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# Proposed Reid Road Reservoir Quarry JART COMMENT SUMMARY TABLE RESPONSE #1

Please accept the following as feedback from the Reid Road Reservoir Quarry Joint Agency Review Team (JART). Fully addressing each comment below will help expedite the potential for resolutions of the consolidated JART comments and individual agency objections. **Additional comments may be provided once a response has been prepared by JDCL to the comments raised below and additional information provided.**

These tables relate to the draft Environmental and Water Management Implementation Guide report, dated February 2020, and arising out of the October/November 2019 experts meetings and the preliminary report from December 2020. Comment based on information provided following this meeting is additionally incorporated into the table.

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1. General Comment: Recommend that at the end of each section/sub-section list the associated notes proposed to go on the Site Plan, and that the Site Plan reference this document.		Appendix D includes a table that summarizes the key requirements from the Implementation Guide that will be included on the updated ARA Site Plans.  See Appendix D.		
2. Add an executive summary and a summary of keep points/ initiatives at the end of each chapter.		An Executive Summary has been added. A summary document will be created that identifies all of the notes that will be included on the Site Plan.		
3. It is understood this environmental implementation guide is focused on terrestrial and water-based environmental management. There should be a reference in the introduction of the report to state this guide is not intended to address other matters (such as environmental air quality and noise matters). Within this clarification, there should be a reference to the document or documents that do address these issues.		Agree. Additional text added to the Introduction.  See Section 1, 3 <sup>rd</sup> Paragraph.		
4. In the second paragraph of section 1.1, last line expand on statement that "...changes in water quality in downgradient private wells are not likely to occur".	1.1	The following text has been added to section 1.1:  "Changes in water quality in downgradient private wells are unlikely to occur because; <ul style="list-style-type: none"> <li>• Aggregate extractive activities and processes do not result in the contamination of water,</li> <li>• During active extraction groundwater will flow into the extraction area and</li> <li>• The unconsolidated and bedrock aquifers are already connected to the existing ponds therefore bacteriological and thermal impacts will be unchanged.</li> </ul>		

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			<p>These conditions and will be verified through on-site monitoring.”</p> <p>See Section 1.1, 2<sup>nd</sup> paragraph.</p>		
5.	Monitoring program should include all new monitors, which are to be installed prior to commencement of extraction activities. A minimum of one year of monitoring data should be obtained in new monitors prior to extraction.	1.2.1	<p>Agree. See Section 1.2.1 #5 which indicates that all new water monitors will be installed.</p> <p>In addition, the following text has been added to Section 4.2.1.1 “A minimum of one year of data will be obtained prior to below-water-table extraction”.</p>		
6.	In Section 1.2.1 item #7, a CH permit will be required for these works. We assume the rail crossing signage is at the internal crossing not on Twiss Road correct? Please just clarify in the text.	1.2.1	Minor text revisions have been made in Section 1.2.1 as suggested.		
7.	The text of Section 1.2.1 needs to be consistent with page 3 of the Site Plans and Section 4.3 of this document.	1.2.1	The Site Plans will be updated once the Implementation Guide has been finalized. Per MNRFs request, a footnote has been added that states that “in the event that there is a discrepancy between the phasing summarized in this document and the Site Plan, the Site Plan notes shall prevail.” See footnote 1 in section 1.2.2.		
8.	Some of the rehabilitation of each phase does not appear to be clearly or accurately identified as discussed in the meeting. Please ensure that each Phase it clearly states how each previous Phase is being rehabilitated.	1.2.2	<p>The description of the Phases has been updated in the Implementation Guide – See section 1.2.2.</p> <p>The Site Plans will be updated once the Implementation Guide has been finalized.</p>		
9.	Recommend outlining a strategy for relocating sensitive species such as snapping turtles from Central Pond prior to filling for production plant area in the Implementation Guide.	1.2.2	<p>Agree. The following text has been added as a footnote to Section 1.2.1 and is also included in Section 14 of the NETR Addendum.</p> <p>“Prior to adding any fill to the Western, Eastern or Central Pond, a visual inspection will be undertaken to determine if any snapping turtles are present. This species is highly aquatic and can remain under water for extended periods, so it may be difficult to detect. Nonetheless, it must come to the surface to breathe approximately every 20 minutes. The area to be filled should be</p>		

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			<p>examined for 30 minutes to confirm its absence prior to any fill being added to the pond. In the event that a snapping turtle is present, filling should either be delayed until the turtle moves out of harm's way or it should be captured and moved to a safe location."</p> <p>This would apply to Pre-Production Activity #'s 15, 17, and 20.</p> <p>See updated section 1.2.1.</p>		
10.	<p>In deeper ponds, such as P5, please confirm how the shot rock will stay stable to allow the drilling platform to get close enough to the edge of the extraction face.</p>	1.2.3	<p>The following text has been added to section 1.2.3:</p> <p>"The shot rock pad will be comprised of large angular rock that has a stable angle of repose. The stability of the pad will comply with all applicable Ministry of Labour requirements"</p> <p>See paragraph 2, Section 1.2.3.</p>		
11.	<p>Explain why ponds are tolerant to water level changes.</p>	1.3.1	<p>The following wording has been added/revised in section 1.3.1:</p> <p>"Temporarily lowering the water level in the main ponds during active extraction periods does not present an environmental challenge within the ponds because the limited ecological functions of these ponds are tolerant to changes in the water levels. The main ponds are essentially devoid of aquatic vegetation except for scattered patches of plants around their margins. These will not be affected by drawdowns within the ponds. The ponds support almost no breeding amphibians or turtles so the ecological functions of these ponds are very limited and not sensitive to water-level fluctuations."</p> <p>See section 1.3.1 paragraph 2.</p>		
12.	<p>Recommend adding "and incorporation of mitigation measures (active pumping into Buffer Pond 1)" after "through the implementation of a physical barrier".</p>	1.3.2	<p>Agree. The suggested wording has been added.</p> <p>See Section 1.3.2.</p>		

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13.	Under Chemical: Ammonia and nitrate water quality within the extraction ponds should be tested to confirm no water quality impacts.	1.3.3	<p>Agree. These compounds are included in the surface water quality sampling in Section 4.2.1.7 as follows;</p> <p>“The water quality parameters will include; pH, EC, Saturation pH, Langlier Index, Alkalinity, Bicarbonate, Carbonate, Total Phosphorus, Hydroxide, Ammonia as N, Ion Balance, Total Hardness, Total Dissolved Solids, Reactive Silica, Total Organic Carbon, Colour, Turbidity, Fluoride, Chloride, Nitrate as N, Nitrite as N, Bromide, Sulphate, Ortho-phosphate, Calcium, Magnesium, Sodium, Potassium, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Selenium, Silver, Strontium, Thallium, Tin, Titanium, Tungsten, Uranium, Vanadium, Zinc, Zirconium, Cation Sum and Anion Sum”</p> <p>See Section 4.2.1.7 below Table 11.</p>		
14.	Under Physical: Turbidity testing should be proposed to ensure that clean water is used in the mitigation system.	1.3.3	<p>Agree. The following has been added to Section 4.2.1.8: “Turbidity testing will be conducted from active pumping stations on a weekly basis until it is confirmed that filtration measures are effective under operating conditions.”</p> <p>See Section 4.2.1.8 “Transfer Pumping Stations”.</p>		
15.	Elsewhere, environmental objective 2 is described in more detail as 10% wetted area to a depth of 10 cm. This additional information should be included here so that there is no confusion. To ensure clarity, it should be stated to which ponds this objective applies to. Based on Figure 13, our interpretation is that this would apply to ponds 5, 7A, 7B, 9 & 10.	1.4.1	<p>The wording of Environmental Objective #2 has been updated.</p> <p>See updated Environmental Objective #2 and corresponding rationale in Section 1.4.1.</p>		
16.	Text under Environmental Objective 2, “...generally require ponds to be full of water in early spring during snowmelt conditions and to maintain some water until about the end of July.” Should be revised to indicate that water should be maintained later into summer/early fall. Elsewhere in the text it can be recognized that maintaining the target minimum water levels into July or August will maintain the ecologically important hydroperiod later into the season.	1.4.1	<p>Agreed that Minimum Water Level Targets will be required for August In Pond 5 and Pond 10. At our meeting on March 5, 2020, it was agreed that a commitment to a longer hydroperiod in these two ponds was required because they are the ponds that typically support salamander breeding and that support gray treefrogs, which may take longer</p>		

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		<p>than the end of July to transform into juveniles.</p> <p>Environmental Objective 2 has been revised to read “Maintain 10% wetted area to a depth of 10 cm in identified amphibian ponds until July 31<sup>st</sup> for all ponds except P5 and P10; for P5, 5-10% of the pond will be wetted to a depth of 10 cm until July 31<sup>st</sup> and some water will be maintained until at least August 15<sup>th</sup>; for P10, 10 cm of water will be maintained over 10% of the pond until the end of July and 5% of the pond will be wetted to a depth of 10 cm until the end of August”. The rationale for this is provided in Section 1.4.1 of the Implementation Guide and is repeated in Section 14.0 of the NETR Addendum.</p> <p>Please note that a third Environmental Objective has been added at the request of MNRF. They considered it important to allow some ponds to dry out in some years to maintain their current conditions as we previously suggested in the Implementation Guide. MNRF’s specific comment was: “It is recommended that a third environmental objective be added under Amphibian Ponds (Section 1.4.1) that recognizes that because some ponds need to dry out for a period of the year, that no overcompensation occurs.”</p> <p>See updated Section 1.4.</p>		
<p>17. Under Environmental Objective 1 and 2, italicized text that states: “Output from the model over a 25-year historical period shows how frequently the amphibian ponds held surface water in at least 10% of their wetted area until July 31<sup>st</sup> under existing and proposed conditions.” Should be revised to reflect that this interpretation is from a simulation and not from actual observations carried out over the 25 year period.</p>	<p>1.4.1</p>	<p>Agree. The text has been revised to state:</p> <p>“Groundwater model simulations performed over a 25-year historical period shows how frequently the amphibian ponds held surface water in at least 10% of their wetted area, to a depth of 10cm, until July 31<sup>st</sup> under existing and proposed conditions.”</p> <p>Section 6.1.1 discusses Minimum Water Level Thresholds for each pond and Table 14 provides information on how frequently each pond achieved Environmental Objective 2 in the past 5</p>		

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			<p>years as determined by the monitoring program.</p> <p>See Section 1.4.1 2<sup>nd</sup> paragraph, under “Amphibian Ponds” and Section 6.1.1, Table 14.</p>		
18.	Under Environmental Objective 1 and 2, it would be appropriate to have references that support the species-specific target dates related to amphibian development into juveniles. Our position is that this may extend later in to the season, albeit, we understand that ensuring a minimum water level by late July to late August will provide a hydroperiod that extend later into the season.	1.4.1	Information on target dates for hydroperiods as they relate to amphibian production is provided in Section 1.4.1 of the Implementation Guide and is repeated in Section 14.0 of the NETR.		
19.	Should water levels drop in the West Pond or the P3/Phase 1 excavation pond after closure due to increased seepage, measures should be implemented to maintain water levels in P3/Phase 1 Pond and West Pond within historical levels. Groundwater and surface water monitoring should continue after termination of extraction until stable water levels have been established within historical levels to maintain springs and seepages west of the west pond. See Section 1.4.4 for commitment.	1.4.1	<p>It is more likely that groundwater levels will increase on the downgradient edges of the ponds after mining is complete. However, post mining monitoring has been included in Section 9.2.</p> <p>See Section 1.4.4 and Section 9.2</p>		
20.	Should seepages within the Tributary to Kilbride Creek drop after the end of extraction operations, the applicant should be prepared to implement measures to maintain seepages (i.e. flow, water quality, and temperature) to the Tributary to Kilbride Creek within historical levels. Ground water and surface water monitoring should continue after termination of extraction until stable water levels have been established within historical levels and water quality restored to within historical levels. Addressed in Section 1.4.4.	1.4.1	<p>It is more likely that groundwater levels will increase on the downgradient edges of the ponds after mining is complete. However, post mining monitoring is included in Section 9.2. There will be a long period of monitoring record prior to the closure of the site including seasonal recovery of water levels and recovery of water levels following Phases 1 and 2 which are nearest to the Tributary. This will provide ample opportunity to recognize and address changes in groundwater flow to Kilbride Creek and its tributary.</p> <p>See Section 1.4.4 as well as Section 9.2.</p>		
21.	As discussed at the meeting on March 5, 2020, Environmental Objective 2 should be revised to maintain the hydroperiod into August for the ponds that support salamanders, for those that are wet into August, and where the modelling demonstrates that pumping in August is required.	1.4.1	<p>Agree. The target water level for ponds that support amphibians has been increased to reflect historical values as recommended.</p> <p>See update Section 6.1.1, Section 6.1.4 and Hydrographs in Appendix B.</p>		
22.	Text addition recommended in italics: Groundwater seepage occurs west of the West Pond in the riparian wetland of Kilbride Creek and into Kilbride Creek.	1.4.1	<p>Agree and corrected as suggested.</p> <p>See Section 1.4.1.</p>		

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23. Text revision recommended in italics: The high-level environmental objective is to maintain flow and temperature <del>range</del> regime in the tributary.	1.4.1	Agree and corrected as suggested.		
24. Environmental Objective 5. It should be clarified/recognized in the second paragraph under this objective that the interpretation of the history of the east wetland is anecdotal. To better support this interpretation, the consulting team could review historical imagery.	1.4.1	<p>We have amended the text as follows:</p> <p>“Given the present-day northerly direction of surface water flow, it is construed that the construction of the access road across this drainage pathway resulted in increased water levels in the wetland north and east of the access road.”</p> <p>See Section 1.4.1, “Eastern Wetland Complex”.</p>		
25. This does not recognize the potential for turbid groundwater to be transmitted through potential fracture pathways in bedrock between Phase 1, 2, and 4 and Kilbride Creek.	1.4.2	<p>1) There is no evidence that any portion of Kilbride Creek located west of the proposed quarry is in direct contact with the bedrock. This section of the creek has been walked by Harden Environmental and the natural heritage specialists and no bedrock outcropping has been observed.</p> <p>2) During active extraction, groundwater will flow into the extraction area to replace removed rock, thereby preventing turbid water from migrating out of the active pond.</p> <p>3) Blasting does not create fine grained particles.</p> <p>4) The ponds are inactive in the evenings, weekends and during the winter, allowing for the settlement of any fine grained material in the pond water.</p> <p>Despite these conditions, JDCL has agreed to monthly turbidity monitoring in groundwater stations between the active ponds and Kilbride Creek as detailed in Section 4.2.1.8.</p> <p>See Section 4.2.1.8. “Groundwater Flow Between Extraction Area and Kilbride Creek”.</p>		

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<p>26. Eastern Wetland Complex: Recommend removing the final sentence under description where it is noted “that the wetland south of the road is of high quality”, as all wetlands on the site are PSWs and of high quality.</p>			<p>2.1 Table 1</p>	<p>Agree. Requested change has been made.  See Table 3.</p>	
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<p>27. Tributary Arising in the Eastern Wetland Complex south of the road: Since this tributary has not been studied, and groundwater inputs are unknown, recommend removing the key features/functions description as it is theoretical and does not assist in characterizing the feature. Should works be required for this feature, then detailed information will be required at that time.</p>					
<p>28. As discussed at the meeting of March 5, 2020, it is unclear what this section is providing. Recommend removing it, if it is not needed, or revising to provide direction.</p>					
<p>29. Recommend this subsection be renamed to “Flooding &amp; Erosion Hazards”. In addition, as discussed at the January 16, 2020, and March 5, 2020, meetings, JDCL will need to demonstrate that there will be no impacts to the flood storage associated with Kilbride Creek as a result of the proposed noise berms. Please ensure that the May 4, 2020 report is referenced/summarized in this Plan. Confirmation that there are no anticipated erosion issues should also be provided.</p>					
<p>2.5</p>					
<p>Agree. This section has been amended as follows:  Section 2.4 Flood and Erosion Hazards  This quarry will be operated without dewatering. The only pumping that will be conducted will occur under controlled conditions between existing ponds and on-site mitigation features. A minimum amount of water transfer to maintain the ecological integrity of on-site natural features will occur.  There will be no direct offsite discharge of water therefore, there is no potential for off-site erosion caused by on-site activities.  Erosion control measures will be used at each on-site discharge location associated with mitigation features.  Phase 1 of the site is found within the flood line of Kilbride Creek. C.C. Tatham and Associates Ltd. (March 31, 2020) conducted a flood line mapping exercise and concluded that the configuration of the noise berms does not reduce the size of the flood plain.  See updated section 2.4.</p>					



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30.	Recommend that this section be updated to include details on contingencies in case the proposed mitigation measures are insufficient.	3	<p>This is included in detail in Section 6.3. A clearer reference to Section 6.3 has been added to Section 3.</p> <p>See Section 3.0, paragraph 1.</p>		
31.	The buffer ponds are noted as only being needed during active extraction. This is premature to state as until it is known how effective the buffer ponds are and they may be needed as contingency post-extraction.	3	<p>We have added closure monitoring period to extend for a period of 2 years to allow water levels to stabilize.</p> <p>See Section 9.2</p>		
32.	Recommend that post extraction contingency measures be proposed in case monitoring data suggests impacts.	3	<p>We have addressed this comment in Section 9.2 with the addition of the following text:</p> <p>In the event that water levels in the ponds do not recover as predicted or rehabilitation has not taken as anticipated, an evaluation of the site and surrounding area conditions will be undertaken by qualified persons including a hydrogeologist and natural heritage professional. Should the water levels in the main ponds or wetlands not recover to pre-extraction conditions it may be necessary to reduce the permeability of the downgradient edge of the ponds with fine-grained material (silt or clay).</p> <p>A report will be prepared for review by the MNRF and Conservation Halton along with recommendations for mitigation (if necessary).</p> <p>See Section 9.2 below Table 17.</p>		
33.	Should describe difference between dispersion trench and infiltration trench if any difference. Dispersion trenches are described in Section 3.1.3 but no reference to infiltration trenches. Is Dispersion Trench 2 and Infiltration Trench? Clarification is required.	3	<p>Agree. Throughout the Implementation Guide we have revised the text to recognize these as “Dispersion Systems” 1 through 3 as only one is a trench. The Site Plan will also be updated accordingly.</p>		
34.	Recommend adding the associated PSW to the list of features that BP2 will maintain.	3.1 Table 5 (currently Table 6)	<p>The following text has been added to function column for Buffer Pond 2 in Table 5: “Maintains hydraulic gradient between West Pond and Kilbride Creek and Kilbride Tributary. This also supports the PSW identified as SWD7-1”</p>		

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			See Section 3.1, Table 6 (previously table 5).		
35.	Confirm what the contingency will be if the buffer ponds do not function as designed.	3.1.2	<p>The contingencies are described in detail in Section 6.3 “Response Action Framework”. The following text has been added to Section 3.1:</p> <p>“A Response Action Framework is detailed in Section 6.3 of this Guide, should the Water Management System components fail to maintain the required water levels (See Section 6.1)”.</p> <p>See Section 3.1, 1<sup>st</sup> paragraph.</p>		
36.	Confirm what the contingency will be if flow under the wetland back into the central and P5 ponds occurs.	3.1.3	Return groundwater flow between P5 and the Central Pond is expected to occur at a rate that allows water to mound within the wetland, thereby maintaining the wetted perimeter and extending the hydroperiod. A short-term test confirmed that these conditions exist. If the hydraulic conductivity is greater than expected then more water than anticipated will be required thereby potentially requiring a change in extraction rate or other contingencies as outlined in Section 3.4 and Section 6.5.		
37.	Under “Source of Water”, to reduce the potential for turbid water to be used for mitigation, the source of water for mitigation should be from ponds not under active extraction	3.2 Table 6	The source of water will have low turbidity values as water will not be directly taken from the ponds but rather via a filtration system. See Appendix C for a conceptual drawing of the proposed pump intake. Turbidity monitoring is outlined in Section 4.2.1.8.		
38.	Under column when required in row “Dispersion Trench 1, what is meant by the term “and there are signs of ecological impairment” please clarify and correct spelling error. Identify what the signs of impairment area.	3.2 Table 6	<p>This wording has been removed from Table 6 (now Table 7) and replaced with “and the ground flora consists of 40% upland plants”.</p> <p>See Table 7 (previously table 6).</p>		
39.	Storing and the use of the site for asphalt recycling is a very contentious use in this area. In section 3.3, 2) is the 1 meter threshold for the storage of asphalt appropriate or does it need to be higher to reduce the change of contamination.	3.3	To align with MNRF policy for aggregate recycling, the text has been updated to state that asphalt and concrete recycling will occur a minimum of 2m above the high water table.		

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		See Section 3.3, #2.		
40. Strategies to enhance turtle nesting habitat by deterring predators should be confirmed with others who have tried these approaches. The vegetation approach is a reasonable idea, but may not be sufficient to deter predators.	3.4.1	<p>To our knowledge, no-one else has tried using vegetation to deter turtle nest predators. We agree that it may not be totally effective in preventing the continued depredation of turtle nests in these areas. To the end of the paragraph that deals with this in the Implementation Guide, the following sentence has been added:</p> <p>“In the event that the planting of Allegheny blackberry is not effective in deterring turtle nest depredation, alternative methods for protecting the nests will be researched and a preferred method will be identified in the annual monitoring report. The monitoring report will be circulated to the Region, Town, and Conservation Halton for their input on turtle nest protection.”</p> <p>See Section 3.4.1, Paragraph 5.</p>		
41. Recommend that the berm associated with BP2 be maintained so that vegetation does not take over and make the site unsuitable for turtle nesting.	3.4.1	<p>The following text has been added to the 4<sup>th</sup> paragraph of section 3.6.1:</p> <p>“The balance of the berm will be kept free of invading vegetation during the life of the quarry. Hand pulling/digging and/or herbicides will be used to remove undesirable vegetation from the berm during late summer after turtle eggs have hatched.”</p> <p>See Section 3.6.1, Paragraph #4.</p>		
42. As discussed on March 5, 2020, the figures should be updated to clearly show the buffers to natural features and limits of extraction.	3.4.2	We are in the process of updating the Site Plan which show the revised limit of extraction and incorporates all of the setbacks from natural features.		
43. Please consider an overall invasive species management plan, including monitoring for the presence of new invasive species establishment, as opposed to individual measures.	3.4.3	We think that it is better to have all the information on invasive species management within the Implementation Guide and on the Site Plan rather than in a separate management plan. At the end of this section in the Implementation Guide, we have added the following sentence: “In the event that new invasive		

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			<p>species become established, a protocol for their control will be prepared and circulated to the Region/Agencies for their comments”.</p> <p>See Section 3.6.3, Paragraph 2.</p>		
44.	<p>Recommend that cutting not be carried during the bird nesting window, so as to not contravene the federal MBCA. While most bird nesting activity is over by the beginning of August, it is certainly possible that late nesting species may be active. Therefore, if cutting has to occur during this time, a qualified birder will need to assess the areas to be cleared before work can be done.</p>	3.4.3	<p>Agreed. A commitment has already been made on the Site Plan that any tree removal will be undertaken during the period November 1 to April 15 to protect breeding birds and roosting bats. This note appears on Page 3 of the Site Plan under Environmental Protection Measures.</p> <p>The following text has been added to the “Treatment of Buckhorn in Conifer Plantations” section of 3.4.3:</p> <p>“For buckthorn cutting to proceed during the breeding bird season a qualified ecologist must confirm there are no nesting birds in the area proposed for treatment.”</p> <p>See Section 3.6.3, “Treatment of Buckthorn in Conifer Plantations”, 1<sup>st</sup> paragraph, Pg.29.</p>		
45.	<p>On-site monitoring of temperature and precipitation should be ongoing throughout the life of the quarry operations. This is critical in assessing impact of operations on surface and groundwater levels. Off-site climate data could be used to supplement on-site data. Climate monitoring included in Table 11 should include precipitation.</p>	4.1.1	<p>Agree and added in Section 4.4 and Table 12.</p> <p>See section 4.4 and Table 12.</p>		
46.	<p>For the climate stations, streamflow and groundwater levels, as well as temperature monitoring data, confirm how the results of this monitoring would be used and what the mechanism and/or protocols would be to make any changes to the site plan.</p>	4.1.1 4.1.2 4.1.3	<p>Agree.</p> <p>See Sections 6.3 (Response Action Framework), Section 7 (Water Budget Reviews) and Section 8, specifically last paragraph.</p>		
47.	<p>Can the intents for each monitoring station be added to the plan? As examples, CB17 and CB12s/d show those. CB16s/16d do not.</p>	4.2.1.1	<p>Agree. Section 4.2.1.1 has been revised accordingly.</p> <p>See Section 4.2.1.1.</p>		
48.	<p>How often will water levels be monitored/recorded in the KC1 monitor? Not included in Tables 8 to 11 below. Section 4.2.1.3 indicates monthly water level readings at all ground monitoring stations.</p>	4.2.1.1	<p>A data logger recording every 30 minutes has been installed for both KC1<sub>i</sub> and</p>		

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			<p>KC1<sub>out</sub>. Table and text updated a necessary.</p> <p>See Section 4.2.1.2 and also Section 4.2.2, Table 12.</p>		
49.	A new groundwater monitor should be installed near the northwest corner of Phase 1 extraction area nearest to Kilbride Creek.	4.2.1.1	<p>Agree a groundwater monitor (CB18) has been installed north west of Phase 1 between the extraction area and Kilbride Creek Station KC2.</p> <p>See Section 4.2.1 “CB18”.</p>		
50.	Recommend adding KC1 to the monitoring stations associated with BP2.	4.2.1.2	<p>Rather than KC which will be greatly influenced by streamflow, we have added CB16S to the list for BP2.</p> <p>See Section 4.2.1.2, Table 8, Row 2.</p>		
51.	In Table 8, the reference to P13 should be P5.	4.2.1.4 Table 8	<p>This has been corrected.</p> <p>See Section 4.2.1.4, Table 9 (previously Table 8).</p>		
52.	Is annual reviews sufficient or should they be done more frequently?	4.2.1.7 Table 10	<p>Groundwater movement is slow and during active extraction will be toward the extraction area. Annual surface quality confirms no significant changes occurring. Annual reviews as indicated in Table 11 are sufficient.</p>		
53.	To ensure no blasting water quality impacts occur, ammonia and nitrate should be added to the monitoring parameters. JART recommends sampling after each blast. If the results show consistently no negative impact, then sampling could be scaled back to annual.	4.2.1.7 Table 10	<p>Agreed, ammonia and nitrate have been added to the water quality parameters. In the first year of operation of below water table extraction and blasting in Phase 1 and Phase 2, ammonia and nitrate will be obtained following the blast.</p> <p>See Section 4.2.1.7 second paragraph below Table 11.</p>		
54.	Turbidity monitoring should be included for existing ponds (West, Central, and East) as well as P3/Phase 1 pond prior to and during operations. Turbidity monitoring should also be included for mitigation features BP1, BP2, DT1, and DT2 during operations. Warning and trigger levels and mitigation plan are required in the event of elevated turbidity or other critical parameters.	4.2.1.8	<p>It is expected that turbid water will occur within the extraction areas following a blast and during the process of rock removal. The turbidity is caused by the suspension of fine-grained materials within moving water both around and active drag line and immediately following a blast event. Still water outside of the reach of the dragline and occurring shortly after a blast will allow particles to</p>		

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			<p>settle within the pond. There are no direct surface water connections between the extraction areas and the natural environment. Only filtered water will be used in the mitigation systems and testing will be conducted weekly until confirmed that filtration measures are adequately removing turbidity. Monthly turbidity testing will be conducted in CB15 and CB16 to confirm that turbidity is not being transported via groundwater flow within fractures.</p> <p>See section 4.2.18.</p>		
55.	Ambient Site Monitoring, Monitoring Station: Recommend adding and instrumenting CB13, CB14 and CB17 with dataloggers. The results would benefit water quality results interpretation and deal with potential water quality/ quantity complaints.	4.2.2 Table 11 (now Table 12)	<p>Agreed. CB13, CB14 and CB17 will be instrumented with data loggers.</p> <p>See Table 12 in Section 4.2.2.</p>		
56.	CB6, CB16, CB5and KC1 are missing. CB 12 appears to be the most critical station for the potential identification of impacts to adjacent private wells. A data logger is required here doe the high potential for impacts.	4.2.2 Table 11 (now Table 12)	<p>Agree. In Table 12 CB6 and CB5 are listed for monthly monitoring. CB12 and KC1 will have data loggers and CB16 will have cellular system tied data logger.</p> <p>See Table 12 in Section 4.2.2.</p>		
57.	Water Level Monitoring, Monitoring Station: Recommend instrumenting CB12/S/D with a datalogger.	4.2.2 Table 11 (now Table 12)	<p>Agreed.</p> <p>See Table 12 in Section 4.2.2.</p>		
58.	Groundwater Quality, Monitoring Station: ensure that CB13 and CB 17 are tested for Cr(VI), Cu and As.	4.2.2 Table 11 (now Table 12)	<p>Agreed.</p> <p>See section 4.2.2, Table 12.</p>		
59.	Should include CB16S/D in annual groundwater quality monitoring.	Table 11 (now Table 12)	<p>Agreed.</p> <p>See section 4.2.2, Table 12.</p>		
60.	Add P3/Phase1 Pond to annual water quality monitoring.	Table 11 (now Table 12)	<p>The limit of extraction has been revised to exclude P3 – this will be reflected on the revised Site Plan. The Phase 1 Pond has been added to the annual water quality monitoring program.</p> <p>See section 4.2.2, Table 12.</p>		
61.	Should include a new groundwater monitor located at the northwest corner of Phase 1 extraction area closest to Kilbride Creek. Should include turbidity monitoring for existing ponds (West, Central, and East)	4.2.2 Table 11 (now Table 12)	<p>Groundwater monitor CB18 has been installed northwest of Phase 1. See response to Comment 54 regarding Turbidity.</p>		

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and P3/Phase 1 excavated Pond as well as mitigation features BP1, BP2, DT1, and DT2.		See Section 4.2.1 “CB18”.		
62. In first paragraph of 4.3 Ecological Monitoring, identify how data sharing of the monitoring results will take place with Region/Agencies.	4.3	Ecological monitoring results will be presented in the annual monitoring report along with the hydrogeological monitoring results. The monitoring reports will be circulated each year to the Region/Agencies. In the event that monitoring triggers a mitigation response, this information will be provided by email to the Region/Agencies within 1 week. This wording has been added to the end of Section 4.3 of the Implementation Guide.  See section 4.3, Paragraph 2.		
63. It is recommended that a more comprehensive monitoring approach be prepared for salamanders. We recommend that monitoring take place in pond 5, as well as other ponds where salamanders occur. Additionally, given the length of time during which extraction is permitted, we recommended the use of environmental DNA to monitor late season occurrence of salamanders, which will establish that juveniles are present.	4.3.2	In Pond 5, we are recommending minnow trapping to ensure that salamanders are entering the pond to breed. The only other pond that salamanders breed in on a regular basis is Pond 10. Usage of this pond by salamanders is very low, probably because the surrounding upland terrestrial habitat is marginal for the blue-spotted salamander and its unisexual population. We opted to not sample in this wetland because of the very low numbers of salamanders present (only two were captured during the minnow trapping). An egg-mass survey was conducted in this pond in 2017 and 0 were found and a more detailed thorough search for egg masses in 2019 revealed the presence of only 5 egg masses. Because of the low populations and the possible sporadic breeding of salamanders, it will be difficult to correlate numbers of breeding salamanders with aggregate operation activities. Another factor that led us to not propose sampling in this pond is that it will be regulated as Jefferson salamander habitat. This means that no activities should take place that might disturb the habitat such as looking for egg masses or doing any other sampling.  We chose to sample for salamanders in Pond 5 using minnow traps because this is the most productive salamander pond within the study area and the pond will not		

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		<p>be regulated as Jefferson salamander habitat. We opted to not do any more egg-mass surveys within the pond because if salamanders are detected within the pond it is a safe assumption that they will breed.</p> <p>Although eDNA sampling for evidence of salamanders later in the season would be interesting, it may not be possible to relate the results to aggregate extraction activities. There are a number of reasons why reproduction may not be successful in this pond. Indeed, the very small population suggests that recruitment into the adult population is currently very low. A detailed egg-mass survey was conducted in this pond in 2019 that took 5 hours and 58 minutes to complete. Only 25 egg masses were found and these contained a total of 87 eggs. Of these only 20 were viable at the time of the survey and more of these likely died prior to hatching. In addition to the low inherent survival rates of eggs, there are other natural factors that may affect whether there are larvae present in the pond later in the season. These may include predation, cannibalism, and algae that may kill eggs or cause oxygen deficits in the pond.</p> <p>Our position is that, if the hydroperiod of the ponds is maintained to mimic existing conditions, salamanders will continue to use them to breed and there should be no difference in their recruitment success. At both the Acton and Milton Quarry Extensions where extensive dewatering takes place and Jefferson salamander breeding ponds are maintained by artificial pumping in perpetuity, MNRF and MECP have not required any monitoring of salamander populations. They have accepted the premise that populations will be maintained if pond hydroperiods are maintained. We are actually proposing more monitoring than is being done at these two quarries by agreeing to undertake minnow trapping in Pond 5.</p>		



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			<p>MNRF has reviewed the Implementation Guide and did not suggest any revisions to our proposed monitoring program.</p>		
<p>64.</p>	<p>Amphibian Monitoring: It is recommended that pond P7B also be included. The proposed frequency of monitoring should also be justified. Additionally, it should be clarified that the proposed monitoring is to be continued throughout the life of the extraction license.</p>	<p>4.3.3</p>	<p>Agree to include Pond P7B in the monitoring and to identify that the monitoring will continue through until closure. We selected every three years for monitoring because it is highly unlikely that there will be any changes in amphibian breeding populations if the MWLTs are achieved. Again, if the hydroperiods of the ponds are maintained similar to existing conditions, there should be no significant changes in amphibian breeding populations. Surveying at 3-year intervals will be adequate to confirm this. Amphibian Monitoring in P7B has been added to the Implementation Guide as has the requirement to monitoring until quarry closure.</p> <p>MNRF has reviewed the Implementation Guide and did not suggest any revisions to our proposed monitoring program.</p> <p>See section 4.3.3, Paragraph 1.</p>		
<p>65.</p>	<p>Recommend having a contingency plan if significant changes are observed, in addition to collecting and quantifying the changes.</p>	<p>4.3.4</p>	<p>Agreed. All of the permanent vegetation plots are associated with the Eastern Wetland Complex. If significant changes in vegetation within these plots are observed, this may trigger the usage of Dispersion System 3 or any of the other contingencies that have been identified if undesirable changes appear to be occurring in the Eastern Wetland Complex. Similarly, the changes in vegetation in the photo plots may trigger usage of Dispersion Systems 1 or 2 or the same contingencies identified for the Eastern Wetland Complex. Monitoring the margins of ponds will trigger eradication of any new populations of invasive species such as common reed. The text of the Implementation Guide has been updated to reflect these comments. A paragraph has been added to the end of this section to discuss contingency measures.</p> <p>See section 4.3.4, Last paragraph.</p>		

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66. Turtle Nesting, Artificial Nesting sites: It would be helpful to indicate where these are located in this document. Are areas along the edges of other ponds being checked and if not why? In addition, turtle nesting in Ontario can occur throughout June into early July. Proposed search methods should be updated to reflect this.	4.3.6	<p>Agreed, the text of the Implementation Guide has been modified to indicate where the artificial turtle nesting sites are located and to cross-reference this to the Site Plan.</p> <p>We do not plan to monitor areas along the edges of other ponds for turtle nesting activity. The reasons for this are that turtles do not occur regularly in any of the ponds except P12 and P13 and the only location other than the berm between P1 and P2 where turtle nesting concentrations were observed was along the railway tracks. Turtles are rare in the West, Central and East ponds as well as P3. They are more common in P2, and the nesting population will be monitored along the berm of this pond. MNRF has reviewed the Implementation Guide and did not suggest any revisions to our proposed monitoring program.</p> <p>Agreed that turtle nesting can occur later than we originally identified and the Implementation Guide has been revised to reflect this.</p> <p>See section 4.3.6, Paragraph 1 and 2.</p>		
67. Who does the collection of the door-to-door collections and the analysis? It should be an independent third party.	5.1	<p>Any private information gathering will be conducted under the license of a professional engineer or geoscientist. Any water quality testing will be conducted by a licensed laboratory by the MECP. Any privately gathered information will be shared with the homeowner/business operator directly and any information shared with government agencies will be coded to protect the privacy of the homeowner/business operator. This provides a transparent process that can be reviewed by the agencies as necessary.</p>		
68. The area down-gradient of the subject property on the west side of 1st Line Nassagaweya should also be included in the well survey as this area is directly down-gradient of the site. This should be shown on Figure 5.	5.1	<p>Any locations west of 1<sup>st</sup> Line are not downgradient of the site. The creek systems flow northwest to southeast and the regional groundwater flow system is</p>		

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			also northwest to southeast. This puts any residential well along 1 <sup>st</sup> Line cross gradient to the flow system downgradient of the site.		
69.	Should include turbidity in water quality characterization.	5.1	Agreed.  See Section 5.1.		
70.	Suggest that only wells not readily accessible not have water levels measured as criteria for measuring water levels.	5.1	Agree. The text has been amended to read:  “The well survey and water quality sampling is access dependent, i.e. static water levels measurements will not be obtained from any well not accessible through the simple removal of well cap.”  See Section 5.1.		
71.	Should show private wells to be monitored for water levels and frequency summarized in a Table.	5.2.1	Agree. Table 13 has been added to Section 5.1.  See Section 5.1, Table 13.		
72.	How often will the water quality samples be taken? Please clarify.	5.2.2	Water samples will be obtained once prior to below-water-table extraction. Annual water sampling will occur between downgradient locations and active extraction areas.  See Section 5.1 and 5.2.2.		
73.	Should also include water quality samples from CB16S/D located between the western edge of the site and wells along 1st Line Nassagaweya. CB16S/D should be sampled for general water quality in addition to turbidity as part of the monitoring program. Include in Table 11.	5.2.2.	Agreed. Added to Table 12.  See Section 4.2.2, Table 12.		
74.	Should use a statistical trend analysis for determination of increasing trend.	5.2.2	The following wording has been added to Section 5.2.2:  a) there is an statistically significant increasing trend, occurring over three sampling events, in the concentration of a chemical parameter measured in CB13 or CB17 and  See Section 5.2.2 a).		

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75.	Why is well CB1 not included in 5.2.2.a)?	5.2.2 a	CB1 is included in the annual sampling and all results will be reviewed and any anomalous data flagged. However, CB1 is located more than 500 metres from any private well and should not be used to trigger a response to test private wells.		
76.	Precipitation rates to include daily on-site precipitation monitoring.	5.3	Agreed.  See Section 4.4, and also Table 12.		
77.	As discussed on March 5, 2020, where the ponds support salamanders, and where the pond is wet beyond July and pumping is required, the minimum water level thresholds needs to be extended to August. For example, MWLT's for P5 and P10 should be established for the end of August.	6.1.1.1	Agreed.  See Table 16, pg. 48 and updated hydrographs in Appendix B.		
78.	Has this water level been measured in the field and calibrated against an observed area of water coverage of the wetland?	6.1.1.1	Yes, see Table 1 in Section 1.4.1.		
79.	The methodology for determining MWLTs for amphibian ponds. Kilbride Tributary, and Kilbride Creek appears reasonable although it is not clear that using historical data for a relatively few years measured on-site will provide sufficient replication of historical wet and dry periods.	6.1.1.3	The following wording has been added at the end of section 6.1.4 after Table 15:  "The MWLT's, Warning Levels and Target Levels will be updated prior to commencement of below-water-table extraction to allow for the longest period of historical observations."  See section 6.1.4, below Table 15.		
80.	Request clarification of the phrase, "it is necessary to keep a minimum water level between Phase 1 Pond and Kilbride Creek".	6.1.1.3	It is not necessary to maintain the seasonality of the historic hydraulic gradient between Phase 1 and Kilbride Creek. It is necessary to maintain a minimum level of groundwater flow to Kilbride Creek.		
81.	It is assumed that in months where there are no MTWLs, there are no critical water level issues associated with amphibian ponds or significant ecological features or functions.	6.1.2	This assumption is correct. There are no critical water-level issues associated with amphibian ponds during these months. This does not mean that significant ecological functions do not occur when there is no water in the ponds or there are much reduced water levels. The natural dewatering prevents establishment of fish populations in ponds, which would be detrimental to amphibian populations. The dewatered areas provide germination areas for a wide variety of obligate wetland plant species and also help		

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			prevent development of monotypic populations of cattails. There are entire guilds of invertebrates that are associated only with vernal pools that routinely dry out every year. These include fairy shrimps and numerous caddisfly species as well as several other insect species and some snails. As the margins of ponds dry out, they are also important foraging areas for many species of birds as the moist soils provide a host of invertebrate prey and also seeds.		
82.	Include a hydrograph for the EWC (WP9) as well.	6.1.4 Table 14	Agreed and added.  See Appendix B.		
83.	Ensure that Table 15 summary shows same water levels than on Graphs 1 through 15.	6.3 Table 15	Agreed and revised.  See Table 16, and updated Graphs in Appendix B.		
84.	Groundwater discharge cools streams in the summer and warms them in the winter. Therefore it is recommended that the temperature targets for the Kilbride Creek tributary be that the maximum temperature not exceed 17°C and the minimum temperature not be less than 4°C. A water temperature outside of that range should trigger an investigation of the cause. If the cause is determined to be a consequence of quarry operations a remedy should be enacted.	6.3	Agreed and shown on update graphs in Appendix B.  See Appendix B.		
85.	It is recommended that if a threshold is breached, that a qualified ecologist also be included in the meeting.	6.4	Agreed and added to Section 6.5.  See Section 6.5, Paragraph 7 and 8.		
86.	Recommend that if quarry activity is not found to be the cause or contributor to the trigger level breach, then the operator should contact the appropriate agencies so that the issue can be resolved.	6.4	Agreed and added.  See Section 6.5, last bullet.		
87.	Will new trigger levels be established in this case?	6.4	An updated summary Table has been included.  See Table 16, Section 6.4.		
88.	As agreed per January 17, 2020 JART/JDCL Meeting.	8			
89.	Recommend monitoring of the enhancements/rehabilitation to ensure they are successful.	9	See Section 9.2, second and third paragraph.		
90.	Clarify if a solid barrier fence will be installed to block/redirect snakes.	9.1.1.1	The Animex Fencing that is suggested for this purpose in the Site Plan is a solid fence that has been used successfully to block and redirect snakes in Essex		

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		<p>Region and along Highway 69, and also to construct drift fences to monitor salamander movements. If the MTO fence design for turtle exclusion is used, snakes can travel through it because it consists of chain-link fencing. If the MTO design is used, silt fencing will have to be added to the lower portion of the fence to exclude snakes. A sentence to this effect has been added to the Implementation Guide and Site Plan.</p> <p>See Section 9.1.1.1, paragraph 3.</p>		
<p>91. Given that the barrier fencing will be approx. 150.0 m in length, it may be helpful if the box culverts included terrestrial benches so that none aquatic wildlife species would be comfortable using them too. This might mean that the 1.0 m width should be increased to accommodate the bench.</p> <p>To confirm suitability, it would helpful if all of the dimensions were included (i.e., height, width and length).</p> <p>Please indicate where the culverts will be located.</p>	<p>9.1.1.2</p>	<p>As indicated below, the culvert closest to the entrance to the facility will be between P12 and P13. This is an area that is highly aquatic that is unlikely to be used by terrestrial wildlife species. It will be in water at both its ends. The barrier fencing will extend only about 50m east of the pond/wetland area and this distance should not be an impediment to the movement of terrestrial wildlife species. The barrier fencing will extend about 75m west of the extremely wet portion of the wetland and this also should not be a major impediment to wildlife movement. The length of the barrier fencing was kept relatively short for several reasons: to allow terrestrial wildlife movement, particularly by the locally significant snowshoe hare; turtles occur only in P12 and P13 and are unlikely to be encountered on the road system distant from them (all road-killed turtles that have been observed to date were in the immediate vicinity of the ponds); and snakes are uncommon in this area. None were encountered under cover boards deployed along the road and only a single road-killed snake was observed during the course of the study and this was in the area that will be protected by the barrier fencing.</p> <p>At the culvert further west along the access road, there will be no barrier fencing. The primary purpose of this culvert is to improve water conveyance between the two sides of the road.</p>		

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		<p>Terrestrial wildlife will be able to move freely in this area.</p> <p>Consequently, we see no reason to have benches on these two culverts. One is entirely in aquatic habitat where it would not be used by terrestrial species and there is no barrier fencing at the other culvert that might inhibit wildlife movement. We acknowledge that there are situations where benches on culverts to allow movement of terrestrial species is warranted, but don't believe that this is the case at the proposed Reid Road Reservoir Quarry.</p> <p>Research has indicated that even corrugated steel culverts are effective in allowing passage of amphibians, snakes, and turtles. See <a href="https://eco-kare.com/wildlife-monitoring/wildlife-monitoring-highway-culverts/">https://eco-kare.com/wildlife-monitoring/wildlife-monitoring-highway-culverts/</a>. We have opted to provide 1-m box culverts as these are more permanent than corrugated steel culverts and may provide better wildlife access because of their uniform width regardless of water depth.</p> <p>The location of the culverts is indicated on Page 2 of the Site Plan. Both are replacements of existing culverts. One will join P12 and P13 and the other is at the headwater of the stream that originates in the Eastern Wetland Complex.</p>		
<p>92. Shallow Littoral Zones: Please clarify the littoral areas that are supposed to be described.</p>	<p>9.1.2.1</p>	<p>The Site Plans will be updated to identify the shallow littoral areas, based on the revised limit of extraction. Shallow littoral areas will be created in along the western shore of the west pond where BP #2 is located, Along the southwest shore of the Central Pond where Buffer Pond #1 is located, along the northeast shore of the central pond, and in the southwest corner of the east pond. Deep-water extraction will not occur in these areas so that a shallow-water, "littoral" environments can be created.</p>		
<p>93. Where soils have been compacted, recommend a minimum of 45 cm of clean topsoil rather than 20cm to allow root establishment.</p>	<p>9.1.2.5</p>	<p>To address this comment, the first two sentences of this section have been updated as follows:</p>		

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			<p>“A total of 3,000 tree seedlings will be planted at a 2.4 m spacing (i.e. 1,500 trees/ha) on approximately 2.0 ha of open disturbed land and in setback areas on the property (see Drawing 4 of 5 of the Site Plan for proposed locations). Where the soil is infertile and compacted it will be ripped or plowed to a depth of 20 cm prior to having at least 20 cm of topsoil applied to these areas.”</p> <p>See Section 9.1.2.5, Paragraph 1</p>		
94.	Recommend that the discussion on the density of plantings be moved to the proceeding paragraph, so that it is clear that this density applies to all areas, not just associated with Pond 4.	9.1.2.5	See updated wording in Section 9.1.2.5.		