surveyed a deciduous swamp / deciduous forest located off the site in the east part of the study area. It was not accessible during the surveys. The feature was approximately 6 ha in size. Due to inaccessibility, it was not determined if this feature was swamp or upland forest, and no information on surface water features within the feature was obtained.
ACC06	This station surveyed a permanent pond of anthropogenic origin located on the Speedway property. The pond was approximately 2000 m ² and was of unknown depth. Riparian vegetation consisted of emergent vegetation including common cattail (<i>Typha latifolia</i>) and flowering rush (<i>Butomus umbellatus</i>), and shrubs including red-osier dogwood (<i>Cornus sericea</i>).
ACC07	This station was a roadside survey that surveyed an off-site agricultural pond of anthropogenic origin, located in the south end of the study area. The pond was permanent, and the depth was not determined. There was no access to this pond.
ACC08	This station was a roadside survey that surveyed an off-site agricultural/or residential pond of anthropogenic origin located in the north end of the study area. The pond was permanent, and the depth was not determined. There was no access to this pond.

Anuran Call Count Surveys Station	Feature assessment
ACC09	This station was a roadside survey that surveyed a deciduous swamp / deciduous forest located off the site in the south part of the study area. It was not accessible during the surveys. The feature was approximately 4.5 ha in size. Due to inaccessibility, it was not determined if this feature was swamp or upland forest, and no information on surface water features within the feature was obtained.
ACC10	This station was a roadside survey that surveyed a deciduous swamp / deciduous forest located off the site in the southwest part of the study area. It was not accessible during the surveys. The feature was approximately 3.75 ha in size. Due to inaccessibility, it was not determined if this feature was swamp or upland forest, and no information on surface water features within the feature was obtained.
ACC11	This station was a roadside survey that surveyed a deciduous swamp / deciduous forest located off the site in the southeast part of the study area. It was not accessible during the surveys. The feature was approximately 14.5 ha in size. Due to inaccessibility, it was not determined if this feature was swamp or upland forest, and no information on surface water features within the feature was obtained.
ACC13	This station included two permanent ponds of anthropogenic origin, located on the Speedway property. The smaller of the two ponds consisted was approximately 11000 m ² and was of unknown depth. The larger of the two ponds was approximately 1500 m ² and was of unknown depth. Riparian vegetation around each pond was sparse.

Comment 5.b: Although the report indicates that the Anuran Call Counts followed the Marsh Monitoring Program protocol, the:

- i. Majority of the point counts conducted on April 24th, 2017 didn't meet the minimum temperature thresholds for the second survey visit (the survey window to which this date was closest).
- ii. May 19th, 2020 survey visit was carried out in weather conditions that were too windy, potentially negatively affecting (i.e., reducing) call output and survey results.

Response 5.b:

- i. The April 24, 2017 visit was the first survey visit (see response to comment 1.c). All point counts met the minimum temperature threshold for the first survey visit.
- ii. Although, the May 19, 2020 survey was conducted with wind speeds that were marginally higher than recommended (i.e., Beaufort wind scale 4, rather than Beaufort wind scale 3), all species expected to be calling at that time of year were observed, and if calling intensity was reduced it is unlikely that this reduction would impact the overall assessment of existing conditions for calling anurans. Furthermore, the only amphibian breeding habitat located within the extraction area was confirmed as SWH based on the presence of breeding American bullfrog.

Section 4.4.6 Fish and Fish Habitat

Comment 6.a: The Natural Environment Level 1 / 2 Report states that Golder used internal Technical Procedures 8.5.1 -Watercourse Mapping System to complete a qualitative fish habitat assessment of the East Wignell Drain in 2017 with two additional reaches assessed in 2019. The report states that during the fish habitat assessment, all reaches of East Wignell Drain on the site were surveyed and notes that a section between what are referred to as the North Channel and the South Channel was not surveyed. No habitat characterization was conducted downstream from the site. Please clarify.

Response 6.a: The section between the North Channel and the South Channel and the section downstream of the site were located on private property and were not accessible at the time of the survey.

Comment 6.b: Golder Technical procedure 8.5.1, which was used to assess fish habitat, is not provided in the Natural Environment Level 1 / 2 Report. The Golder Response to the Region of Niagara comments on the Terms of Reference for the Natural Heritage Environment Work Program (refer to Appendix D of the Natural Environment Level 1 / 2 Report) indicates that the details of the method will be included in the combined Natural Environment Level 1/2 /EIS report. Please address.

Response 6.b

The methods from Golder Technical Procedure 8.5.1 are summarized below and the following data were collected in the East Wignell Drain:

- habitat mapping including key habitat features (e.g., riffles, pools, woody debris, undercut banks, boulder clusters), groundwater seepage areas, depth, substrate types, bank stability and soil types and in-water cover;
- In-situ water quality parameters including dissolved oxygen, temperature, pH, and electrical conductivity, observations of water colour and clarity;
- riparian vegetation and in-stream aquatic vegetation;
- critical habitat areas (e.g., potential spawning areas, deep water holding habitat), existing infrastructure (i.e., culverts, road crossings) and potential pollution point sources; and
- georeferenced photographs, and GPS locations of fish observations.

Comment 6.c. Three documents are referenced as the basis for the habitat mapping methods. One of these (Roper and Scarnecchia, 1995) is not included in the References section of the report. Please address.

Response 6.c:

This reference is as follows: Roper, Brett, and Dennis Scarnecchia. 1995. Observer Variability in Classifying Habitat Types in Stream Surveys. North American Journal of Fisheries Management. 15(1):49-53.

Section 4.5 Analysis of Significance and Sensitivity and Impact Assessment

Comment 7.a: According to the report, “An assessment was conducted to determine if any significant environmental features or SAR exist, ...” However, it does not appear that the deciduous swamp (SWD3-2) present at the north end of the subject lands was re-evaluated for significance using the field data collected from 2017 – 2020.

Response 7.a: Golder considers a re-evaluation of the evaluated non-provincially significant wetland (the deciduous swamp) to be outside of the scope of the NEL1/2. The Ministry Northern Development, Mines, Natural Resources and Forestry (MNDMNRF) formerly (MNRF) is the agency responsible for designation of PSWs. In correspondence received from the MNRF (Appendix D of the NEL1/2), the MNRF identified the evaluated, non-provincially significant wetland as a natural heritage feature in the study area. The MNRF requested ELC classification, botanical inventory, and targeted SAR surveys be conducted, but did not request a re-evaluation of the wetland for provincial significance. Regardless, the status of the wetland would not change the assessment of potential impacts of the project on this feature. Based on an integrated assessment of natural environment, and groundwater and surface water, it was determined that there would be no adverse impacts on the wetland as a result of extraction on the site. That remains true regardless of the status of the wetland.

Section 5.2 Hydrogeology

Comment 8.a: Details regarding the hydrogeology characteristics as they relate to natural features present should be expanded. For example, specific information regarding depth to ground water (average, seasonal), flow rates, etc. would help to better understand the existing hydrogeological function of wetlands on the property.

Response 8.a: The groundwater levels in the wetland area were measured in monitoring wells installed in boreholes drilled in the wetland areas as part of the hydrogeological work program. The borehole drilling indicated the presence of thick clayey soil deposits beneath the wetland. The clay deposits may also be visually observed from the east wall of Pit 3 of the existing quarry. The groundwater levels beneath the wetland are shallow reflecting the low permeability of the clay deposits which have not experienced significant drawdown even though they are adjacent to the existing quarry. This condition is expected to persist in the future for the proposed extension and will be confirmed by the monitoring program. A more detailed description of the site hydrogeology is provided in the Hydrogeological Report (Golder 2020a)

Section 5.3 Surface Water Resources

Comment 9.a: Details regarding the surface water function as it relates to the deciduous swamp at the north side of the study area should be discussed in this section.

Response 9.a: The deciduous swamp at the north end of the study area maintains standing water or wet conditions for portions of the year. This feature contributes drainage to the upstream end of the East Wignell Drain. The wetland feature may collect surface drainage from north of 2nd Concession Road but does not collect runoff from the extraction area to the south.

A more detailed discussion of the surface water features is included in the Hydrological Assessment in Support of the Aggregate Resources Act Application for the Port Colborne Quarry Expansion, Port Colborne, Ontario (Golder 2020b).

Section 5.4.2.1 Deciduous Swamp Characterization

Comment 10.a: Consistent with comments regarding the Hydrogeology and Surface Water Resources sections, a characterization of the overall hydrologic function of the swamp should be provided.

Response 10.a: See responses to comments 8.a and 9.a above.

Section 5.5.5.1 Fish Habitat

Comment 11.a: Field sheets for the 2019 field investigations are in Appendix E of the Natural Environment Level 1 / 2 Report but the field sheets from the 2017 characterization do not appear to be. The units for electrical conductivity are reported to be $\mu\text{s}/\text{cm}$, which we interpret to be a short-form for microsiemens per centimeter, on one of the four field sheets and are not reported on the others. The reported values range from 0.192 – 0.196; these are three orders of magnitude less than would be expected. Are the numbers siemens per centimeter?

Response 11.a: The field records from the 2017 characterization consists of an annotated field map. It is included in Appendix E. The correct value for electrical conductivity is 192-196 microsiemens/centimetre.

Section 5.5.5.2 Fish

Comment 12.a: No fish sampling data were acquired through background review and no fish sampling was conducted during the field investigations. The report states that some of the warmwater fish species present in Lake Erie may be present in East Wignell Drain, West Wignell Drain, and Beaverdam Drain and that stocked coldwater species are unlikely to be present. Such statements would not normally be considered an adequate characterization of the fish community.

Response 12.a: The northern reach of the East Wignell Drain is to be realigned by the City of Port Colborne. Port Colborne Quarries will be responsible for the temporary realignment of the south reach of the East Wignell Drain prior to extraction in that area of Phase 1A (Figure 4). Following extraction, the area where the south reach of the Drain is currently located will be backfilled and the Drain will be restored to the general location of its original alignment. The drain is underlain by low permeability clayey soils and therefore there will be a low degree of leakage of surface water through the base of the drain. The realignment of the south reach of the Drain is not expected to occur for at least 15 years, and due to the low permeability of the soils it is not anticipated that there will be an impact on the fish habitat. Prior to undertaking of any operational activities that have the potential to impact fish habitat in the drain, including drain realignment and stripping/excavation west of the Drain within approximately 30 m, the appropriate agency/agencies will be contacted, and the required authorizations will be obtained at that time. Additional field surveys such a fish habitat and fish community surveys may be required as part of those authorizations. This commitment will be added to the site plans. Because the impacts on fish habitat resulting from operational activities are not expected to occur for several years, fish community surveys conducted for this NEL1/2 would be out of date by the time the required authorizations must be obtained.

Section 6.3 Significant Wetlands

Comment 13.a: The report states that “*There are no significant wetlands on the site.*” However, the deciduous swamp at the north end of the site (i.e., SWD3-2), acknowledged to be a non-provincially wetland (see Section 2.7), was not re-evaluated using the field data collected between 2017 and 2020. Data collected for this study could be used to determine if the status of the wetland would remain the same or may be updated.

Response 13.a: See response to comment 7.a above.

Section 6.4 Significant Woodlands

Comment 14.a: Table 9 uses feature IDs that are not presented on any of the report figures. Updating the figures to include the IDs would help with cross-referencing the features in question.

Response 14.a: The locations of the features included in Table 9 are described in the first column of the table.

Comment 14.b: Clarification should be provided as to whether, given existing conditions, woodland FOD7-2 would be considered a key feature given presence of Eastern Wood-Pewee and proximity to the east branch of the Wignell Drain.

Response 14.b: Although eastern wood-pewee was observed from a BBS surveys station located adjacent to FOD7-2, it was observed calling from the larger SWD3-2 located just north of that survey station. FOD7-2 is too small to provide breeding habitat for eastern wood-pewee. Due to the small size (approximately 0.85 ha), lack of species diversity, absence of rare plant communities and species at risk habitat, and the lack of large mature trees observed in FOD7-2, this feature would not be considered as a significant woodland on a regional or provincial basis.

Comment 14.c: For transparency and clarity, data, and assessment outcomes for woodlands on the site that were determined to be not significant should also be included.

Response 14.c: All woodlands on the site that were assessed for significance are included in Table 9 of the NEL1/2.

Section 6.7.3 Specialized Habitat for Wildlife (Significant Wildlife Habitat)

Comment 16.a: The report states: *“Based on the result of the anuran call count surveys (Section 5.5.3) no SWH for amphibian woodland breeding was identified in the study area.”* However, Section 5.5.3 does not include abundance information for the species documented, therefore the information presented doesn’t allow an evaluation of significance. Furthermore, according to the Anuran Call Count data sheets included in Appendix E, it appears that calling levels at some stations exceeded the minimum thresholds for significance recommended in the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (OMNRF, 2015). Please address.

Response 16.a: Upon further review of the anuran call count data, it appears likely that the silver maple deciduous swamp SWD3-2 at the north end of the site supports a breeding amphibian population of at least 20 individual spring peepers, and at least 20 individual western chorus frogs. It therefore meets the minimum threshold for significance recommended in the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E. The SWD3-2 feature will not be removed, and a setback of 10 m will be applied. It is not anticipated that there will be a negative impact on the amphibian woodland breeding habitat. The impact assessment determined there would be no negative impact of the deciduous swamp. This determination would not change due to a change in status of significance regarding amphibian breeding, and no impacts on the amphibian breeding habitat are anticipated.

Comment 16.b: For transparency, it would be helpful if the report indicated why Woodland Area-Sensitive Bird Breeding Habitat was not present.

Response 16.b: It was determined that Woodland Area-sensitive Bird Breeding Habitat was not present since the breeding bird surveys did not confirm the presence of nesting or breeding pairs of three or more of the woodland area-sensitive bird species listed in the SWH Criteria Schedules for Ecoregion 7E.

Section 6.7.4 Rare Habitat (Significant Wildlife Habitat)

Comment 17.a: Please confirm why the woodland habitats at the north end of the study area (i.e., vegetation community SWD3-2, FOD7 and FOD7-2 are not considered Old Growth Forest SWH. The areas where these communities are present appeared to be mature forest in 1934.

Response 17.a: The SWD3-2, FOD7 and FOD7-2 are not considered old growth forest SWH for the following reasons:

- Recognizable forestry activities (cut stumps) were observed in the south end of the SWD3-2, east of Carl Road.
- The dominant tree species are not older than 140 years.

Although it was determined that old growth forest SWH is not present in the study area, the assessment of no adverse impacts on these features would not change if the status of these woodlands were different, or if remnants of old growth forest were present in this area.

Section 7 Impact Analysis

Comment 18.a: Despite not being considered a Significant Woodland, the Impact Analysis section should acknowledge and discuss the loss of the 0.85 ha forest community FOD7-2, which is present within the proposed extraction limit.

Response 18.a: The FOD7-2 plant community, located southeast of the deciduous swamp (SWD3-2) is an immature green ash dominated deciduous forest containing low wet areas dominated by red-osier dogwood and pussy willow. The green ash trees are unlikely to survive to maturity due to the threat of emerald ash borer. The removal of this feature will result in the loss of a limited amount of nesting and foraging habitat for some species of migratory birds, and the loss of foraging and cover habitat for small mammals. No SAR habitat will be lost, and no rare plants or rare plant communities will be removed. It is not anticipated that the removal of this plant community will have a significant adverse effect on plant and wildlife populations, or on the ecological function of the area.

Section 7.1.1 Birds (Threatened or Endangered Species)

Comment 19.a: Report text on page 25 indicates that Bank Swallows were observed flying over the agricultural fields on the site in 2018 and 2019. Although no suitable nesting habitat is present on site, it was stated that the species could potentially be nesting in stockpiles in the aggregate pits to the west. It is also possible, although less likely, that Bank Swallows could be utilizing exposed cliff faces in recently excavated areas adjacent to the proposed quarry expansion area. In either case, the impact that the proposed quarry expansion would have on its foraging habitat should be evaluated, as per the General Habitat Description for Bank Swallow (OMNRF, 2015). Until this has taken place, and MECP has been consulted, it is premature to conclude that this species will not be negatively impacted by the proposal.

Response 19.a: Although no bank swallow colonies were confirmed to be present in the study area, it is possible that portions of the site are within 500 m of an active nesting colony. Therefore, it is possible that category 3 habitat (foraging habitat within 500 m of an active colony) is present on the site. The General Habitat Description for Bank Swallow states that category 3 habitat will be considered to have a high tolerance to alteration. The open, terrestrial habitat on the site consists of actively managed agricultural lands. This habitat is widespread and abundant in the study area and beyond. Following extraction, the rehabilitated site will include open areas including wetlands and large open water, which is suitable as bank swallow foraging habitat. The temporary disturbance of foraging habitat for bank swallow is not anticipated to have a significant negative impact on this species. In addition, the MNRF has provided guidance on how to mitigate aggregate operations on bank swallow and bank swallow habitat (MNRF 2017). Consultation with the MECP is not a requirement.

Comment 19.b: As indicated in Section 5.5.2, and reconfirmed in Section 7.1.1, Bobolink and Eastern Meadowlark (both designated Threatened in Ontario) habitat was documented in 2017, 2018 and 2019, from within and directly adjacent to the site. Given the intent to develop these lands as an aggregate quarry, the Ministry of Environment, Conservation and Parks (MECP) must be contacted as per Section 23.6 of Ontario Regulation 242/08 to confirm compensation requirements. Please ensure that the Region is copied on all correspondence with MECP to ensure that the matter is being appropriately addressed. Furthermore, the statement that the local farmer is planning to replace the hay fields used by Bobolink and Eastern Meadowlark to a nitrogen fixing cover crop to restore nutrients may not be necessary given that, with an approved licence, the lands would be approved for extraction and thus long-term soil management would not be required.

Response 19.b: As part of normal farming practices, the farmer who leases the land intends to rotate away from hay in future years as part of regular agricultural practice. Agricultural practices in bobolink habitat are exempt from the prohibitions of the ESA. The farmer has provided a crop rotation schedule for the agricultural lands on the site showing previous years crop (back to 2012) and a five-year projection going forward. The crop rotation schedule is included in Appendix A of this technical memorandum. The MECP will be consulted regarding the bobolink habitat on the site, the crop rotation schedule and compliance with the ESA. The Region will be copied on MECP correspondence.

Section 7.1.2 Bats (Threatened and Endangered Species)

Comment 20.a: The report text concludes by stating that suitable bat maternity roost habitat is not expected to be negatively affected by the project. However, until the complete assessment of potential suitable bat maternity roost habitat is made available for review, this conclusion is premature. Please see previous comments related to this concern and provide the applicable field data sheets.

Response 20.a: The conclusions regarding bat maternity roost habitat in the NEL 1/2 are based on the bat acoustics conducted in 2017 and 2019 which included habitat assessment, stationary acoustic surveys, and active monitoring. This survey effort was sufficient and the conclusions are sound. However, to address concerns raised by the JART, additional bat data was collected during the 2021 maternity season. These data will be analyzed and presented in a separate technical memorandum (Golder 2021 in production).

Section 7.2 Fish Habitat

Comment 21.a: The impact of the realignment of Wignell Drain is not assessed. The Natural Environment Level 1 / 2 Report states “It is Golder’s understanding that the City is planning to realign the East Wignell Drain (formerly Mitchner Drain) around the eastern boundary of the site. Without these realignment design details, it is not possible to assess the potential effects of the proposed quarry expansion on the realigned Wignell Drain prior to its planned realignment.”

Response 21.a: See response 12.a.

Comment 21.b: The Natural Environment Level 1 / 2 Report indicates that, although drainage area to Wignell Drain will be lost, pumping from the expanded quarry will likely discharge water into the realigned drain, resulting in increased average annual flow while creating a stable flow regime with controlled peak flows. The report titled Hydrological Assessments in Support of Aggregate Resources Act Applications for the Port Colborne Proposed Pit 3 Extension, Port Colborne, Ontario (Golder, 2020b) indicates that flow from the quarry expansion will be directed to both the East Wignell Drain and the West Wignell Drain. Please address this discrepancy and explain how dewatering from the quarry affect flows, including how it will create a stable flow regime.

Response 21.b: Dewatering from the Pit 3 Extension will be directed to the existing quarry discharge (West Wignell Drain) for the initial portions of the extraction until a sump can be established within the extension. Once the sump is established, it is expected that the majority of the dewatering from the Pit 3 Extension will be directed to the East Wignell Drain at a new discharge location. As part of Phase 1, a dewatering sump and discharge to East Wignell Drain will be completed. It is anticipated that there will be a consistent pumping into the East Wignell Drain and this will result in a stable flow regime relative to current conditions.

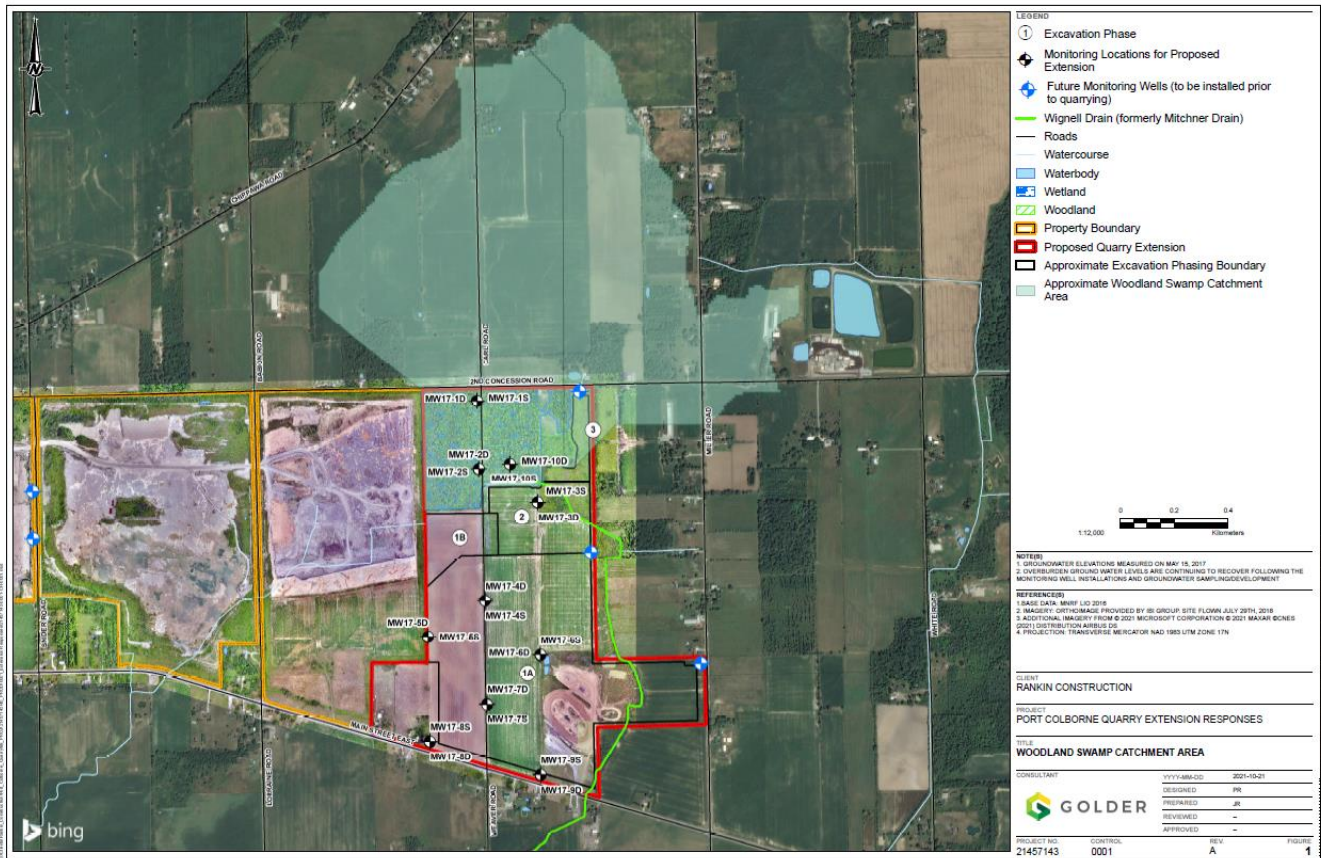
Comment 21.c: Please provide an assessment of the impacts on flows in East Wignell Drain and West Wignell Drain, as they relate to fish habitat, when quarry operations cease and an assessment of the fish habitat status of the 177-hectare lake that is expected to be present when the quarry ceases operation. Will fish habitat features be incorporated into the lake?

Response 21.c: When quarry operations cease and the quarries are rehabilitated, they will consist of rehabilitated lands and flooded quarry areas. The quarry ponds will spill at surface and this discharge will be directed to East and West Wignell Drains. This will maintain a portion of the flow in the drains but based on the evaporation of the quarry lakes, the flows will be reduced from pre-quarry conditions. Site surplus for the Pit 3 Expansion is expected to see a decrease of 6.5% in the rehabilitation condition (compared to existing conditions). Further investigations will be completed to assess the impacts of the quarry discharges will be completed as part of the Industrial Sewage Works Environmental Compliance Approval. However, the quarry lakes themselves will provide significant fish habitat that may compensate for any loss from decreased flows. Fish habitat features will include shallow, vegetated aquatic habitat created through the construction of submerged benches, approximately 0.25 to 0.75 m deep.

Section 7.3 Significant Woodlands

Comment 22.a: It is acknowledged that the hydrogeology and hydrology reports are referenced and indicate that no impacts to the hydrologic function of the swamp in the north area of the site are expected. With regard to the surface hydrology however, there are no maps presented that show the existing catchment and surface drainage patterns as they relate to the swamp; therefore, the no impact conclusion cannot be fully validated at this time.

Response 22.a: As shown in the figure below, the majority of the catchment contributing to the swamp is to the north, with only a small portion of the of the catchment being removed by Phase 3 of the expansion (<1% of the total swamp catchment). For this reason, impacts on the swamp caused by the loss of catchment area are not expected. Currently, the groundwater drawdown from the existing Pit 3 extends below the swamp area and has shown no significant impacts on the swamp water levels as a result of the impermeable nature of the soils. Therefore, the predicted extended drawdown as a result of the Pit 3 Expansion is not expected to have a significant impact on the swamp water levels.



Comment 22.b: Additional detail is required to justify a 10 m buffer from the significant woodland feature. In addition to protecting the critical root zone of trees, other considerations should include, but are not limited to potential to mitigate impacts to the hydrologic function of the wetland (particularly surface drainage, and wildlife habitat functions).

Response 22.b: Wildlife habitat function will be improved through the creation of a 10 m setback from the significant woodland relative to the current state which consists of an abrupt agricultural / natural interface. Improvements will include increased width, increased habitat diversity, enhanced habitat for terrestrial invertebrate (e.g., Lepidoptera and Odonata), and increased native species composition. Because the significant woodland does not receive surface water input (drainage) from the south where the setback will be established, a wider setback is not required to mitigate impacts to surface water function of the feature.

In addition to the 10 m setback, additional improvements will be made to the significant woodland including the decommissioning and rehabilitation of Carl Road, and the rehabilitation of open areas north and east of the significant woodland feature to enhance connectivity and wildlife movement corridors to off-site woodland features. The 10 m setback will be sufficient to protect the significant woodland from dust and mechanical disturbance. The site will have a dust best management practices plan and there will be no mechanical disturbance and no compaction permitted in the setback.

Comment 22.c: Recommendations provided in the Final Arborist Report (IBI, 2020) should be reflected in the Natural Environment Report and detailed on the Site Plan. In particular, potential impacts and recommendations

to avoid compaction and root damage outlined in the Arborist Report section 5.1 and 5.2 should be presented in the appropriate sections of the Natural Environment Report.

Response 22.c: The recommendations for the protection of trees are provided in the Final Arborist Report will be included on an updated Site Plan. It is not a requirement that the recommendations in the Final Arborist Report are repeated in the Natural Environment Report as the two reports are complimentary.

Section 7.4 Significant Wetlands

Comment 23.a: Following from the comment related to the status of the swamp present at the north end of the site, a determination of whether data collected for this study may affect the status determination of the Upper Wignell Drain Wetland Complex assessment.

Response 23.a: See response to comment 7.a above.

Section 7.6 Impact Assessment Summary

Comment 24.a: As noted in a previously, the Significant Woodland feature IDs should be presented on a map for clarity.

Response 24.a: See response to comment 14.a.

Section 7.5.1 Candidate Landbird Migratory Stopover Habitat (Significant Wildlife Habitat)

Comment 25.a: Please provide rationale in support of the statement that *“It is not anticipated that the proposed quarry expansion will have a negative effect on the use of this candidate (but unconfirmed) SWH by migrant birds.”* In addition, following standard procedures, until the required field surveys have been conducted, the status of this SWH type should be considered confirmed.

Response 25.a: A feature should not be considered confirmed SWH until it has been demonstrated that it meets the provincial criteria. The rationale in support of the above statement is as follows: all candidate landbird migratory stopover habitat SWH is located outside of the limit of extraction. Additionally, the Significant Wildlife Habitat Mitigation Support Tool (SWHMiST) states, that the basic principals for retaining the functions of migratory stopover are:

- 1) Minimize the loss and disruption of forest cover (i.e., cluster development where possible).;
- 2) Ensure that development does not completely sever access routes; and
- 3) Ensure that each area contains a good variety of habitat types.

The proposed quarry expansion will minimize the loss and disruption of forest cover. With the exception of FOD7- 2, which is less than 1 ha, no forest cover will be removed. The expansion area is immediately adjacent to the existing Port Colborne Quarry; therefore, development has been clustered. It is not expected that a quarry will result in a severing of access routes when compared to the existing open agricultural landcover that currently occupies the majority of the site. The enhanced buffer area will enhance the variety of habitat types. Additionally, the site post-rehabilitation will complement and improve the diversity of habitat for migrants within the general area relative to the homogeneous open agricultural lands that currently occupy the majority of the site.

Section 7.5.2 Candidate Woodland Bat Maternity Roost Habitat (Significant Wildlife Habitat)

Comment 26.a: Please see previous comments related to Bat Maternity Roost habitat and reconfirm whether all candidate Bat Maternity Roost SWH is located outside the proposed limit of extraction.

Response 26.a: All candidate bat maternity roost SWH is located outside of the proposed limit of extraction.

Section 7.5.3 Amphibian Wetland Breeding Habitat (Significant Wildlife Habitat)

Comment 27.a: Please see comment 13 and reconfirm whether Pond 3 represents the only confirmed SWH on the site.

Response 27.a: Comment 13 is unrelated to amphibian wetland breeding habitat SWH. Pond 3 is the only confirmed Amphibian Wetland Breeding Habitat SWH on the site.

Section 7.5.4 Habitat for Species of Conservation Concern (Significant Wildlife Habitat)

Comment 28.a: Please provide support for the conclusion that the proposed quarry expansion will not negatively impact Eastern Wood-Pewee and Wood Thrush, both of which would be directly adjacent to an active aggregate quarry, subject to increased disturbance (i.e., noise) and dust.

Response 28.a: The habitat for these species is already located directly adjacent to an active aggregate operation: the existing Port Colborne Quarry. Extraction in the quarry expansion is not going to begin until the resource in the existing quarry is exhausted. The two sites will not be operating simultaneously and there will be no increase in noise and dust from the extraction on the expansion property. The local populations of these species are adapted to breeding in close proximity to active aggregate operations and there will be no change to the local conditions.

Comment 28.b: Grasshopper Sparrow statements, the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (OMNRF, 2015) do not exclude actively managed agricultural lands from consideration as SWH. Furthermore, SWH assessment is not contingent upon when the proposed development is to occur but rather the time the features were studied. Please address.

Response 28.b: Habitat for grasshopper sparrow was identified on the site in actively managed agricultural land. Due to the regular patterns of agricultural land use this habitat is ephemeral. Although habitat for SC species is considered SWH, it is not protected under the ESA. It is not anticipated that the removal of this small amount of anthropogenic habitat will significantly impact the regional population of this species.

Comment 28.c: Details regarding methods to avoid impacts to Snapping Turtle and associated habitat are required in the Natural Environment report and the Site Plan.

Response 28.c: Snapping turtles and their habitat do not receive protection under the ESA. Habitat for this species will be replaced through the rehabilitation plan. A worker awareness plan related to the presence of snapping turtles on the site will be developed to educate workers in the identification of herpetofauna in the area. A requirement for worker awareness training related to snapping turtles will be included in the site plan.

Section 7.6 Impact Assessment Summary

Comment 29.a: Table 10. Please review and revise as necessary, as per the preceding comments.

Response 29.a: This technical memorandum provides the requested additional information to support the NEL1/2 impact assessment. The assessment of potential impacts has not changed based on the additional information supplied in this technical memorandum.

Section 8.0 Rehabilitation / Mitigation / Monitoring

Comment 30.a: Notwithstanding previous comments, how will the loss of vegetation community FOD7-2 be mitigated/compensated? How will the functions be replaced, including lost wildlife habitat?

Response 30.a: The removal FOD7-2, which is a small community dominated by immature ash trees, will be mitigated by the restoration of the buffer around SWD3-2, and the restoration of the section of Carl Road that bisects SWD3-2, and by the establishment of ecological linkages between SWD3-2 and off-site woodlands to the north.

Comment 30.b: Clarify if the rehabilitation located along the north section of the existing Pit 3 has been agreed on as part of the respective rehabilitation plan.

Response 30.b: The NDMNRF has requested a Site Plan Amendment for the Pit 3 plans to address changes including the proposed ecological linkages along the northern perimeter of Pit 3. These site plan changes depend upon the approval of the Pit 3 Extension. IBI Group has drafted a letter to the NDMNRF advising of the changes that are being sought.

Comment 30.c: Clarify if the proposed rehabilitation located at the north end of extraction area 3 and east of the deciduous swamp is feasible given the proposed realignment of Wignell Drain. Would an integrated approach be undertaken as part of the rehabilitation implementation?

Response 30.c: The realignment will be integrated into the rehabilitation area and will not conflict with the Wignell Drain realignment. This will improve the riparian conditions of the realigned drain in this area.

Section 8.2.1 General Best Management Practices

Comment 31.a: For clarity, please identify which vegetation features will be removed and would require nesting surveys if they are removed between April 15th – August 15th, and that this direction has been presented on the Site Plan notes.

Response 31.a: All vegetation communities with the potential to provide nesting sites to migratory birds will require nesting surveys if they are removed between April 15 and August 15th. This will include the FOD7-2 in extraction area 2, the CUM1-1 in extraction area 3 north of the FOD7-2, and the CUM1-1 in extraction area 1A around the Humberstone Speedway. If areas of the open agricultural lands have transitioned into fallow post-agricultural lands, nesting surveys will also be required in those areas if clearing is to take place during the nesting season. This will be added to the Site Plan notes.

Comment 31.b: Third bullet should be separated to identify sediment and erosion controls etc. BMPs from habitat screening for Bobolink or Eastern Meadowlark habitat.

Response 31.b: Golder acknowledges the following change to the bullets in section 8.2.1:

- Prior to the removal of vegetation in the agricultural fields on the site, a biologist should confirm that no suitable habitat for bobolink and eastern meadowlark is present. If habitat is confirmed to be present and in use by bobolink or eastern meadowlark, permitting or registration under the ESA may be required to remove habitat.
- Implement appropriate sediment and erosion controls, spill prevention, etc. during the construction phase of the project;

This will be added to the site plan notes.

Comment 31.c: Fifth bullet should add that the use of native plant species should be prioritized for rehabilitation plantings, and that removal of existing habitat for Monarch can be offset by incorporating Common Milkweed where appropriate.

Response 31.c: Golder acknowledges the following change to the bullets in section 8.2.1:

- The use of native plant species should be prioritized for rehabilitation plantings.
- The removal of existing habitat for Monarch can be offset by incorporating common milkweed where appropriate.

This will be added to the site plan notes.

Section 8.3 Monitoring

Comment 32.a: Specific targets should be established to identify low versus high-risk changes to ground water level draw-down in the overburden in protected features. As well, the appropriate contingency measure that will be implemented should ground water levels drop below the high-risk threshold should be identified and actions documented on the Site Plan.

Response 32.a: The groundwater levels in the wetland will be monitored on a monthly within wells installed in the overburden deposits as wells as underlying bedrock. The groundwater level measurements will be tabulated and summarized on hydrographs. These data can be used to discern any potential trends in groundwater level declines and to establish maximum and minimum levels.

Comment 32.b: b. In addition to the proposed wetland vegetation monitoring program, it is also recommended that a wildlife monitoring program be established:

- i. In the deciduous swamp (SWD3-2). It should include breeding bird surveys and anuran call count surveys and aim to document whether the proposed adjacent extraction activities negatively impact species diversity and abundance, especially the Species at Risk known to occur in the woodland.
- ii. At each of the wetland replacement habitats along the periphery of the extraction area. The purpose of this monitoring would be to document the success of these features as breeding habitat for amphibians as well as foraging and overwintering habitat for Snapping Turtle.

Response 32.b:

- i. The monitoring program will be modified to include annual breeding bird surveys and anuran call count surveys within the deciduous swamp following the same methods used for the NEL1/2 baseline

- studies. The purpose of the wildlife monitoring is to document whether the proposed extraction activities negatively impact species diversity and abundance. Monitoring should be conducted during years when extraction activities are scheduled to occur within 30 m of the deciduous swamp.
- ii. Following rehabilitation, anuran call count surveys will be completed within the wetland habitat around the periphery of the extraction area to evaluate the success of these features as breeding habitat for amphibian. Monitoring will be conducted for a period of three years. Following rehabilitation, the wetland habitat will be evaluated for suitability as snapping turtle foraging and overwintering habitat. Because it cannot be determined how long it may take for snapping turtles to colonize the habitat, the evaluation will focus on the suitability of the habitat rather than the presence or absence of snapping turtles. However, any turtles observed will be documented.

Section 10 Site Plan Notes

Comment 33.a: Site plan notes should summarize the comprehensive set of recommendations identified in the Natural Environment Report, including but not limited to, sediment/erosion controls, nest screening of all vegetated areas if removal is undertaken April 15th-August 15th, wildlife screening where habitat removal is proposed, etc. This includes recommendations presented in Section 9.0, and other recommendation that are determined to be appropriate based on the outcome of this review and final modifications.

Response 33.a: The site plan notes will be updated with the above-mentioned recommendations including the additional monitoring described in Response 32.b.

Figures

Comment 34.a: Vegetation community FOD7-2 is missing from Figure 1. Please address.

Response 34.a: Figure 1 does not present plant community classification for any plant communities. FOD7-2 is visible in the imagery on Figure 1. Plant community classification is presented on Figure 4.

Comment 34.b: For clarity and future ease of review, please include Breeding Bird Survey (BBS) station 10 and Anuran Call Count (ACC) station 11 on Figure 3.

Response 34.b: Figure 3 has been updated to include BBS station 10 and ACC station 11 and is included with this technical memorandum.

Appendix C Wildlife List

Comment 35.a: According to the list of wildlife species, only three invertebrate species were documented. However, upon review of the field data sheets contained in Appendix E, at least three additional species were also documented. If the Natural Environment Report is revised, please include all invertebrate species on the Wildlife List.

Response 35.a: The additional invertebrate species observed include: common eastern bumble bee (*Bombus impatiens*), eastern tiger swallowtail (*Papilio glaucus*), viceroy (*Limenitis archippus*), and twelve-spotted skimmer (*Libellula pulchella*).

Wignell Drain

Comment 36.a: The Wignell Drain (east branch) runs through two different sections of the subject lands. It is the NPCA's understanding that the City of Port Colborne is undergoing the necessary *Drainage Act* process to

relocate the northern portion such that the Drain would not bisect the Phase 3 extraction area. This will be a separate process from the applications being reviewed. The NPCA will be involved in that process and has no comment at this time of the relocation of this section of the Wignell Drain.

Response 36.a: No response required.

Comment 36.b: There is a southern section of the Wignell Drain that bisects an area for extraction. The applicant has indicated that the City will be realigning that portion of the Drain. In conversations with City Staff, the City has not received any request to realign that portion of the Drain and it is not part of current updates to the Drainage Engineering Report. This proposed realignment will have to go through the *Drainage Act* process, which would be led by the City and separate from these applications. It is our understanding that there are concerns with the increase in channel length that would result from such a realignment. More detailed information would need to be reviewed during the *Drainage Act* process.

Response 36.b: The Drainage Act process has been initiated for the realignment of the southern reach of the East Wignell Drain.

Comment 36.c: Additional comments relating to the Wignell Drain include:

- i. The EIS indicates that, although drainage area to Wignell Drain will be lost, pumping from the expanded quarry will likely discharge water into the realigned drain, resulting in increased average annual flow while creating a stable flow regime with controlled peak flows. The Hydrological Assessments indicates that flow from the quarry expansion will be directed to the Wignell Drain (both the east and west branches). Please address this discrepancy and explain how dewatering from the quarry affect flows, including how it will create a stable flow regime.
- ii. Assessment of the impacts on flows in Wignell Drain (east and west branches), as they relate to fish habitat, when quarry operations cease and an assessment of the fish habitat status of the 177 hectare lake that is expected to be present when the quarry ceases operation. Will fish habitat features be incorporated into the lake?

Response 36.c:

- i. See response 21.b.
- ii. See response 21.c.

Wetland

Comment 37.a: The Wignell Drain Wetland Complex is an LSW at the northern portion of the subject lands. The applications are not proposing any extraction within the wetland. This is consistent with Section 8.2.2.1 of the NPCA's Policies. The applications propose a 10 metre buffer from the wetland to extraction areas. NPCA staff have concerns with this and note additional information is required to determine if the 10 metre buffer is sufficient and demonstrate conformity with Section 8.2.3.5 (d):

- i. The EIS indicates that there are no significant wetlands on the site; however, it does not appear that the LSW (SWD3-2) present at the north end of the subject lands was re-evaluated for significance using the field data collected from 2017 – 2020. Data collected for this study could be used to determine if the status of the wetland would remain the same or may be updated.

ii. Details regarding the hydrogeology characteristics as they relate to natural features present should be expanded. For example, specific information regarding depth to ground water (average, seasonal), flow rates, etc. would help to better understand the existing hydrogeological function of wetlands on the property. In addition, a characterization of the overall hydrologic function of the LSW should be provided.

iii. Details regarding the surface water function as it relates to the LSW at the north side of the study area should be discussed in Section 5.3 of the EIS.

Response 37.a: With regards to the appropriateness of the 10 metre setback, see response 22.b.

- i. See response 7.a.
- ii. See response 8.a.
- iii. See response 9.a.

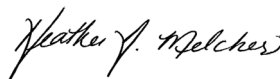
3.0 CLOSURE

We trust this technical memorandum meets your current needs. If you have any further questions regarding this report, please contact the undersigned.

Golder Associates Ltd.



Luke Owens
Terrestrial Ecologist
LO/HM/ff



Heather Melcher, MSc
Principal, Senior Ecologist

Attachments: Figure: Natural Environment Survey Station Locations and Sar Observations
Appendix A: Fehrhaven Farms Crop Rotation Schedule

[https://golderassociates.sharepoint.com/sites/32998g/deliverables/phase 3000 natural environment/jart comment response/21457143-tm-rev0- jart comment response-24nov2021.docx](https://golderassociates.sharepoint.com/sites/32998g/deliverables/phase%203000%20natural%20environment/jart%20comment%20response/21457143-tm-rev0-jart%20comment%20response-24nov2021.docx)

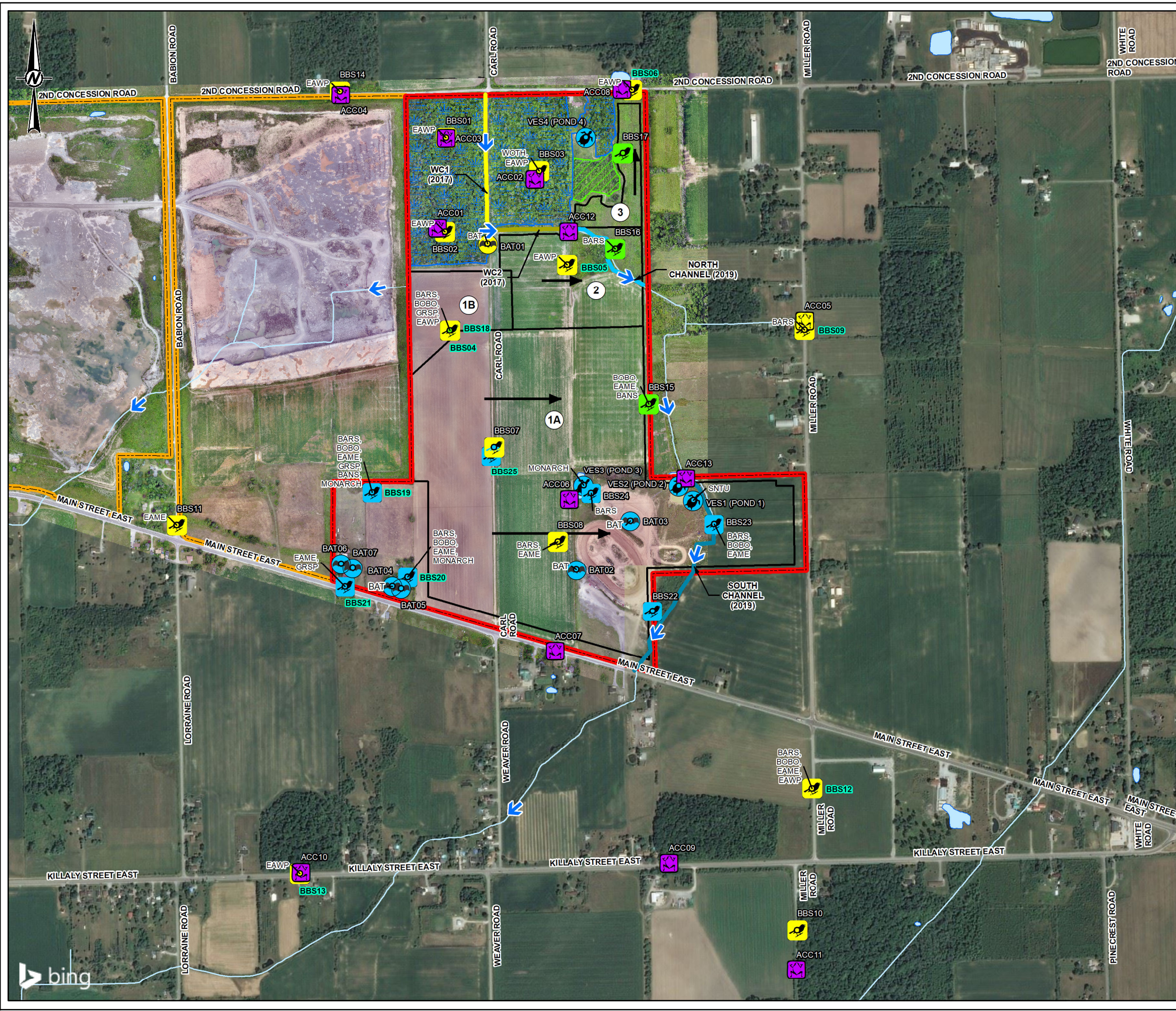
References

Golder Associates Ltd. (Golder) 2020a. Hydrogeological Assessment, Level 1 / 2 Water Resources Study.

Golder Associates Ltd. (Golder) 2020b. Hydrological Assessments in Support of Aggregate Resources Act Application for the Port Colborne Proposed Pit 3 Extension, Port Colborne, Ontario. Ontario Ministry of Natural Resources and Forestry (MNRF). 2017. Best Management Practices for the Protection, Creation and Maintenance of Bank Swallow Habitat in Ontario. Queen's Printer for Ontario, 2017. 37 pp.

FIGURE

Natural Environment Survey Station Locations and Sar Observations



LEGEND

Survey Station Type	Species at Risk (SAR) Observation
Anuran Call Count	BANS Bank Swallow
Bat	BARS Barn Swallow
Breeding Bird	BAT Bat
Turtle VES	BOBO Bobolink
	EAME Eastern meadowlark
	EAWP Eastern wood-pewee
	GRSP Grasshopper sparrow
	Monarch Monarch
	SNTU Snapping turtle
	WOTH Wood thrush

Year Surveyed

- 2017
- 2018
- 2019
- 2020

BBS06 Considered a Grassland Bird Survey

Aquatic Habitat Survey

Date Surveyed

- North Channel (2019)
- South Channel (2019)
- WC1 (2017)
- WC2 (2017)
- Watercourse
- Railway
- Waterbody
- Wetland
- Woodland
- Property Boundary
- Proposed Quarry Extension
- Approximate Excavation Phasing Boundary
- Excavation Direction Arrow
- 1 Excavation Phase
- Surface Flow Direction

0 200 400
1:10,000 Meters

REFERENCE(S)

1. BASE DATA: MNRF LIO 2016
2. IMAGERY: ORTHOIMAGE PROVIDED BY IBI GROUP, SITE FLOWN JULY 29TH, 2018
3. ADDITIONAL IMAGERY FROM ESRI, HERE, DELORME, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEBCO, IGN, KADASTER NL, ORDANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISSTOPO, MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
4. PROJECTION: UTM ZONE 17N DATUM: NAD 83

CLIENT
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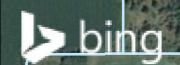
PROJECT
PROPOSED PORT COLBORNE QUARRY EXTENSION

TITLE
NATURAL ENVIRONMENT SURVEY STATION LOCATIONS AND SAR OBSERVATIONS

CONSULTANT	YYYY-MM-DD	2021-10-20
DESIGNED	PR	
PREPARED	JR	
REVIEWED	-	
APPROVED	-	

PROJECT NO. 1771656 CONTROL 0017 REV. A FIGURE 3

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APPENDIX A

Fehrhaven Farms Crop Rotation Schedule

FEHRHAVEN FARMS CROP ROTATION PLAN

November 2, 2021

		PREVIOUS YEARS CROP ROTATION									CURRENT	PROPOSED FUTURE ROTATION			
FIELD #	FIELD DESCRIPTION	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
01-1	E Carl Rd - NORTH	soybeans	soybeans	soybeans	soybeans	wheat	soybeans	soybeans	soybeans	soybeans	soybeans	soys / wheat	wheat	cover crop	soys
01-2	E Carl Rd - SOUTH	corn	soybeans	corn	soybeans	wheat	corn	soybeans	corn	corn	soybeans	soys / wheat	corn	wheat	cover crop
04-1	W Carl Rd - NORTH	wheat	soybeans	Tim/Alf	Tim/Alf corn	Tim/Alf	Tim/Alf	Tim/Alf	soybeans	soybeans	soybeans	soys / wheat	wheat	cover crop	soys
04-2	W Carl Rd - SOUTH	soybeans	soybeans	soybeans	pumpkins	soybeans	soybeans	wheat	Tim/Alf	Tim/Alf	Tim/Alf	Tim/Alf	corn	corn	soys
06-1	Knisley	soybeans	soybeans	soybeans	soybeans	wheat	soybeans	soybeans	soybeans	soybeans	soybeans	soys / wheat	wheat	cover crop	soys
07-2	Miller - WEST	wheat	soybeans	soybeans	soybeans	soybeans	soybeans	fallow	soybeans	fallow	soybeans	wheat	cover crop	soys	soys
	<p>Fehrhaven Farms, established in 1951, is a 750 acre operation multi-generational farm producing a variety of cash crops and specialty market garden crops. This includes sweet corn, pumpkins, garden vegetables, timothy alfalfa hay, soybeans and winter wheat. Emphasis is placed on crop and soil health by the use of long term no-till practises, soil amendments, crop rotation, and other Best Farming Practises as outlined by OMAFRA.</p>														