

Table 2: Responses to Public Review Comments

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
PHYSICAL ENVIRONMENT					
Geology / Topography	Email from Anne Wowchuk, received Nov. 1, 2021, Public comments Batch #2; Email from Roxanne Frechette, received Nov. 1, 2021, public comments Batch #2; Email from Janice Brolly, received Nov. 1, 2021, Public comments Batch #2; Email from J. Carriere, received Nov. 1, 2021, public comments Batch #3; Public Registry from Anessa Maize, received Nov. 1, 2021, public comments Batch #3; Forwarded letter from Christine Hutlet, CAO, RM of Tache, Oct. 5, 2021, public comments Batch #3; Email forwarded by Shandi Strong, originally written by Jon Gerrard (MLA), received Nov. 1, 2021, Public comments Batch #3; Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4; Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	1	General - concern regarding ground subsidence (sinking / shifting of the earth) / collapse/slumping of sand pillars between extraction voids; collapse of barrier between aquifers	<p>The Extraction Project has been planned and will be carried out in a way which protects surface and subsurface geology in the surrounding environment. The exploration and environmental planning phase of CanWhite’s activities involved studying the geology and geotechnical conditions to ensure that the method of extraction would not cause surface subsidence (including shifting, sinking, collapsing or slumping at the surface) and would not create a risk of new connections between aquifers underground.</p> <p>In 2021, the extraction method was tested at three test hole locations where “surface settlement” was monitored before and after sand extraction was completed. The monitoring indicated that there was very limited to no surface settlement at the extraction locations. The maximum measured change in ground elevation at any of the extraction sites was only –0.002 m (2 mm). This amount of movement (in geological terms) is extremely small, considering that the accuracy of the survey equipment used to measure ground movement is 1 mm, and therefore there is potential that this observed movement was the result of near surface ground movement unrelated to sand extraction or was related to the margin of error for the monitoring method.</p> <p>In addition to conducting physical settlement monitoring, CanWhite retained an engineering consultant (Stantec) to carry out a geotechnical assessment of the proposed sand extraction activities (Stantec 2022). The Stantec study was designed to:</p> <ul style="list-style-type: none">• Evaluate (through simulation and modelling using data obtained from field and laboratory investigations) the behaviour of the voids created by sand extraction and the associated potential for collapse of supporting caprock (Limestone) over voids following the completion of extraction activities, and the potential for associated ground subsidence; and• Create “rules” for operation that would eliminate the potential for surface subsidence by determining the most suitable methodology for extracting sand under various geological conditions (e.g., limestone thickness; overburden thickness; extraction depth, void behaviour). <p>In other words, Stantec’s geotechnical ‘model’ was designed to guide the Project extraction activities so that adverse impacts on surface and sub-surface geology are eliminated.</p> <p>As stated in the Executive Summary (see Attachment A) of the geotechnical report (Stantec 2022):</p> <p>“Stantec developed the basis of geotechnical design to meet the short- and long-term stability requirements for the extraction cavity and caprock. The [design identifies] stable allowable extraction cavity sizes as well as distances between extraction boreholes and multi-borehole patterns that will not generate surface subsidence and [will] eliminate potential for connection to occur between the upper and lower aquifers as a result of caprock subsidence.”</p>	EAP, Section 6.2.1, Geology/Topography

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				<p>To allow for a very conservative evaluation of the potential for ground subsidence, the geotechnical model design criteria for this assessment applied a stability factor of safety (FoS) of “2”. The FoS of 2 (which is generally defined as how much stronger a system is than it needs to be for an intended load) is more stringent than would typically be applied in geotechnical studies and is a reasonably conservative value for subsidence study. For comparison, structures whose failure would cause significant damage (such as hydroelectric and mine tailings dams) will typically consider an FoS of 1.5 in their design or assessment. Applying an even higher (safer) FoS (2) in this assessment allows the model to assume a “worst-case scenario” in the evaluation of potential for ground subsidence scenarios for the Project and provides a higher standard of care for extraction operations.</p> <p>The information used to develop the geotechnical model was drawn from field investigations completed by CanWhite and others (Stantec, AECOM, Friesen Drilling) including borehole drilling (lithology, structure and other properties) and downhole imaging and testing, assessment of limestone material properties, laboratory strength testing, standard penetration tests (SPT), geotechnical modeling, and subsidence monitoring before, during, and after exploratory test drilling.</p> <p>Through this modelling, Stantec has established Allowable Extraction Disturbance Zone Dimensions (Table 9 of Stantec 2022, which is provided in Attachment A) that will guide the location, arrangement, and depth of the annual extraction wells. The rules for operation will determine locations for well clusters, how far apart the extraction wells are from each other, and how much sand can be extracted from any one well.</p> <p>In summary, adverse impacts on surface and sub-surface geology are eliminated for the following reasons:</p> <ul style="list-style-type: none">• Only a very small fraction of sand (approximately 1.06%) will be removed from the target aquifer (Carman Sand Member of the Winnipeg Sandstone Formation) during the 24-year life of the Project and the amount taken from each well will be determined on the basis of safety;• Proactive modelling before annual extraction activities will be used to restrict extraction activities to the ‘Allowable Extraction Disturbance Zone Dimensions’;• CanWhite will conduct physical subsidence monitoring and assessment before, during, and after extraction operations; and• Additional and ongoing testing will also be conducted to confirm overburden and limestone thickness and stability.	

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	Email by Druanne Naayen, received Nov. 1, 2021, Public comments Batch #6; Email by Reeve Trudy Turchyn, RM of Reynolds, received Nov. 1, 2021, public comments Batch #6; Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1 , 2021, public comments Batch #7; Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7; Email by Janet Nylen, received Oct. 12, 2021, public comments Batch #7; Email by Margaret Marion-Akins and E.Allan Akins, received Nov. 1, 2021, public comments Batch #7; Email by Darryl Speer, received Nov. 1, 2021, public comments Batch #7; Email by J. Carriere, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #8	1.1	General - concern regarding ground subsidence (sinking/ shifting of the earth) / collapse/slumping of sand pillars between extraction voids; collapse of barrier between aquifers.	Please refer to response #1 regarding no subsidence.	Refer to mitigation measures proposed for response to #1 regarding geology / topography.
	Public Registry from Anessa Maize, received Nov. 1, 2021, public comments Batch #3; Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4; Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6; Email by Paul James Chornoby, received Nov. 1, 2021, Public comments Batch #6; Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7	2	Request that Stantec geotechnical reports referenced in the EAP be released / concern that these reports were not included in the EAP submission.	Reports which contain trade secrets, scientific or technical business information, or other information of a proprietary nature are shared with the regulator on a confidential basis.	N/A

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	Email from Shaun Sturby, received Nov. 1, 2021, public comments Batch #3	3	<i>"Anything other than clean pure drinking water replacing this sand in the aquifer will contaminate and alter the Ph balance ." "A higher Ph would eat away at the rock causing it to weaken and eventually the structural integrity of the stone formation would give way ."</i>	<p>Water returned to the aquifer following the sand extraction process will be of similar or improved quality as the water removed from the aquifer during the extraction process. The extracted water will be contained and under continuous flow during extraction, and therefore will not be exposed to contaminants (including organic materials and chemicals) throughout the extraction and treatment process. As an additional measure, UV sterilization will be applied to the extracted groundwater prior to it being returned to the aquifer to remove naturally-occurring microorganisms that may be present in the groundwater. For additional details, please refer to responses #24, #25 and #26 regarding potential for contamination of the aquifers.</p> <p>Any changes in pH would be neutralized by the naturally occurring carbonate or silicate minerals that are present in the geological layers. These minerals will counteract the effects of any sulphuric acid produced during weathering of sulphide minerals. Laboratory testing of most samples from the Project Area found the neutralization potential of the carbonate, shale and sandstone to be more than sufficient to counteract any acid generation.</p>	A Groundwater Monitoring and Impact Mitigation Plan (EAP, Section 8.4) will be submitted to the Director before operations commence.
	Email forwarded by Shandi Strong, originally written by Jon Gerrard (MLA), received Nov. 1, 2021, Public comments Batch #3	4	<i>"The size and the scope of the CanWhite Sands project means it is likely that there will be slurry lines crossing the line of Winnipeg's Aqueduct. It is a concern should there be subsidence under the Aqueduct, or a spill of toxic chemicals in proximity to the Aqueduct ."</i>	<p>As described in the EAP (Section 2.2, Silica Sand Extraction Process), the slurry line contains only water and sand and therefore poses no risk of contamination caused by a spill of toxic chemicals. Also see response #1 regarding subsidence.</p> <p>Please refer to Figure 1-2 in the EAP which provides the location of the proposed extraction wells for the first four to five years of operation, and revised Figure 1-1, which shows the location of the Greater Winnipeg Water District (GWWD) Shoal Lake Aqueduct in relation to the proposed Project Site (Attachment B). Note that none of the extraction sites proposed in this application approach or cross the aqueduct.</p> <p>Any future Notice of Alteration for operations that might fall within the proximity of the aqueduct will consider potential environmental effects on the aqueduct.</p>	N/A
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	5	<i>Request that the geochemical analysis of sand and core samples be redone so that samples are protected from air (and chemical reaction) and request that many samples be taken over the entire life of project (24-year) area. "Will CWS have representative sampling redone and resubmitted by independent experts to ensure the samples are properly handled and sealed in air tight containers immediately upon extraction? Will CWS ensure the sand samples are not exposed to air during extraction and immediately sealed in air tight containers? "</i>	<p>The environmental samples were not contaminated. Industry accepted methods for sampling, handling, preservation, and shipping of drill cuttings, water samples, and core samples were applied by the professional consultants retained by CanWhite. Proper Chain-of-Custody (COC) procedures were applied and all testing was conducted by independent accredited laboratories. Sampling methods are described in the Hydrogeology and Geochemistry Assessment Report (Appendix A of the EAP) and in the geotechnical report (Stantec 2022). Copies of completed COC Forms are provided with the laboratory analytical reports included in Appendix F ('Part 6' in the Public Registry) of the Hydrogeology and Geochemistry Assessment Report (Appendix A of the EAP).</p>	N/A

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	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	6	"Will CWS move their operations westward into the ALY area where the limestone is thicker and the sandstone aquifer is saline to avoid subsidence ?"	CanWhite is not contemplating extracting sand from the ALY area. Please see response for #1 regarding subsidence. Most of the figures contained in Batch #4 Public Comments were either not developed or provided by CanWhite, or contain material alterations of CanWhite figures and are not representative of the Project.	N/A
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	7	Concern that a geotechnical model is not provided to support the following statements from the Hydrogeology and Geochemistry Assessment Report (Appendix A) of the EAP: <i>Removal of the sand will form a void in the shape of a cone extending from the bottom of the Carman Sand Member to the base of the Winnipeg Shale. The pattern of extraction cones is planned to extend laterally by successively extracting from new boreholes across the extraction area in a "room and pillar" style in accordance with the geotechnical model.</i>	The geotechnical model that supports the conclusions stated in the EAP regarding the physical environment (EAP, Section 6.2) is described in the geotechnical report (Stantec 2022).	N/A
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	8	A) "Does CWS acknowledge the northern part of the BRU project area is wholly within the Black Island member part of the Winnipeg formation known to contain pyritic shale, marcasite coating the sand, pyritic concretions such as oolite layers and not within the Carman sands area?" B) "Does CWS acknowledge that the Black Island member from which sand will be extracted in the northern portion of the Bru area contains pyrite that will be exposed to re-injected aerated water that will from acid and mobilize heavy metals and selenium thereby contaminating the aquifer?"	A) No. CanWhite plans to drill into the Carman Sand Member. The Winnipeg Formation consists of multiple layers. Throughout the Project area, the Black Island Member lies below the Carman Sand Member. Please see Table 1 from the Stantec geotechnical report (Attachment A). The Carman Sand Member does not contain the mineralogy described in question #8 (A). There is no risk that CanWhite's operations will extend into the Black Island Member at any time or under any circumstances because: - The Black Island Member is below and not above the Carman Sand Member; - The Carman Sand Member is separated from the Black Island Member by a shale layer; and - The Black Island Member does not contain the targeted sand resource. B) See response above for A).	N/A

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	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	9	"Will CWS engage an independent expert to gather core samples and sand samples from representative locations in the Bru area that will be protected against oxidation and have the samples re-analyzed? Will CWS have properly protected samples of lower shale, concretions and oolite nodules analyzed? If the re-testing demonstrates that the samples contain significant amounts of sulphide and heavy metals that will likely contaminate the aquifer when the cavities are filled with re-injected aerate water will CWS abandon their operations in the Vivian area?"	<p>The environmental samples were not contaminated. Refer to response #5 regarding use of industry standard sampling methods.</p> <p>Sampling of the shale aquitard has already occurred and results are outlined in the Hydrogeology and Geochemistry Assessment Report (Appendix A of the EAP).</p>	N/A
	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	10	Concern regarding the geochemical analysis in the Hydrogeochemical Assessment Final Report (Appendix A in the EAP) was based on contaminated samples: " <i>The Geochemical analysis in the Report is based on contaminated samples; exposure to air, time and weather. Of course contaminated samples would record "low to absent concentrations" for heavy metals. Still core samples gave high values for arsenic 30.4 ppm, barium 30 ppm, boron 70 ppm, chromium 58 ppm and selenium 13.1 ppm. Selenium was also found in the Carbonate, shale and sandstone. Acid generating material in the sandstone, shale layers and shale aquitard were found. The amount of oxygen contained in the injection process has not been calculated. That is essential for proper knowledge of geochemical reactions.</i> "	<p>The environmental samples were not contaminated. Refer to response #5 regarding use of industry standard sampling methods.</p> <p>Geochemical modelling conservatively accounted for the exposure of minerals naturally occurring in the aquifer to an unlimited supply of oxygen (EAP, Appendix A). In reality, under actual conditions, the materials will remain in the water-saturated subsurface conditions and the concentrations of oxygen therefore will be much lower than simulated by the model. Thus, there was no need to calculate actual dissolved oxygen concentrations.</p>	N/A

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	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	11	Concern that the Hydrogeology and Geochemistry Assessment Report (Appendix A) of the EAP is incomplete: " <i>Uranium exceeded screening criteria yet no further testing for radium occurred. Concretions and oolite nodules were not tested for the presence of sulphide, selenium and heavy metals. The geochemical analysis is incomplete. It does not provide adequate information to prevent environmental contamination.</i> " " <i>Have tests for sulphide and heavy metals been run on the concretions and oolite nodules?</i> " " <i>Will a study of all oxygen sources, amounts, types (dissolved, gaseous), distance and direction of travel from Project operations be completed to understand the full geochemical reaction?</i> " "" <i>Will a comprehensive Report on geochemical reactions be provided for the review?</i> "	<p>Some naturally occurring elements, including the radionucleotides uranium and radium, are present in the groundwater in this region, and some water samples collected and tested by CanWhite confirm the presence of uranium concentrations marginally exceeding water quality criteria. This is not uncommon in the region and is due to naturally elevated background concentrations, not human activities. Naturally occurring radium, which is not typically analyzed in routine water monitoring programs, is also expected to be present in low concentrations in groundwater in this region.</p> <p>CanWhite's operations will maintain and/or, for some parameters, locally improve water quality. The water will be contained and under continuous flow during extraction and treatment, and therefore will not have been exposed to contaminants, including uranium and radium. Therefore, the extraction process will not alter uranium or radium concentrations in the aquifer. The groundwater monitoring programs, which will be developed as part of the future Groundwater Monitoring and Impact Mitigation Plan, will include uranium and radium in the list of analytical parameters to be monitored.</p> <p>Testing for acid rock drainage and metal leaching was completed on samples collected from the Project Area. This testing determined that most of the subsurface materials in the Project Area are classified as “Non-Potentially Acid Generating” (Non-PAG). This means that the rock, for the most part, is not sensitive to the introduction of oxygen. The samples that showed concentrations of sulphide minerals (i.e., pyrite) were at levels that were either very low or below the lowest concentrations that could be measured. Although these materials may be sensitive to oxygen inputs if brought to surface, any potential acid-generating materials will be separated and transported to a licensed facility for disposal.</p>	N/A

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				<p>Geochemical modelling conservatively accounted for the exposure of minerals naturally occurring in the aquifer to an unlimited supply of oxygen (EAP, Appendix A). Under actual conditions, the materials will remain in the water-saturated subsurface conditions and the concentrations of oxygen therefore will be much lower than simulated by the model. Thus, there was no need to calculate actual dissolved oxygen concentrations.</p> <p>Please refer to response #24 and #26 for additional information regarding potential for contamination of the aquifer/drinking water/water wells.</p> <p>Oolites and concretions comprise a very small proportion (<5%) of the overall sandstone aquifer. Oolites are commonly composed of calcium carbonate and are not likely to negatively influence water quality. Due to their relatively large spherical shape, the oolites and concretions are likely to have a low reactivity in the subsurface. Some of these materials were contained within the sand samples submitted for geochemical analysis. These materials will be separated and managed conservatively in accordance with the Waste Characterization and Management Plan and will likely be disposed at a licensed facility.</p> <p>The geochemical analysis was conducted in accordance with industry-standard practices, based on extensive geological and hydrogeological information obtained from well logs, groundwater monitoring and hydrogeological testing. This information was collected by the Province of Manitoba, Friesen Drilling Limited, several academic researchers and consultants, including AECOM, over a period of more than 50 years.</p> <p>The only source of oxygen will be the air that is introduced during well drilling and the air injection process used during extraction. Most of the air utilized during the extraction process will not interact with the aquifer, as the oxygen will return to surface with the sand slurry and be released back into the atmosphere. Refer to response #33 regarding aeration of groundwater.</p> <p>A comprehensive Hydrogeology and Geochemistry Assessment Report has been provided in Appendix A of the EAP.</p>	
	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	12	Regarding the Hydrogeology and Geochemistry Assessment Report (Appendix A) in the EAP: " <i>"the removal of sand will permanently increase the effective porosity and storativity of the Winnipeg Sandstone aquifer within the Project Site through the annual extraction of material and resulting creation of void space"</i> (7.2.1 Part 1A) " <i>"Will the "void space" trap oxygen?"</i>	<p>The voids created during sand extraction will be occupied by the surrounding groundwater, not by air.</p> <p>Most of the air (source of oxygen) utilized during the extraction process will not interact with the aquifer, as the air will return to ground surface with the sand slurry and be released to the atmosphere. Although a small amount of dissolved oxygen may occasionally enter the aquifer, it will not adversely impact the quality of the groundwater.</p> <p>Please refer to response #33 regarding aeration of groundwater.</p>	N/A
	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	13	<i>"Injection wells can over pressurize resulting in fractures to the limestone. As the limestone is considered a crucial support structure in the prevention of subsidence it is alarming that the Report did not analyze and provide this requisite information. " "What is the safe pressure limit to ensure integrity of the limestone, the shale aquitard, and the integrity of the aquifer system?"</i>	No pressure will be applied during the reinjection process, as water will be returned to the aquifer by gravity only. This is why CanWhite will be returning water to an operating well, so that the drawdown created by the extraction can be replaced by the water being returned to the aquifer (and no pressure is required).	N/A

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	Email by Paul James Chornoby, received Nov. 1, 2021, Public comments Batch #6	14	Concern regarding absence of lithology log and core photographs: <i>"It appears that only one diamond drill hole BRU 95-8 was cored and logged for lithology on the project site. Core photographs and a lithology log are said to be contained in Appendix C-1 and Appendix B of the Proposal but are absent ."</i>	The core photographs and lithology logs are in Part 4 of the Hydrogeology and Geochemistry Assessment Report (EAP, Appendix A): lithology logs are on page 29; core photos are on page 74-76.	N/A
	Email by Paul James Chornoby, received Nov. 1, 2021, Public comments Batch #6	15	<i>"CanWhite Sands Corp., has not provided to the public a description of all the geological work done with respect to:</i> <ul style="list-style-type: none"><i>• Type, amount and location of drilling done on the property proposed for mining.</i><i>• Thickness (or absence) and condition of the shale layers encountered in each hole.</i><i>• The nature of the underlying Precambrian basement rocks and their condition (are they highly weathered and/or fractured ?)"</i>	<p>All CanWhite exploratory and test wells have been documented in reports filed with the Groundwater Management Section - (Water Branch) in accordance with the requirements of <i>The Groundwater and Water Well Act</i>. These reports are available from the Water Branch on request.</p> <p>These reports contain the information requested bullets #1 and #2 of comment #15, but not information about the Precambrian basement rocks because CanWhite has not typically drilled into that zone. The underlying Precambrian basement rock is not a part of the Project extraction zone. CanWhite does not plan to drill into, or extract from, the Pre-Cambrian basement rock.</p>	N/A
	Forwarded email, originally written by Janine G. Gibson, Receive Nov. 1, 2021, public comments Batch #7	16	Concern that the target silica sand deposit is contaminated with iron pyrite: <i>"...in June of 2020, I collected a number of sand samples, following lab protocols and completed Chain of Custody paperwork, of what visually appeared to be freshly piled silica." "Our ALS Environment Lab report results conflict with the official CWS silica analysis declarations, in that our samples showed the silica samples had a .047 presence of iron pyrite that would need to be removed for the sand to be marketable. This removal process results in highly toxic acid runoff with significant impact likely to the immediate environment and the watershed."</i>	<p>In the absence of detailed sample collection information (including sample date, sample type, location, parameters analyzed, chain of custody) and a copy of the laboratory certificate, CanWhite is unable to compare the information contained in this question to the analytical results from samples collected during our field studies.</p> <p>However, CanWhite has reviewed certificate of analysis VA 20137923 dated July 17, 2020 ("VA 20137923") for two sand samples (labelled Sand #4 and #7) that were submitted by a member of the public to the Impact Assessment Agency of Canada (IAAC) on September 24, 2020. VA 20137923 appears to be missing some data that is typically provided by the laboratory.</p> <p>Further, the data contained in VA 20137923 cannot be used to draw conclusions pertaining to the presence and abundance of iron pyrite. The iron (Fe) result provided in VA 20137923 is derived through ICP analysis, and represents the concentration of elemental iron present in the samples. This iron could be derived from any one of many forms of iron-containing compounds that could have been present in the sample, and therefore does not indicate the presence of iron pyrite.</p> <p>CanWhite's design does not provide for the removal of iron pyrite from the sand. Nor is any such process required.</p> <p>It should also be noted that the author acknowledges that they collected samples from a pile of sand situated on CanWhite property without permission from CanWhite and without CanWhite's knowledge. These piles (which are comprised of consolidated sand to be used as a base matting material) would not provide a representative example of the bio-chemical composition of raw sand obtained immediately following extraction, as it will contain traces of organic material (soil, twigs, and other debris) that will have been introduced during consolidation and storage.</p>	N/A

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	Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7	17	Concern that: " <i>Silica sand samples used in the EAP were exposed to air for a prolonged period of time, meaning that any marcasite would have leached out during this time,spoiling the validity of the sample .</i> "	The environmental samples were not contaminated. Refer to response #5 regarding use of industry standard sampling methods.	N/A
	Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7	18	" <i>Concerns with heavy metal concentrations in the shale of the aquifer, including barium, selenium, arsenic and boron .</i> " " <i>The aerated re-injected water would oxidize and mobilize selenium in the carbonate aquifer .</i> "	Project operations will primarily interact with the sandstone aquifer, with very little interaction with the shale and carbonate aquifers. Any shale encountered within the sandstone aquifer will be brought to surface with the sand slurry and the resultant waste materials will be managed in accordance with the Material Characterization and Management Plan. Thus, any trace elements (including barium, selenium, arsenic and boron) contained in the shale will not pose a risk to groundwater quality in the aquifer. There will be no injection of aerated water into the carbonate aquifer and therefore, there is no potential for enhanced mobility of selenium in the carbonate aquifer. All reinjected groundwater will be injected into the sandstone aquifer.	N/A
Groundwater	Email from Robyn Ingram, received Nov. 1 2021, Public comments Batch #2; Email from Maureen Y., received Nov 1. 2021, public comments Batch #2; Email from Evan Robert, received Nov. 1 2021, public comments Batch #2; Erika MacPherson, Receive Nov. 1 2021, public comments Batch #2; Email from Justine Hudson, received Nov. 1, 2021, public comments Batch #2; Email from Anne Wowchuk, received Nov. 1, 2021, Public comments Batch #2; Email from Claude St-Jacques, received Nov. 1, 2021, public comments Batch #2; Email from Diana Newbury, received Nov. 1, 2021, public comments Batch #2; Email from Janice Brolly, received Nov. 1, 2021, Public comments Batch #2	19	General - concern about potential effects on groundwater/aquifer(s).	Please refer to responses #24, #25 and #26 regarding potential for contamination of the groundwater/aquifers; response #30 regarding the prevention of water mixing between aquifers; and response #32 regarding potential Project effects on the quantity of water in the groundwater/aquifers.	EAP, Section 6.2.3, Groundwater; EAP, Section 8.4, Groundwater Monitoring and Impact Mitigation Plan

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	Letter to Springfield Municipality from Ken Rowes, received Nov. 1 2021, public comments Batch #3; Email forwarded, originally written by Carlos A. Jovel, received Nov. 1 2021, public comments Batch #3; Public Registry from Anessa Maize, received Nov. 1, 2021, public comments Batch #3; Forwarded letter from Christine Hutlet, CAO, RM of Tache, Oct. 5, 2021, public comments Batch #3; Response to EAP from D Kerr, received Nov. 1, 2021, public comments Batch #3; Email by Druanne Naayen, received Nov. 1, 2021, Public comments Batch #6; Email by Trevor Kirczenow, received Nov. 1, 2021, public comments Batch #6; Email by Heatker Erickson, received Nov. 1, 2021, public comments Batch #7; Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1 , 2021, public comments Batch #7	20	General - concern about potential effects on groundwater/aquifer(s).	Please refer to responses #24, #25 and #26 regarding potential for contamination of the groundwater/aquifers; response #30 regarding the prevention of water mixing between aquifers; and response #32 regarding potential Project effects on the quantity of water in the groundwater/aquifers.	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).

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	Email by Megan Henry, received Nov. 1, 2021, public comments Batch #7; Forwarded email, originally written by Janine G. Gibson, Receive Nov. 1, 2021, public comments Batch #7; Email written by Denis Funk, received Nov. 1, 2021, public comments Batch #7; Email written by L. L'Hirondelle received Nov. 1, 2021, public comments Batch #7; Email written by Kevin Albo received Nov. 1, 2021, public comments Batch #7; Email written by Deanna Kazina received Nov. 1, 2021, public comments Batch #7; Email by Joan and Allan Wiens, received on Nov. 1, 2021, public comments Batch #7; Email by Janet Nylen, received Oct. 12, 2021, public comments Batch #7; Email by Margaret Marion-Akins and E.Allan Akins, received Nov. 1, 2021, public comments Batch #7; Email by Jennifer Vandenbosch, Forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #8	21	General - concern about potential effects on groundwater/aquifer(s).	Please refer to responses #24, #25 and #26 regarding potential for contamination of the groundwater/aquifers; response #30 regarding the prevention of water mixing between aquifers; and response #32 regarding potential Project effects on the quantity of water in the groundwater/aquifers.	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Email by Wayne Lovenuk, forwarded to CanWhite, received Nov. 1 2021, Public comments Batch #8; Email by Christine Hutlet (CAO, RM of Tache), originally sent to Minister Guillemard, forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #8; Email by Erica Wood, originally written by Tiffany Fell, sent to Minister Guillemard, forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #8	22	General - concern about potential effects on groundwater/aquifer(s).	Please refer to responses #24, #25 and #26 regarding potential for contamination of the groundwater/aquifers; response #30 regarding the prevention of water mixing between aquifers; and response #32 regarding potential Project effects on the quantity of water in the groundwater/aquifers.	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Email from Janice Broly, received Nov. 1, 2021, Public comments Batch #2; Email from J. Carriere, received Nov. 1, 2021, public comments Batch #3; Response to EAP from D Kerr, received Nov. 1, 2021, public comments Batch #3; Email from Barry and Gail Olinkin, Nov. 1, 2021, public comments Batch #3; Email by Meradith Anderson, received Nov. 1, 2021, public comments Batch #7; Email by J. Carriere, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #8; Email by Wayne Lovenuk, forwarded to CanWhite, received Nov. 1 2021, Public comments Batch #8; Email by Erica Wood, originally written by Tiffany Fell, sent to Minister Guillemard, forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #8	23	General - concern about potential effects on the aquifer/drinking water/water wells.	Please refer to responses #24, #25 and #26 regarding potential for contamination of the groundwater/aquifers; response #30 regarding the prevention of water mixing between aquifers; and response #32 regarding potential Project effects on the quantity of water in the groundwater/aquifers.	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Email from Kathleen M Bell, received Nov. 1, 2021, Public Comments Batch #1; Email from Sue Ziemski, received Nov. 1. 2021, Public Comments Batch #1; Email from Darrell Henzel, received Nov. 1, 2021, Public comments Batch #1; Email from Dennis Leneveu, received Nov. 1 2021, Public comments Batch #1	24	General - concern about potential for contamination of the aquifer/drinking water/water wells.	<p><u>Chemical Contamination:</u></p> <p>There will be no chemical contamination of the aquifer as neither extraction nor processing of the sand will involve the use of any harmful chemical or potential contaminant.</p> <p>The extraction process uses conventional drilling methods that are very similar to those used for drilling a new water supply well. CanWhite's drilling and extraction method utilizes an air lift method that is routinely used in water well drilling throughout the world, including in Manitoba and the local area where thousands of these wells have historically been drilled. The quality of the water returned to the aquifer following the sand extraction process will be similar to or better than the water removed from the aquifer during the extraction process.</p> <p>Air compressors used to facilitate sand extraction will be oil-less and therefore will not introduce any oil contaminants. The extracted water will be contained and under continuous flow during extraction, and therefore will not be exposed to contaminants (including organic materials and chemicals) throughout the extraction and treatment process.</p> <p>The materials used in the construction of extraction wells and other conveyance and storage infrastructure are safe, and will consist of steel, polyvinyl chloride (PVC) and high-density polyethylene (HDPE) pipe which are routinely used in the water supply well industry. Contact with these materials will not affect water quality. CanWhite will use only industry-standard well grouting materials that are used in the water well industry and known not to impact water quality.</p> <p>Wells will be installed by licensed contractors and constructed in a manner that is designed to prevent infiltration of surface runoff into the wells. Upon completion of extraction activities, wells will be decommissioned to meet or exceed provincial standards for water well construction and decommissioning. This will involve sealing the borehole with an industry-standard grout mixture that provides both structural integrity and hydraulic sealing properties.</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Email from Joshua Aimola, received Nov. 1, 2021, Public comments Batch #2; Email from Robyn Ingram, received Nov. 1, 2021, Public comments Batch #2; Email from Maureen Y., received Nov. 1, 2021, public comments Batch #2; Email from Evan Robert, received Nov. 1, 2021, public comments Batch #2; Erika MacPherson, Receive Nov. 1, 2021, public comments Batch #2; Email from Justine Hudson, received Nov. 1, 2021, public comments Batch #2; Email from Anne Wowchuk, received Nov. 1, 2021, Public comments Batch #2; Email from Claude St-Jacques, received Nov. 1, 2021, public comments Batch #2; Email from Mark Wowchuk, received Nov. 1, 2021, public comments Batch #2; Email from Roxanne Frechette, received Nov. 1, 2021, public comments Batch #2; Email from Deborah Thompson, received Nov. 1, 2021, public comments Batch #2	25	General - concern about potential for contamination of the aquifer/drinking water/water wells.	<p>Microbiological Contamination:</p> <p>The Project will not introduce any biological contaminants into the aquifer. The extraction process utilizes a closed-loop system that is designed to convey, store, and treat water in a manner that protects it from becoming contaminated by external sources of water, solids or biological pathogens. The closed-loop extraction, conveyance and reinjection system will contain only the extracted water and sand. Therefore, there is no potential for bacteria or other microbial contaminants to be introduced into the water, and water will be continuously circulated to limit stagnation and growth of microbes.</p> <p>Well construction materials, once brought to the site, will be stored and managed so they are kept free of debris to avoid introduction of microbial contaminants to the aquifer. Extraction and monitoring wells will be installed by licensed contractors and constructed in a manner that is designed to prevent infiltration of surface runoff into the wells.</p> <p>As an additional measure to protect groundwater quality, UV sterilization will be applied to the extracted groundwater prior to it being returned to the aquifer to remove naturally occurring microorganisms that may be present in the groundwater. CanWhite is working with industry leading UV treatment specialists and a certified laboratory to determine the required level of UV treatment and filtration. UV systems are widely used to disinfect industrial and municipal water for potable and non-potable uses. CanWhite will be undertaking additional water quality testing to support the design of the UV treatment system. Several parameters will be monitored in the field and verified by the analytical laboratory to guide UV treatment system design.</p> <p>Once extraction activities have been completed and the closed-loop system is moved to the next extraction site, the completed extraction wells will be decommissioned in a manner that prevents biological contamination of the aquifer, which includes sealing the borehole with an industry-standard grout mixture that provides both structural integrity and hydraulic sealing properties.</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Email from Diana Newbury, received Nov. 1, 2021, public comments Batch #2; Email from Janice Brolly, received Nov. 1, 2021, Public comments Batch #2; Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2; Letter to Springfield Municipality from Ken Rowes, received Nov. 1 2021, public comments Batch #3; Email from Herman and Marilyn Bouw, Nov. 1. 2021, public comments Batch #3; Email forwarded, originally written by Carlos A. Jovel, received Nov. 1 2021, public comments Batch #3; Forwarded letter from Christine Hutlet, CAO, RM of Tache, Oct. 5, 2021, public comments Batch #3; Report comments submitted by Jack Kowalchuk, received Nov. 1 2021, public comments Batch #3; Email from Shaun Sturby, received Nov. 1, 2021, public comments Batch #3	26	General - concern about potential for contamination of the aquifer/drinking water/water wells.	<p>Changes to Physical and/or Geochemical Conditions:</p> <p>There is limited to no potential for changes in physical and/or geochemical conditions in the aquifer due to Project operations that would result in contamination of groundwater. Any changes that do occur will be minimal, localized, and/or temporary.</p> <p>While it is common for geological layers to contain natural sulphide-containing minerals (e.g. pyrite), and these minerals could produce acid rock drainage (ARD) and leach metals from surrounding rocks if they are exposed to an excess of oxygen and water for a long period of time, the Project will not cause an acid rock drainage or metal leaching problem for the following reasons:</p> <ul style="list-style-type: none">• The groundwater returned to the aquifer after treatment will contain only a very small volume of dissolved oxygen introduced from the compressed air and/or exposure to air in storage tanks during the extraction process.• The potential for acid rock drainage and resulting metal leaching in the Project Area is low. Laboratory testing of samples from the Project Area found that most of the subsurface materials in the Project Area are classified as “Non-Potentially Acid Generating” (Non-PAG). This means that the rock, for the most part, is not sensitive to the introduction of oxygen. The samples that showed concentrations of sulphide minerals (i.e. pyrite) were at levels that were either very low or below the lowest concentrations that could be measured. These materials may be sensitive to oxygen inputs if brought to surface, but those materials will be separated and transported to a licensed facility for disposal.• Neutralizing carbonate or silicate minerals that are also naturally present in the geological layers counteract the effects of any sulphuric acid produced during weathering of sulphide minerals. Laboratory testing of most samples from the Project Area found the neutralization potential of the carbonate, shale and sandstone to be more than sufficient to counteract any acid generation.	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Email from Mike Jaques, received Nov. 1, 2021, Public comments Batch #3; Email forwarded by Shandi Strong, originally written by Jon Gerrard (MLA), received Nov. 1, 2021, Public comments Batch #3; Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4; Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6; Email by Druanne Naayen, received Nov. 1, 2021, Public comments Batch #6; Email by Trevor Kirczenow, received Nov. 1, 2021, public comments Batch #6; Email by Reeve Trudy Turchyn, RM of Reynolds, received Nov. 1, 2021, public comments Batch #6; Email by Heatker Erickson, received Nov. 1, 2021, public comments Batch #7; Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1 , 2021, public comments Batch #7	27	General - concern about potential for contamination of the aquifer/drinking water/water wells.	Please refer to responses #24, #25 and #26 regarding potential for contamination of the aquifer/drinking water/water wells.	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Forwarded email, originally written by Janine G. Gibson, Receive Nov. 1, 2021, public comments Batch #7; Email written by Denis Funk, received Nov. 1, 2021, public comments Batch #7; Email written by L. L'Hirondelle received Nov. 1, 2021, public comments Batch #7; Email written by Kevin Albo received Nov. 1, 2021, public comments Batch #7; Email written by Deanna Kazina received Nov. 1, 2021, public comments Batch #7; Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7; Email by Joan and Allan Wiens, received on Nov. 1, 2021, public comments Batch #7; Email by Janet Nylen, received Oct. 12, 2021, public comments Batch #7; Email by Margaret Marion-Akins and E.Allan Akins, received Nov. 1, 2021, public comments Batch #7	28	General - concern about potential for contamination of the aquifer/drinking water/water wells.	Please refer to responses #24, #25 and #26 regarding potential for contamination of the aquifer/drinking water/water wells.	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Email by Jennifer Vandenbosch, Forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #8; Email by Terri and Edmond Ross, originally sent to the Environmental Approval Branch, forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #8	29	General - concern about potential for contamination of the aquifer/drinking water/water wells.	Please refer to responses #24, #25 and #26 regarding potential for contamination of the aquifer/drinking water/water wells.	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Email from Sue Ziemski, received Nov. 1, 2021, Public Comments Batch #1; Email from Anne Wowchuk, received Nov. 1, 2021, Public comments Batch #2; Email from Deborah Thompson, received Nov. 1, 2021, public comments Batch #2; Email from Janice Brolly, received Nov. 1, 2021, Public comments Batch #2; Public Registry from Anessa Maize, received Nov. 1, 2021, public comments Batch #3; Forwarded letter from Christine Hutlet, CAO, RM of Tache, Oct. 5, 2021, public comments Batch #3; Email forwarded by Shandi Strong, originally written by Jon Gerrard (MLA), received Nov. 1, 2021, Public comments Batch #3; Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	30	General - concern about water transfer from one aquifer to another (mixing of water between aquifers) due to Project operations and disturbance of the shale aquitard barrier between the Carbonate and Sandstone aquifers and risk of contamination of the aquifers as a result.	<p>Proper sealing of extraction wells will prevent any mixing of water between aquifers. CanWhite's extraction wells will be sealed across the shale layer. This is a standard industry practice when a well is installed into the Sandstone Aquifer. Extraction wells will be installed by licensed contractors and constructed in a manner that is designed to prevent aquifer interconnection and surface runoff and precipitation from entering the well. Upon conclusion of extraction activities at each well site, the wells will be decommissioned in accordance with provincial guidelines and best practices established by CanWhite.</p> <p>CanWhite utilizes an industry-accepted grout/cement mixture that provides both stability (from the cement) and sealing properties (from the bentonite grout) to establish a competent seal in the shale layer and up into the limestone that provides both structural integrity and hydraulic sealing properties.</p> <p>Water quality is classified as either “Fresh”, “Brackish”, or “Saline” depending on the concentration of dissolved solids in the water. West of Anola (and west of the full 24-Year Project Area) the carbonate aquifer is classified as “Fresh”, but the sandstone aquifer is classified as “Brackish” or “Saline” depending on the location. Here, maintaining separation between the two aquifers is critical to minimizing the upward artesian flow of brackish/saline groundwater from the sandstone to the overlying carbonate aquifer. But within the Project Area, the sandstone and carbonate aquifers are both classified as “Fresh” and have good water quality. Therefore, even if there were migration of groundwater between aquifers through unsealed boreholes in the Project Area, it would not degrade water quality.</p> <p>Also, within the Project Area, water levels in both aquifers are similar and there is little to no driving force for exchange of water between aquifers even if boreholes were improperly sealed. Exchange of groundwater between these aquifers has been well described in the scientific literature, which documents that numerous existing wells screened across both the sandstone and limestone aquifers in the Project Area have allowed for mixing of waters to occur for a very long time (EAP, Appendix A, Hydrogeology and Geochemistry Assessment Report). West of Anola, where artesian conditions prevail in the saline portion of the sandstone aquifer, this has resulted in upwelling of saline water into the overlying carbonate aquifer. But within the Project Area, artesian conditions are not present and water quality impacts of this nature have not been reported.</p> <p>In accordance with CanWhite’s Groundwater Monitoring and Impact Mitigation Plan, water quality in the sandstone and carbonate aquifers will be monitored before, during and following operations to confirm that water quantity and quality is preserved in both aquifers. The results will be evaluated by a professional hydrogeologist or geochemist with experience evaluating water quality, with results provided to regulatory agencies for review. In summary, the Project will not contaminate the sandstone or carbonate aquifers, and water quality is not anticipated to be materially affected by Project operations.</p> <p>Aquifer hydraulics and the influence of any mixing of waters on water quality is described in detail in the Hydrogeological and Geochemistry Assessment Section 4.3.2 in Appendix A of the EAP.</p> <p>Also refer to response #162 and #167 regarding well sealing and decommissioning.</p>	N/A

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5; Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6; Email by Janet Nylen, received Oct. 12, 2021, public comments Batch #7; Email by Margaret Marion-Akins and E.Allan Akins, received Nov. 1, 2021, public comments Batch #7; Email by Darryl Speer, received Nov. 1, 2021, public comments Batch #7; Email by Wayne Lovenuk, forwarded to CanWhite, received Nov. 1 2021, Public comments Batch #8	31	General - concern about water transfer from one aquifer to another (mixing of water between aquifers) due to Project operations and disturbance of the shale aquitard barrier between the Carbonate and Sandstone aquifers and risk of contamination of the aquifers as a result.	Refer to response #30 regarding the prevention of water mixing between aquifers and responses #24, #25 and #26 regarding potential for contamination of the aquifers.	N/A
	Email from Anne Wowchuk, received Nov. 1, 2021, Public comments Batch #2; Email from Diana Newbury, received Nov. 1, 2021, public comments Batch #2; Email forwarded, originally written by Carlos A. Jovel, received Nov. 1 2021, public comments Batch #3; Email written by Deanna Kazina received Nov. 1, 2021, public comments Batch #7; Email by Janet Nylen, received Oct. 12, 2021, public comments Batch #7	32	General - concern about potential effects on groundwater/aquifer during drought conditions.	<p>The impact of the Project on groundwater quantity will be minor, localized, and temporary, even during periods of drought, for the following reasons:</p> <ul style="list-style-type: none">- The Project does not consume an excessive amount of groundwater. Except for a residual amount of moisture that remains with the sand as it transfers to the slurry line, the entirety of the groundwater (once separated from the sand) will be returned to the aquifer.- Although water levels within the aquifer can naturally fluctuate by approximately 2.5 metres (~8 feet), and fluctuations may be greater in times of drought or water surplus, the lowest groundwater elevations in the sandstone and limestone aquifer generally occur during late winter and rapidly rise in response to recharge following spring snow melt (see Figures 5-12, 5-13 and 5-14 of Appendix A to EAP). CanWhite’s extraction activities will occur during spring, summer and fall, and there will be no extraction activities occurring during the winter when groundwater levels in the aquifer are at their lowest. <p>The Project is forecast to temporarily lower water levels by 1 to 5 metres, but only within 1.5 km from the active well cluster, and with the amount of drawdown decreasing with distance from the active extraction wells. With operations occurring during the time of year when water levels are generally higher (see comment above), the impact to well yield will not occur for most wells if pumps are installed at depths greater than 5 metres. However, during drought conditions (when groundwater elevations could be near or below the intake of the submersible pump in a given well) well yield may be affected, as has been noted in the Project Area in recent years in the absence of any pumping by CanWhite. In these rare instances, well yield can typically be restored by lowering the pumps in the affected wells.</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).

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				<p>· Sand and groundwater will be extracted from the sandstone aquifer, with drawdown (lowering of the groundwater level) occurring primarily in the sandstone aquifer within proximity to active extraction wells (see comment above). A much smaller amount of drawdown will be observed in the limestone aquifer because it is separated from the pumped sandstone aquifer by a low permeability shale aquitard. The thick and relatively low permeability glacial sediments overlying the limestone aquifer will prevent measurable drawdown in any shallow glacial sediment aquifers or dugouts.</p> <p>Groundwater levels in the sandstone and carbonate aquifers are expected to recover shortly after operations cease in each extraction well and well cluster, with recharge derived primarily from the Sandilands Area and infiltration of precipitation from the overlying aquifer system.</p> <p>CanWhite will have a stringent mitigation and monitoring program that will monitor aquifer conditions before, during and after extraction activities. A pre-development assessment (like what was completed for the hydrogeological and geochemical field investigation) will be completed for wells near the proposed extraction activities in the area. Groundwater elevations will be monitored in real time so that operations can be stopped if water levels approach intolerable ranges. If any intolerable levels are observed, CanWhite will investigate to determine if the cause is related to CanWhite’s extraction activities. Should Project activities impact the availability of water to nearby residents, including during drought conditions, CanWhite will immediately take actions to ensure access to water at CanWhite’s cost.</p> <p>Mitigation measures will be described in the Groundwater Monitoring and Impact Mitigation Plan that will be prepared in advance of commencing operations which will include monitoring of groundwater elevations in real time so that operations can be modified to avoid unacceptable lowering of water levels and impacts on well yield.</p>	

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	Email forwarded by Shandi Strong, originally written by Jon Gerrard (MLA), received Nov. 1, 2021, Public comments Batch #3; Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4; Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5; Email by Druanne Naayen, received Nov. 1, 2021, Public comments Batch #6; Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7	33	Concern regarding introducing oxygen into an anaerobic aquifer environment and resulting oxidation processes in the shale aquitard producing sulphuric acid resulting in mobilization of heavy metals; concern for selenium leaching; concern for other chemical reactions and concern for growth of harmful organisms related to reinjection of aerated water and resulting effects on groundwater quality / drinking water contamination.	<p>While it is common for geological units to contain natural sulphide minerals (e.g. pyrite), and these minerals could produce acid conditions and leach metals from surrounding rocks if they are exposed to an excess of oxygen and water for a long period of time, the Project will not cause acid generation or mobilize heavy metals for the following reasons:</p> <ul style="list-style-type: none"> • The potential for production of sulphuric acid and mobilization of heavy metals in the Project Area is low. Laboratory testing of samples from the Project Area found that most of the subsurface materials in the Project Area are classified as “Non-Potentially Acid Generating” (Non-PAG). This means that the rock, for the most part, is not sensitive to the introduction of oxygen. The samples that showed concentrations of sulphide minerals (i.e. pyrite) were at levels that were either very low or below the lowest concentrations that could be measured. • The majority of the air utilized during the extraction process will not interact with the aquifer but will return to surface with the sand slurry and return to the atmosphere. • The neutralizing carbonate or silicate minerals that are also naturally present in the geological layers counteract the effects of any sulphuric acid produced during weathering of sulphide minerals. Laboratory testing of most samples from the Project Area found the neutralization potential of the carbonate, shale and sandstone to be more than sufficient to counteract any acid generation. • As shown in Table 4-3 of the Hydrogeology and Geochemistry Assessment Report (Appendix A to the EAP), concentrations of selenium in the sandstone aquifer (where sand extraction will occur) were found to be either very low or below the lowest concentrations that could be measured, indicating that the potential for leaching of selenium is low. <p>It is unlikely that this dissolved oxygen will facilitate the proliferation of iron bacteria and other microbes. Most of the air utilized during the extraction process will not interact with the aquifer but will return to surface with the sand slurry and return to the atmosphere and the groundwater returned to the aquifer after treatment will contain only a very small volume of dissolved oxygen. Extraction activities will not introduce any biological contaminants into the aquifer.</p> <p>As an additional measure of protection, UV sterilization will be applied to the extracted groundwater prior to it being returned to the aquifer to remove naturally occurring microorganisms that may be present in the groundwater.</p> <p>Please refer to responses #18, #24, #25 and #26 regarding potential for contamination of the aquifer/drinking water/water wells.</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Forwarded letter from Christine Hutlet, CAO, RM of Tache, Oct. 5, 2021, public comments Batch #3	34	General - concern about drawdown effects on private wells and adequacy of mitigation measures prior to aquifer/well recharge.	Please refer to response #32 regarding concerns regarding drawdown effect and mitigation measures.	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Forwarded letter from Christine Hutlet, CAO, RM of Tache, Oct. 5, 2021, public comments Batch #3	35	<i>"The EAP states that there are low to absent concentrations of minerals prone to oxidation (e.g., pyrite and pyrrhotite) but it is unclear if this is in the area for the four-year operation or the 24-year operation ."</i>	Core samples from across the 24-year operational area were analyzed for the Hydrogeology and Geochemistry Assessment (EAP, Appendix A). Results were relatively consistent across the operational area as would be expected in a laterally extensive sedimentary depositional environment that tends to produce laterally continuous and relatively uniform geology and geochemistry. To confirm that materials are consistent with the findings of the Geochemistry Assessment, the Waste Characterization and Management Plan will include protocols that provide for sampling, analysis and evaluation of materials in advance of future drilling. This will ensure that materials are being appropriately characterized and managed.	N/A

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	Forwarded letter from Christine Hutlet, CAO, RM of Tache, Oct. 5, 2021, public comments Batch #3	36	"The EAP states that "injection of oxygenated water may reduce concentrations of iron and manganese in the vicinity of the extraction wells", but what impact will this have on domestic wells with respect to more or less rusty colored water? "	<p>Groundwater sampling conducted by AECOM for this Project indicated that groundwater meets current water quality guidelines for drinking water except for turbidity, iron and manganese. At the observed concentrations, the naturally elevated iron and manganese do not create toxicity, but they do represent aesthetic concerns, which may include the potential for staining (e.g., clothes), unpleasant taste and the presence of odours. These unpleasant aesthetic conditions result from the natural occurrence of iron and manganese and associated microorganisms, not from human activity. See also response #214 which describes other factors that influence aesthetics in groundwater.</p> <p>Although most of the air utilized during the extraction process will not interact with the aquifer (air will return to surface with the sand slurry and return to the atmosphere), a net addition of a small amount of dissolved oxygen may occasionally occur within the aquifer. However, if this does occur the addition of dissolved oxygen would have a positive effect on groundwater aesthetics. Chemical reactions between iron, manganese and oxygen would produce less soluble mineral precipitates, which generally will attach to local substrate or will be filtered out of the water by the sandstone and not result in discoloration of water used by domestic well users. This is the reason that geochemical modelling found that CanWhite operations may result in a reduction of the naturally elevated concentrations of dissolved iron and manganese in the groundwater in the immediate vicinity of the extraction wells. This means that water quality at nearby water wells would be unchanged or possibly marginally improved.</p> <p>In accordance with CanWhite's Groundwater Monitoring and Impact Mitigation Plan, water quality in the sandstone and carbonate aquifers will be monitored before, during and following operations to confirm that water quantity and quality is preserved in both aquifers. The results will be evaluated by a professional hydrogeologist or geochemist with experience evaluating water quality, with results provided to regulatory agencies for review. In summary, the Project will not contaminate the sandstone or carbonate aquifers, and water quality is not anticipated to be materially affected by Project operations.</p>	N/A
	Forwarded letter from Christine Hutlet, CAO, RM of Tache, Oct. 5, 2021, public comments Batch #3	37	"One municipality has experienced lithium in the groundwater supply and how is this addressed by the proponent? "	<p>Naturally occurring lithium is present in the groundwater. CanWhite's operations will maintain and/or, for some parameters, locally improve water quality. The water will be contained and under continuous flow during extraction and treatment, and therefore will not allow for the introduction of any new contaminants such as lithium. Therefore, the extraction process will not alter lithium concentrations in the aquifer.</p> <p>CanWhite will develop and implement a Groundwater Monitoring and Mitigation Plan that includes regular sampling of the groundwater extracted from the wells and water that is returned to the sandstone aquifer. Lithium will be analyzed in all samples and compared to applicable water quality guidelines. The program will be supervised by a qualified professional, and all laboratory testing of samples will be carried out by a certified laboratory. The water sampling program plan will be submitted to the Director before operations commence.</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Letter from Mayor Shelly Hart, RM of East St. Paul, Original letter sent October 6, 2021, forwarded by Suzanne Ward, public comments Batch #3	38	"What is the sphere of influence of the proposed project, and will the proposed CanWhite Sands project impact the RM of East St. Paul in any manner? "	There is no potential impact on the RM of East St. Paul. The maximum zone of influence of any extraction activities is limited to a distance of up to 1.5 km from the active well cluster. All of the well clusters projected for the full 24-year life of the Project lie within the geographic area described in the EAP, Figure 1-2, which is well outside the RM of East St. Paul.	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).

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	Email from Shaun Sturby, received Nov. 1, 2021, public comments Batch #3	39	<i>"This summer's extreme drought saw some citizen's wells dry up. If CanWhite doesn't plan to replace the equal volume of sand being extracted, our water table will drop significantly."</i>	<p>CanWhite is not aware on any wells installed within the limestone or sandstone that have “dried up”. It has been observed that water well pumps are installed at varying depths, and as water levels naturally fluctuate some pumps may become too shallow to access the ground water. In these instances, the pumps would need to be lowered to allow for pumping of water from the aquifer. Refer to response #64 for discussion of well pump installation.</p> <p>The replacement of the sand has already been considered in the assessment. Except for a residual amount of moisture that remains with the sand as it transfers to the slurry line, the entirety of the groundwater (once separated from the sand) will be returned to the aquifer. Overall, the extraction of sand and water will result in an effective pumping rate of approximately 270 US GPM. The effective pumping rate was calculated and applied in the assessment to account for the volume of groundwater required to “replace” the sand removed from the aquifer.</p> <p>The “use” of groundwater is equivalent to approximately 10 to 20 domestic water supply wells or approximately 10% of the amount used by the existing industrial users in the area (see the Hydrogeology and Geochemistry Assessment: Other large industrial users in the study area are licensed to extract a total of 5,241,820 m3/year (2,633 GPM or 166 L/s) of groundwater).</p> <p>Please refer to response #32 which explains why the impact of the Project on groundwater quantity has been assessed to be minor, localized, and temporary, and describes the Groundwater Mitigation and Monitoring Plan.</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Email from Shaun Sturby, received Nov. 1, 2021, public comments Batch #3	40	<i>"Over one hundred thousand people rely on this aquifer for drinking water and all runoff would be contaminated with fertilizer from farmer's fields, acid rain, and other runoff pollutants."</i>	<p>Project extraction wells will be installed by licensed contractors and constructed in a manner that is designed to prevent surface runoff and precipitation from entering the well. Upon conclusion of extraction activities at each well site, the wells will be decommissioned in accordance with provincial guidelines which will prevent surface water infiltration and potential groundwater contamination.</p> <p>As described in the EAP (Section 2.2, Silica Sand Extraction Process) and response #4, the slurry line contains only water and sand and therefore poses no risk of contamination caused by a spill of toxic chemicals.</p> <p>Water returned to the aquifer following the sand extraction process will be of similar or improved quality as the water removed from the aquifer during the extraction process. The extracted water will be contained and under continuous flow during extraction, and therefore will not be exposed to contaminants (including organic materials and chemicals) throughout the extraction and treatment process. As an additional measure, UV sterilization will be applied to the extracted groundwater prior to it being returned to the aquifer to remove naturally-occurring microorganisms that may be present in the groundwater.</p> <p>CanWhite will develop and implement a program for regular sampling of the groundwater extracted from the wells and as it is returned to the Winnipeg Sandstone aquifer following UV treatment. The program will be supervised by a qualified professional, and all laboratory testing of samples will be carried out by a certified laboratory. The water sampling program plan will be submitted to the Director before operations commence.</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	41	General - concern that sampling procedures for groundwater from test wells were not done properly to prevent sample contamination.	Refer to response #5 regarding use of industry standard sampling methods.	N/A

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	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	42	General - concern that the groundwater model simulations presented in the Hydrogeology and Geochemistry Assessment Report (Appendix A) in the EAP were not realistic. <i>"The finite element model and the field tests did not examine the actual intended operating conditions of near 100% re-injection of water." "It is essential to quantify the volume, rate and fate of all sources of oxygen introduced into the aquifer by the extraction process including from air injection." "The scenario of 100% water (plus sand) withdrawal and nearly 100% water reinjection scenario that would actually occur was never modelled nor field measured in the hydrogeological study." "All the field tests and modelling results were done for water withdrawal pump tests that have no relevance to the sand extraction process that the hydrogeological model was purported to support. "</i>	<p>The modelling approach was both conservative and relevant to the proposed sand extraction activities. The groundwater model was developed and calibrated in accordance with industry-standard practices, based on extensive geological and hydrogeological information obtained from well logs, groundwater monitoring and hydrogeological testing across the model domain. This information was collected by the Province of Manitoba, Friesen Drilling Limited, several academic researchers and consultants, including AECOM, over a period of more than 50 years. The conceptual model has been presented in several peer-reviewed journal articles and AECOM's work was reviewed by at least two independent reviewers with expertise in hydrogeology, geochemistry and groundwater modelling (see peer review report in the EAP, Appendix B).</p> <p>To explore the sensitivity of groundwater modelling results, two scenarios (0% and 50% reinjection) were simulated to bracket the range of possible outcomes. The only consumptive use of water is the residual moisture in the sand after water is removed from the slurry. Pumping rates implemented during the 2020 field investigation (372 GPM; 26.56 L/s) were higher than the effective pumping rates that would result from operations (approximately 270 GPM; 17.03 L/s), and field testing therefore conservatively measured aquifer response to pumping at rates that are equivalent or higher than those proposed during operations. Reinjection of the water will reduce the consumptive use of groundwater and therefore reduce impacts on the aquifer and surrounding groundwater users. The modelling utilized the results of field investigations to simulate Project operations, taking into account both extraction and reinjection.</p>	N/A
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	43	Concern regarding the Hydrogeology and Geochemistry Assessment Report (Appendix A) in the EAP: <i>"The results from the well drawdown tests quantifying the drawdown effect on nearby domestic water wells are misleading. Rather than temporarily drying up nearby domestic wells around the sand extraction, wells could back up from the re-injection pressure and return cloudy water high in fine silica particles." "It appears that meaningless drawdown studies were a deliberate tactic to deceive reviewers, the regulator and the public into believing that an extensive comprehensive hydrogeological study was done that would support and verify the feasibility of the extraction project. "</i>	<p>The purpose of the well drawdown tests was to determine aquifer properties and directly measure the drawdown effects of pumping on both the sandstone and carbonate aquifers. The testing followed industry-standard practice and accomplished the objective of the study.</p> <p>Wells will not back up during reinjection because no pressure will be applied. Water will be returned to the aquifer under gravity flow, which will counteract any drawdown that occurs during extraction.</p> <p>Although pressure can build in some groundwater injection wells due to fouling/plugging of well screens with sediment, mineral precipitates, or biofilms over a prolonged period of operations (years to decades), this will not occur in this Project for the following reasons:</p> <ul style="list-style-type: none">• CanWhite's extraction wells will not be outfitted with well screens and there will be no impediment to flow;• The aquifer is very permeable and each well will only be operated for a short period of time;• There will be excess capacity in the aquifer following sand extraction;• Because groundwater moves very slowly, any disturbed natural sediments likely will settle within the aquifer and therefore will not migrate away from the active extraction area.	N/A

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				<p>The Groundwater Monitoring and Impact Mitigation Plan will include a robust monitoring plan to confirm that water quality is not impacted.</p> <p>The Hydrogeology and Geochemistry Assessment Report (EAP, Appendix A) was prepared by qualified professionals in accordance with industry-standard practices. The Hydrogeology and Geochemistry Assessment underwent peer review by two separate independent hydrogeologists (Jeff Bell, B.Sc. (G.E.), P.Eng. Hydrogeological Engineer, Friesen Drillers Ltd. and Dr. Grant, B.Sc., Ph.D., P.Geo., Eng.L. University of Saskatchewan, Professor Civil, Geological and Environmental) with extensive knowledge of the subject matter and the regional aquifer. The peer review comments and responses to those comments are provided in Appendix B of the EAP. The Hydrogeology and Geochemistry Assessment report was finalized (Appendix A of the EAP) in consideration of peer review input and additional information was incorporated to improve the assessment.</p>	
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	44	<i>"Will CWS determine the total withdrawal of water from the aquifer from all sources including water retained in the sand stockpiles piles and in all waste streams including waste from vibrating screens and drill cuttings at the extraction site? Will CWS determine the affect of these withdrawals on the sustainability of the sandstone aquifer?"</i>	<p>Withdrawal of water from the aquifer has been considered in the environmental assessments carried out both for this Project and for the Processing Facility (Environment Act Licence #3367). The Processing Facility will use approximately the amount of water consumed daily by a household of four to six people.</p> <p>The Hydrogeology and Geochemistry Assessment Report (EAP, Appendix A) assessed the impact of the Extraction Project water withdrawals on the aquifers to be minor, localized, and temporary (even during periods of drought). Please refer to response #32 which summarizes the results of the Hydrogeology and Geochemistry Assessment.</p> <p>Thus, the total usage of water by the Processing Facility and this Extraction Project will not adversely impact the sustainability of the aquifers.</p> <p>To be clear, there will be no sand stockpiles associated with the Extraction Project.</p> <p>As described in Section 7.5 of Appendix A to the EAP, a Water Management Plan will be developed and submitted to regulators prior to operations. It will include a refined water and material balance for the extraction, reinjection and treatment of groundwater and sand. This information will be presented in a series of process flow diagrams (PFDs), plan maps, tables and graphs to illustrate all groundwater and sand inputs and outputs over the life of the project. The location of flow monitoring instruments and water quality monitoring locations throughout the system will be shown. The frequency of measurements and sampling will also be specified. It will also describe how various streams of water and solids will be managed to ensure groundwater and surface water resources are protected.</p>	N/A
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	45	<i>"Will CWS model the simultaneous re-injection and water plus sand removal to obtain meaningful groundwater flow results for the CWS extraction process? Will CWS model the migration of contaminants formed in the sandstone aquifer through the degraded shale aquitard and through the carbonate aquifer?"</i>	<p>The effect of sand extraction and reinjection of water was simulated as reported in the Hydrogeology and Geochemistry Assessment Report (Appendix A to the EAP) and the results are meaningful representations of the extraction process. The water required to replace the sand was considered by the model. Except for a residual amount of moisture that remains with the sand as it transfers to the slurry line, the entirety of the groundwater (once separated from the sand) will be returned to the aquifer. Overall, the extraction of sand and water will result in an effective pumping rate of approximately 270 US GPM. The effective pumping rate was calculated and applied in the assessment to account for the volume of groundwater required to “replace” the sand removed from the aquifer in addition to the volume of water that is reinjected.</p> <p>AECOM’s work was reviewed by at least two independent reviewers with expertise in hydrogeology, geochemistry and groundwater modelling (see peer review report in the EAP, Appendix B).</p> <p>To be clear, extraction activities will not result in the formation of any contaminants (refer to responses #24, #25 and #26).</p>	N/A

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	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	46	"Will CWS respect the regulations of the Groundwater and Water Well Act and terminate plans to extract sand in the Vivian area where mixing of aquifer waters cannot be avoided with the CWS extraction methods."	The CanWhite extraction method does not intermix aquifers. It does not draw or return water from any aquifer other than the Winnipeg Sandstone aquifer. CanWhite will respect all applicable statutes, regulations and guidelines. Also see response #167 regarding well sealing and decommissioning.	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	47	"Artesian conditions will certainly be encountered, presenting potential for site flooding, and requiring special sealing techniques. These conditions bring into question the compatibility of this project with the hydrogeological setting of the project area."	Artesian wells are not unusual in Manitoba, and the guidelines and regulations provide for steps to manage and seal artesian wells. There are no areas that are expected to be artesian for the majority of the 24-year mine life. However, if flowing artesian wells are encountered, they will not be allowed to flood the site and will be contained. In many cases, if a well is artesian it is only artesian at a certain time of year (usually spring). In these cases, extraction activities can take place when water levels are seasonally low.	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	48	"The enormous number of wells will unavoidably contribute to interconnections between the aquifers and their intermixing, and increase the risk of contaminant transport from the surface into the aquifers."	Refer to response #30 regarding the prevention of water mixing between aquifers. Also refer to responses #162 and #167 regarding well sealing and decommissioning, and response #40 regarding surface runoff.	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	49	"Some drawdown of domestic wells surrounding the extraction sites may/will occur during and after operation activities. Simulation modelling does not match proposed parameters." "If the water level is at 10 m below the ground surface, and the pump at 30 m, a 1-5 m drawdown will not imperil the well. But if the water level is 25 or 30 m below the surface, yes, the drawdown will create a problem."	As indicated in response #32, the Project is forecast to temporarily lower water levels by 1 to 5 metres, but only within 1.5 km from the active well cluster, and with the amount of drawdown decreasing with distance from the active extraction wells. CanWhite is aware that water well pumps are installed at varying depths, and as water levels naturally fluctuate some pumps may become too shallow to access the ground water. In these instances, the pumps would need to be lowered to allow for pumping of water from the aquifer. Refer to response #64 for discussion of well pump installation. Water levels reported by AECOM at the time of drilling were also recorded by drillers on well records, and groundwater elevations in numerous monitoring wells are monitored by the Province of Manitoba. Records for three monitoring wells nearest the Project are provided on Figures 5-12, 5-13 and 5-14 of the Hydrogeology and Geochemistry Assessment (Appendix A to the EAP). In these wells, recorded groundwater elevations in the carbonate and sandstone aquifers ranged from 256-261 masl between 2007 and 2021. The base of the carbonate aquifer is at an elevation of 200-220 masl across the Project Site, indicating that wells completed in the carbonate aquifer have 36 m to 61 m of total available drawdown if the pump is installed near the bottom of the well. The base of the sandstone aquifer is at an elevation of 180-200 masl over the majority of the Project Site, indicating wells completed in the sandstone aquifer have 56 m to 81 m of total available drawdown if the pump is installed near the bottom of the well. For wells in the sandstone aquifer, drilling and well completion methods may limit pump installation depths to near the base of the carbonate aquifer. The simulated impacts of Project operations suggest impacts to surrounding wells can be avoided or effectively mitigated through implementation of a robust Groundwater Monitoring and Impact Mitigation Plan.	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	50	"Sampling methodology for groundwater chemistry is in some cases invalid."	Refer to response #5 regarding use of industry standard sampling methods.	N/A

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	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	51	<i>"Oxygen will be introduced into the Sandstone aquifer primarily with the reinjected groundwater, assuming there will not be additional leakage from the air lift apparatus, which latter design is not fully disclosed. Oxygen will oxidize soluble iron and manganese to form insoluble precipitate. Such untreated tapwater will appear discolored, when otherwise it would have been clear and "turned" later after exposure to air ."</i>	Please refer to response #36 regarding oxygenation of iron and manganese and resulting precipitates.	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	52	<i>"Oxygen will create favorable conditions for proliferation of iron bacteria and aquatic fungi, should they be introduced into the aquifer with infected tools and equipment, or be already present in nearby infested domestic wells ."</i>	<p>See Response #25 regarding microbiological contamination.</p> <p>The groundwater returned to the aquifer after treatment will contain only a very small volume of dissolved oxygen introduced from the compressed air and/or exposure to air in storage tanks during the extraction process. It is unlikely that this dissolved oxygen will facilitate the proliferation of iron bacteria and other microbes.</p> <p>The Project will not introduce any biological contaminants into the aquifer. The extraction process utilizes a closed-loop system that is designed to convey, store, and treat water in a manner that protects it from becoming contaminated by external sources of water, solids or biological pathogens. Well construction materials, once brought to the site, will be stored and managed so they are kept free of debris to avoid introduction of any microbial contaminants to the aquifer.</p> <p>As an additional measure of protection, UV sterilization will be applied to the extracted groundwater prior to it being returned to the aquifer to remove naturally occurring microorganisms that may be present in the groundwater.</p>	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	53	<i>"The modelling simulations in AppA1 [Appendix A in the EAP] utilize assumptions and parameters that do not reflect the conditions of the planned operations in the EAP, for example re-injection variables do not agree. This brings into question the purpose and utility of the simulations ."</i>	<p>The modelling approach was both conservative and relevant to the proposed sand extraction activities. The groundwater model was developed and calibrated in accordance with industry-standard practices, based on extensive geological and hydrogeological information obtained from well logs, groundwater monitoring and hydrogeological testing across the model domain. This information was collected by the Province of Manitoba, Friesen Drilling Limited, several academic researchers and consultants, including AECOM, over a period of more than 50 years.</p> <p>The conceptual model has been presented in several peer-reviewed journal articles and AECOM's work was reviewed by at least two independent reviewers with expertise in hydrogeology, geochemistry and groundwater modelling (see peer review report in the EAP, Appendix B). The assumptions and parameters applied to the model were judged to be acceptable.</p> <p>Please also see response #58 for further details on the modeling.</p>	N/A

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	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	54	"The EAP and the Hydrogeological Assessment Final Report (AppA) do not agree on several fundamental topics, for example planned reinjection rates of water, or decommissioning protocols for abandoned wells. Simulation models in AppA do not match the planned parameters in the EAP. "	<p>The conclusions in the EAP were based on the results of the hydrogeology and geochemistry assessment. There is no material disagreement between information presented in the EAP and the Hydrogeology and Geochemistry Assessment Report (EAP, Appendix A). The EAP does not list planned reinjection rates. There is no discrepancy between the EAP and the Hydrogeology and Geochemistry Assessment Report with respect to decommissioning protocols. See response #167 which describes well decommissioning.</p> <p>The comment regarding simulation models is not clear. However, please refer to response #42 regarding the groundwater model simulations.</p>	N/A
	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	55	"When iron and manganese are exposed to oxygen in the aquifer discoloured drinking water comes out of our taps. The simulation indicates that a permanent and negative change, that does not meet drinking water standards may occur to Water quality. CanWhite/AECOM and presumably the Water Branch are of the opinion that this is a “positive” an “improvement”. Citizens filed a formal complaint that clearly stated discoloured water, among other things, is unacceptable, not an improvement . " "Can you guarantee there are no negative effects to Water quality? "	Please refer to response #36 regarding potential for discoloured water due to iron and manganese precipitates, and responses #24, #25 and #26 regarding potential for contamination of the aquifer/drinking water/water wells.	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	56	"Water in the area is high in fluoride, arsenic, and uranium. Will a study to determine if injection of aerated water and mining will increase levels beyond safe drinking water recommendations be undertaken? "	<p>Historical groundwater investigations have identified concentrations of fluoride, arsenic, and uranium at levels which exceed standards applicable to drinking water. These elevated concentrations are either naturally occurring or the result of historic human activities. CanWhite's operations are designed to maintain (or in the specific case of iron and manganese potentially slightly improve) water quality. The water will be contained and under continuous flow during extraction and treatment, and therefore will not have been exposed to contaminants, including fluoride, arsenic, and uranium. Geochemical modelling indicates water quality will be similar or better following exposure to oxygen due to precipitation of metals.</p> <p>Therefore, the extraction process will not alter fluoride, arsenic, or uranium concentrations in the aquifer.</p> <p>See also responses to #36 and #57.</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).

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	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	57	<i>"Radon gas is known to be present in the area and result from uranium decay. Tests showed that uranium sample exceeded screening criteria. Will this issue be fully analyzed to ensure that no contamination occurs?" "What will come out of our taps that our senses will not be picking up that can cause disease or poisoning from this project?"</i>	<p>Some naturally occurring elements, including uranium, are present in the groundwater. CanWhite's operations will maintain and/or, for some parameters, locally improve water quality. The water will be contained and under continuous flow during extraction and treatment, and therefore will not have been exposed to contaminants, including uranium. Therefore, the extraction process will not alter uranium concentrations in the aquifer.</p> <p>A robust Groundwater Monitoring and Mitigation Plan will be developed and followed during and following operations to verify water quality in the aquifer, and guide development of any additional mitigation measures that may be required. The parameters included in water quality monitoring program will be those that are applicable to provincial and federal drinking water quality criteria for the protection of human health, aquatic ecology, agricultural use, irrigation use and livestock watering. Please note that although uranium is included in the list of metals that typically are analyzed in water, radon (which is a gas) is not analyzed in water samples.</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	58	Concern regarding the Hydrogeology and Geochemistry Assessment Report (Appendix A) in the EAP: "The Numerical Groundwater Model simulations fail to examine the actual planned near 100% injection of used mine water into the aquifer system with 7 extraction/injection wells producing simultaneously. The Report does not disclose the actual percentage value of the injected water." "No near 100% injection model was simulated. To simulate 50% injection the pumping rate or water withdrawal, was reduced by 50%. The modelling report assumes less withdrawal equals less injection."	<p>To be clear, the seven extraction/injection wells within each well cluster will be cycled in and out of production as they are drilled, operated, and then decommissioned.</p> <p>Further, the sand will be removed from the slurry prior to treatment and reinjection of most of the extracted groundwater. Therefore, it will not be possible to reinject 100% of the volume of materials (sand and groundwater) that are removed during extraction. The sand will account for approximately 50% of the volume of material that is removed, and the maximum reinjection rate will be equivalent to 50% of the slurry extraction rate, which was simulated. The remaining 50% that was not simulated to be reinjected represents the volume of sand that is extracted and therefore removed from the system.</p> <p>A list of scenarios that were simulated by the groundwater model to investigate a range of reinjection rates (0% to 50%) are presented in Table 6-1 (Appendix A to the EAP). The results of the sensitivity analysis are presented in Table 6-2 (Appendix A to the EAP).</p> <p>Groundwater models are intended to be a representation of how groundwater will behave under certain conditions when applied under real-world conditions. An exact replica of site conditions and extraction activities is not required to produce meaningful results.</p>	N/A
	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	59	<i>"What impacts to groundwater flow patterns?"</i>	<p>Regional groundwater flow patterns, described in Section 5.8 of the Hydrogeology and Geochemistry Assessment (Appendix A to the EAP), are generally from southeast to northwest. These regional groundwater flow patterns will not be altered by the Project.</p> <p>Please also refer to response #38 which describes the limited temporary zone of influence of extraction activities.</p>	N/A

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	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	60	<i>"What impacts to rural well users? Will this result in turbidity, clogging and damage to household water systems, pumps, filtration and pressure tanks?"</i>	<p>There is limited to no potential for the Project to cause changes in physical and/or geochemical conditions in the aquifer that would result in contamination of groundwater. Any changes that do occur will be minimal, localized, and/or temporary. Therefore, the Project will not cause turbidity and clogging in household water systems.</p> <p>Further, for additional protection, CanWhite will develop, document, and implement a monitoring and mitigation program (Groundwater Monitoring and Impact Mitigation Plan) designed to avoid, investigate, and resolve any concerns or issues that may arise which may have the potential to impact household water systems. A similar monitoring and mitigation program was implemented during the hydrogeological testing program (Fall of 2020) and it demonstrated that testing activities caused no unacceptable impacts to water supply wells and household water systems located close to the hydrogeological testing wells.</p> <p>The Groundwater Monitoring and Impact Mitigation Plan will include a robust procedure for responding to unforeseen issues in a timely manner. CanWhite has demonstrated its commitment in responding to complaints, as previous concerns expressed by homeowners during exploration and testing activities were acknowledged and rapidly investigated by a qualified hydrogeologist or well drilling company at CanWhite's cost. All investigations prompted by public concerns completed to date have determined that the reported issues were not attributable to CanWhite operations.</p> <p>In the event that a water supply well is unacceptably impacted by CanWhite's operations, sand extraction activities will be stopped until the issue can be investigated and resolved at CanWhite's cost. If a homeowner's access to water is negatively impacted, the impacted homeowners will be provided with potable water available for immediate use at CanWhite's cost. If issues are not attributable to CanWhite, recommendations for corrective actions (e.g. routine well maintenance, etc.) will be provided.</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	61	<i>"How will Project operations effect the nearby saline boundary?"</i>	<p>CanWhite activities will not cause any migration of groundwater between the aquifers because the extraction wells will be appropriately sealed (see details of well sealing and decommissioning in response #160 and #167).</p> <p>Water quality is classified as either "Fresh", "Brackish", or "Saline" depending on the concentration of dissolved solids in the water. West of Anola (and west of the full 24-Year Project Area) the carbonate aquifer is classified as "Fresh", but the sandstone aquifer is classified as "Brackish" or "Saline" depending on the location. In this area west of the full 24-year Project Area, maintaining separation between the two aquifers would be critical to minimizing the upward artesian flow of brackish/saline groundwater from the sandstone to the overlying carbonate aquifer.</p> <p>However, within the Project Area, the sandstone and carbonate aquifers are both classified as "Fresh" and have good water quality. Therefore, even if there were migration of groundwater between aquifers through unsealed boreholes in the Project Area, it would not degrade water quality. See response to #30 regarding concern about water transfer from one aquifer to another.</p>	N/A
	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	62	<i>"...the Winnipeg Formation extends outside provincial and Canadian boundaries, Will transboundary issues be addressed?"</i>	<p>Although the Winnipeg Formation extends outside of Manitoba, there is no potential for a transboundary issue to arise. The maximum zone of influence of any extraction activities is limited to a distance of up to 1.5 km from the active well cluster. All of the well clusters projected for the full 24-year life of the Project lie within the geographic area described in the EAP, Figure 1-2, which is well within southeastern Manitoba.</p>	N/A

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	Email by Reeve Trudy Turchyn, RM of Reynolds, received Nov. 1, 2021, public comments Batch #6	63	Regarding recharge rate of the aquifer: " <i>Will expanding the operation to 24/7, eight months a year for 4 years and then another 21 years of drilling result in the same recovery rate in neighbouring wells? Are the assessments and test drill results a reasonable representation of the fully operational extraction process?</i> "	<p>The aquifers have been well studied and are relatively homogeneous (consistent) across the full extent of the Model Domain, which includes the entire 25-year life of the Project as defined in the EAP. The Hydrogeology and Geochemistry Assessment utilized information collected from a large number of historical studies that cover the spatial extents of the aquifers over a period spanning several decades, together with the test wells conducted by AECOM. This information is considered sufficient for the development of a conceptual geological model and numerical groundwater model.</p> <p>This Environment Act application fully addresses the first 4 to 5 years of extraction. Any change in potential environmental impact that could result from relocating operations in subsequent years will be addressed through the Notice of Alteration process set out in section 14 of Act, and as described in the regulatory framework section of the EAP (Section 1.7). Each future Notice of Alteration for proposed extraction activities beyond 2025 will project a block of proposed annual extraction areas, describe in detail the existing environment in that block and include a thorough environmental assessment using monitoring data collected during extraction operations and the follow-up activities proposed in the EAP (Section 8).</p>	N/A
	Email by Reeve Trudy Turchyn, RM of Reynolds, received Nov. 1, 2021, public comments Batch #6	64	" <i>The reports predicted solution to resolve drawdown is to lower the pump. Is it even possible that any wells were installed with the pump just below the water level to botain minimum water supply rather than near the bottom of the well to obtain maximum water supply?</i> "	<p>Yes. Existing water well pumps have been installed at many different depths as a matter of common practice. In cases where pumps are installed too shallow, they can be lowered. A good example of this is found in the August 3rd, 2021 Steinbach Online article, "Are wells really drying up in southeastern Manitoba?", which concluded that many of the difficulties with local water wells are due to installation of pumps at depths that are not sufficiently below the water table (Reference: https://steinbachonline.com/local/are-wells-really-drying-up-in-southeastern-manitoba).</p> <p>As indicated in the EAP, Section 8.4 'Groundwater Monitoring and Impact Mitigation Plan', lowering pumps in water wells that may experience a temporary water supply issue is one potential mitigation strategy that can be used to maintain water supply, if needed.</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Email by Reeve Trudy Turchyn, RM of Reynolds, received Nov. 1, 2021, public comments Batch #6	65	" <i>The report predicts the aquifer water quality will be similar or slightly better upon introduction of oxygenated water. Is the short length of the testing period a good reflection of the water quality after 4, 10, 15, 20, 25 years of extraction?</i> "	Refer to response #63 regarding adequacy of the Hydrogeology and Geochemistry Assessment and the Notice of Alteration process for activities beyond the first 4 to 5 years of extraction.	N/A
	Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1, 2021, public comments Batch #7	66	Request for: " <i>...an independent review of the groundwater model provided by CanWhite, as well as an independent review of the geochemical groundwater assessment ...</i> "	A draft version of the Hydrogeology and Geochemistry Assessment Report (final version in Appendix A) underwent peer review by two separate independent hydrogeologists (Jeff Bell, B.Sc. (G.E.), P.Eng. Hydrogeological Engineer, Friesen Drillers Ltd. and Dr. Grant, B.Sc., Ph.D., P.Geo., Eng.L. University of Saskatchewan, Professor Civil, Geological and Environmental) with extensive knowledge of the subject matter and the regional aquifer. The peer review comments and responses to those comments are provided in Appendix B of the EAP. The Hydrogeology and Geochemistry Assessment Report was finalized (Appendix A of the EAP) in consideration of peer review input and additional information was incorporated to improve the assessment.	N/A
	Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1, 2021, public comments Batch #7	67	Concern regarding: " <i>...the feasibility of reclamation of the aquifer if it becomes contaminated ...</i> "	<p>CanWhite is committed to protecting the aquifer and will implement a comprehensive Groundwater Monitoring and Impact Mitigation Plan that will be prepared prior to the initiation of Project operations as described in the EAP, Section 8.4.</p> <p>See also response #26 regarding no potential for aquifer contamination.</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).

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	Email written by Deanna Kazina received Nov. 1, 2021, public comments Batch #7	68	Concern regarding the mitigation measure of trucking-in water to local groundwater users if water wells are adversely affected by project activities: "CanWhite Sands assures concerned citizens that the aquifer will not be disrupted in any way by their business. This is confusing in the sense that CanWhite Sands has mitigation plans for homeowner's well water decline – solution, in their own words during their August 24th open house will be to truck in water!"	<p>Please see response #32 which describes in detail the very limited and temporary potential impacts on local groundwater users. As described in response #32, CanWhite will have a stringent mitigation and monitoring program that will monitor aquifer conditions before, during and after extraction activities. The mitigation measures will be described in the Groundwater Monitoring and Impact Mitigation Plan that will be prepared in advance of commencing operations. Groundwater elevations will be monitored in real time so that operations can be stopped if water levels approach intolerable ranges. If any intolerable levels are observed, CanWhite will investigate to determine if the cause is related to CanWhite's extraction activities. Should Project activities impact the availability of water to nearby residents, CanWhite will immediately take actions to ensure access to water and take full responsibility for any costs thereof.</p> <p>CanWhite is required to look at any and all situations that could require mitigation and all practicable mitigation measures that could address such situations, even if they are highly unlikely to occur. The reference to trucking in water is one such example.</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Email written by Deanna Kazina received Nov. 1, 2021, public comments Batch #7	69	Concern regarding the groundwater modeling (Appendix A of the EAP): "...during the open house it was noted that CanWhite Sands' own modeling failed to include modeling under various climate scenarios ."	<p>The groundwater model did contemplate variability in climatic inputs. The modelling included a robust sensitivity analysis that considered the variability in groundwater recharge in response to changes in climatic conditions (precipitation and/or evapotranspiration) and aquifer properties to produce a range of outcomes as is standard practice. See Table 6-2 of Appendix A to the EAP.</p> <p>Please also refer to response #42 on groundwater modeling.</p>	N/A
	Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7	70	"Concerns with the groundwater model simulations in the EAP and how they are inconsistent with reality"	Refer to response #42 on groundwater modeling.	N/A
	Email by Alex, received on Nov. 1, 2021, public comments Batch #7	71	"Manitoba Groundwater and Well Water Act explicitly prohibits the mixing of sandstone aquifer water, with carbonate aquifer water. Why applicant is allowed ?"	<p>CanWhite's extraction method does not mix groundwater aquifers. CanWhite is held to the same standards as is applied across the Province.</p> <p>Please also refer to responses #46 and #30 on aquifer intermixing.</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Email by Janet Nylen, received Oct. 12, 2021, public comments Batch #7	72	Concern regarding the number of production wells that will be drilled over the life of the project and potential effects on the aquifer: "The project actually intends to drill more than 9000 production wells and this number should be expected to be more because it is anticipated that there will be many other wells drilled that will not or cannot be used for sand production purposes. The potential impact of the overall number of wells penetrating the Winnipeg Formation Sandstone Aquifer is of critical importance for the protection of the quality of our water supply and the future health of south eastern Manitobans. " "The size and depth and number of wells being proposed significantly increase the risk of contamination to our irreplaceable aquifers ."	<p>This Environment Act application fully addresses the first 4 to 5 years of extraction, which contemplate approximately 392 extraction wells per year. In addition, Project operations will require the use of monitoring wells, many of which can also be repurposed for use as domestic wells. CanWhite facilitates this dual purpose whenever possible. All wells will be appropriately managed as described in responses to #160, #167 and #258.</p> <p>Please also see responses #73 and #19 to #34.</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).

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	Email by Margaret Marion-Akins and E.Allan Akins, received Nov. 1, 2021, public comments Batch #7	73	Concern regarding the number of production wells that will be drilled over the life of the project and potential effects on the aquifer: <i>"The drilling of over 9,000 wells through the Red River Carbonate Aquifer, the shale aquitard into the Winnipeg Sandstone Aquifer represents significant and un-reparable risk to the quality water source Springfield relies on for most of its potable water by creating or causing interconnections between the aquifers ."</i>	<p>This Environment Act application fully addresses the first 4 to 5 years of extraction, which contemplate approximately 392 extraction wells per year. All wells will be appropriately managed as described in responses to #160, #167 and #258. As described in responses #19 to #34, the Project will not cause interconnections between the aquifers (response #30) and will not adversely affect the water source on which Springfield relies.</p> <p>A Groundwater Monitoring and Impact Mitigation Plan will be prepared prior to the initiation of Project operations as described in the EAP, Section 8.4. The Plan will address both water quantity and quality. Refer to the response for #234 regarding the submission of this Plan and other follow-up plans outlined in the EAP. See also response #19 and Responses to TAC (Table 1, response #35) regarding monitoring of both groundwater quantity and quality. Responses to TAC (Table 1, response #35) includes information about real-time monitoring of water levels.</p> <p>Future years of extraction activities will be addressed through the Notice of Alteration process set out in section 14 of The Environment Act as indicated in the regulatory framework section of the EAP (Section 1.7). Each future Notice of Alteration for proposed extraction activities beyond 2025 will: project a block of proposed annual extraction areas; describe in detail the existing environment in that block; and will include a thorough environmental assessment using monitoring data collected during extraction operations and the follow-up activities proposed in the EAP (Section 8).</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Email by Erica Wood, originally written by Tiffany Fell, sent to Minister Guillemard, forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #8	74	<i>"Following a review of the most recent CanWhite Sands Environment Act Proposal, Council has determined that the application is deficient in addressing concerns in regards to protection of the Carbonate and Winnipeg Sandstone Formation Aquifer Systems ."</i>	Please see Section 6.2.3 (Groundwater) and Section 8.4 (Groundwater Monitoring and Impact Mitigation Plan) of the EAP. Please also refer to responses #19 to #34 regarding groundwater.	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
ATMOSPHERIC ENVIRONMENT					
Air Quality	Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2	75	<i>"CWS will not be capable of keeping mountains of silica dry under the prairie sun, and in the face of the non-stop prairie wind. It will not happen. "Therefore, the risk of silica sand dust dispersal is [most definitely NOT] eliminated. " "The facts are that this mega-operation will use internal combustion engines 24 hours per day, 7 days per week all year long with the possible exceptions of Christmas and New Year's, but maybe not. Don't tell me that damage to air quality will be "minor to negligible ."</i>	<p>At no time will dry silica sand be stored or exposed to sun or wind at the Extraction Project Site. Please see the description in the EAP, Section 1.1 'Project Overview'.</p> <p>Sun and wind drying of the extracted sand will be prevented by maintaining the sand in wet form (slurry) from extraction through to processing. After screening of the slurry for waste 'overs' (material that is too large), the slurry will be immediately contained within a slurry line that conveys the enclosed sand slurry to the facility for processing which removes the risk of silica dust dispersion. At no time will dry silica sand be left exposed at the Project Site and therefore there will be no potential for the generation of airborne respirable crystalline silica.</p> <p>Regarding emissions from Project equipment and vehicles, the vehicles and equipment used for Project activities (listed in Table 2-1 of the EAP) would not all be operating simultaneously and will move around the Project Site as extraction wells are drilled and progressively decommissioned. The GHG calculations for the EAP (Section 6.3.2) were based on guidance in Canada's Greenhouse Gas Quantification Requirements (Environment and Climate Change Canada, 2019). The annual calculations reflect the full numbers of diesel equipment types, expected engine Tier (i.e. age of equipment), hours of operation (detailed in the EAP, Table 6-3) and fuel consumption during extraction operations. The calculation also includes all electrical power consumed for extraction activities.</p>	EAP, Section 6.3.1, Air Quality

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				Mitigation measures (EAP, Section 6.3.1, Air Quality) to minimize the potential for Project effects on air quality include: - minimizing idling of motorized equipment; - applying water to gravel roads to control dust as required; and - properly maintaining vehicles and equipment. With the application of these mitigation measures, effects on air quality are expected to be sufficiently mitigated. During the summer months, stockpiles at the Processing Facility will be maintained in a sufficiently moist condition to prevent dust dispersion to the surrounding environment. During the winter months, the wet sand stockpiles will freeze a few inches on the outer layer, which will contain the sand further should there be any remaining dust particles in the stockpiles. Environment Act Licence #3367 (s. 25a) for the Processing Facility specifies: "...maintain the moisture content of the sand stockpiles to prevent sand migration on and off the Development site..."	
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	76	"Air quality will be a nuisance on days when the site is upwind. Diesel exhaust from all of the heavy equipment and generators can exacerbate respiratory conditions and create stress."	Refer to the above response to #75 regarding air quality.	Refer to mitigation measures proposed for response to #75 regarding air quality.
	Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1, 2021, public comments Batch #7; Email by Janet Nylen, received Oct. 12, 2021, public comments Batch #7	77	General - concern regarding the project effects on air quality.	Refer to the above response to #75 regarding air quality.	Refer to mitigation measures proposed for response to #75 regarding air quality.
	Email by Meradith Anderson, received Nov. 1, 2021, public comments Batch #7	78	"I'm worried about the dust from the silica causing sickness or cancer which it's known to cause, affecting my family."	Refer to the above response to #75 regarding air quality.	Refer to mitigation measures proposed for response to #75 regarding air quality.
Greenhouse Gas (GHG)	Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2	79	"AECOM's report on greenhouse gasses is sparse and unintelligible. Clearly, it was drafted to minimize any perception that greenhouse gas production will be more than negligible."	The GHG calculations for the EAP (Section 6.3.2) were based on guidance in Canada's Greenhouse Gas Quantification Requirements (Environment and Climate Change Canada, 2019). The annual calculations reflect the full numbers of diesel equipment types, expected engine Tier (i.e. age of equipment), hours of operation (detailed in the EAP, Table 6-3) and fuel consumption during extraction operations. The calculation also includes all electrical power consumed for extraction activities.	EAP, Section 6.3.2, Climate/Greenhouse Gases

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	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	80	"The GHG emissions from the plant and extraction project might not extend beyond the 2050 target for zero net emissions according to the project's 24 year stated lifetime ." "For diesel powered pump stations by the end the 24 year project period the GHG for both CWS projects would be about the same as the Summit Road landfill at number 6 amongst the large final emitters for Manitoba ."	<p>The annual GHG emissions for the extraction Project are estimated to be 0.0296% of annual Manitoba emissions based on 2019 estimates for Manitoba (EAP, Section 6.3.2). As described in the EAP (Section 2.2.4), the pump stations will be electric with power drawn from the grid and therefore will not generate any GHGs. All GHG emissions associated with other mobile equipment are already included in the total estimated annual GHG emissions for the Project.</p> <p>As indicated in the EAP for the Facility project, the Processing Facility is estimated to generate approximately 0.00016% of the annual Manitoba emissions based on 2018 estimates for Manitoba.</p> <p>By comparison, the annual GHG emissions for the Summit Road landfill comprised 0.4% of Manitoba emissions as calculated for 2018 (Climate Change Connection: https://climatechangeconnection.org/emissions/manitoba-ghg-emissions/manitoba-large-final-emitters-lfe/).</p>	EAP, Section 6.3.2, Climate/Greenhouse Gases
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	81	"The estimates of greenhouse gas emission (EAP2, section 6.3.2) omit contributions ensuing from removal of trees and vegetation, and burning debris ."	<p>Most areas that have been selected for Project activities are on previously disturbed sites such as gravel quarries or open fields. CanWhite will reduce clearing to the greatest extent possible.</p> <p>To estimate the GHG contribution related to vegetation clearing for a 'worst case scenario', the following assumptions were made:</p> <ul style="list-style-type: none">• Approximately 13 ha of natural vegetation (forest) requiring clearing for extraction in year 2025 which is the annual extraction area with the most naturally vegetated landcover that would need clearing (noting that the current Environment Act Licence application is for activities up to and including 2025);• The forest is as dense as the forest in Fort McMurry, AB which the Canadian Forest Service has estimated emitted 170,000 kg CO2e/ha during major forest fires in that area (Werner Kurz, CFS, quoted in the Edmonton Journal article “Carbon release in wake of Fort McMurray wildfire spikes greenhouse gasses“, May 11, 2016);• Approximately 20% the vegetation is burned and approximately 80% is mulched and/or salvaged; and• Two 220 hp pieces of clearing equipment operate 24/7 for full two weeks. <p>With these assumptions, the total emissions from vegetation clearing activities is approximately 494,000 kg CO2e/year; or 7.3% of the total 6,797,411 kg CO2e/year provided in Table 6-3 in the EAP, of which 442,000 kg CO2e/year is due to burning vegetation and 52,000 kg CO2e/year is due to vehicle emissions. Therefore, even with a 'worst case scenario' for vegetation clearing required, this Project would still contribute less than 0.032% annually of the reported Manitoba emissions in 2019 (see the EAP, Section 6.3.2, Climate/Greenhouse Gases). CanWhite will minimize burning of cleared vegetation debris to the extent feasible. Remaining timber/brush will be chipped or mulched and as with the facility site clearing, be removed for alternate uses such as biofuel for nearby communities.</p>	EAP, Section 6.3.2, Climate/Greenhouse Gases Additional Proposed Mitigation: Burning of cleared vegetation debris will be minimized to the extent feasible.

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Noise and Vibration	Email from Anne Wowchuk, received Nov. 1, 2021, Public comments Batch #2; Email by Sonya May, received Nov. 1, 2021, public comments Batch #6	82	General - concern regarding the noise from project operations not abiding by the municipal Noise by-law	<p>Based on the findings of the Noise Impact Assessment completed by AECOM for the CanWhite Vivian Sand Facility Project, an initial setback distance of 100 m of Project activities from the nearest residences has been selected as an initial measure to mitigate nuisance noise that maybe generated by Project activities at local residences. A review of the isopleths from the Noise Impact Assessment indicates that noise levels typically do not exceed an average of 60 dBA (the Manitoba Guidelines Maximum Desirable Sound Level for year-round operations) at a distance of 100 m from the loudest noise generating activities at the Processing Facility during daytime hours. We consider the highest sound level generated at the Processing Facility to be comparable to the noise that will be generated during extraction activities.</p> <p>Prior to commencement of drilling activities, CanWhite will test the noise-generating equipment used during the extraction process and collect sound measurements at multiple points at 100 m distance from the extraction site (or at the nearest residence) to confirm that sound levels meet the 60 dBA limit at these monitoring points. Ambient sound levels (background noise) will also be collected at each location. Noise generated from extraction equipment shall not exceed 60 dBA at these monitoring locations, unless the ambient noise level exceeds the 60 dBA limit.</p> <p>Mitigation will be applied in cases where noise exceeds the Manitoba Guidelines Maximum Desirable Sound Level for year-round operations. Mitigation measures may include engineered controls such as soundproofing material or insulation around noise-generating equipment, portable noise barriers, and equipment maintenance. Operation controls can also be applied, including limited operating hours, minimizing acceleration and deceleration of motors, and limiting activities that create noise (e.g. hammering pipe; limiting the use of vehicle back-up alarms).</p> <p>CanWhite will develop a Noise Mitigation Plan for the Project that will include a strategy for addressing community concerns in discussion with the Environmental Compliance and Enforcement (ECE) Branch to confirm the recommended scope for the plan. The draft plan will be submitted to ECE for review and will be finalized prior to the initiation of Project operations. Noise complaints will be investigated and addressed as quickly as possible. Please also refer to Table 1, Responses to Technical Advisory Committee (TAC) response # 13 regarding noise (available in the Manitoba Conservation and Climate Public Registry file #6119.00).</p>	EAP, Section 6.3.3, Noise Additional Proposed Mitigation: CanWhite will have a Noise Mitigation Plan in place prior to initiating Project operations.
	Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2; Email by Sonya May, received Nov. 1, 2021, public comments Batch #6	83	General - concern that proposed noise mitigation measures will not be sufficient	Refer to response for #82 regarding noise.	Refer to mitigation measures proposed for response to #82 regarding noise.

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Report comments submitted by Jack Kowalchuk, received Nov. 1 2021, public comments Batch #3; Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5; Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1, 2021, public comments Batch #7; Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7; Email by Janet Nysten, received Oct. 12, 2021, public comments Batch #7	84	General - concern regarding noise impacts on wildlife, farm animals and residents/human health	<p>Section 6.5.2 (Wildlife) of the EAP has assessed the potential for Project impacts on regional wildlife populations related to noise. Noise generated during Project activities is expected to influence wildlife behaviour (e.g. area avoidance) to varying degrees within the Project Site and Local Project Area depending on the type of wildlife (U.S. National Parks Service, 2018). However, Project generated noise is not expected to be of a magnitude that would measurably affect wildlife populations in the Regional Project Area.</p> <p>An example study cited by the U.S. National Parks Service (2018) is an article by Shannon et al. (2015) indicating that terrestrial wildlife responses begin at noise levels of approximately 40 dBA. Human-generated noise sources regularly occurring adjacent to the Project Site, such as existing noise from traffic, are currently influencing wildlife behaviour. Traffic noise can be as high as 69 dBA up to 60 m from highways (Rochat 2016). Project activities in any one location will be temporary as each well cluster is decommissioned and drilling activities move on to another well cluster site. Additionally, noise levels will be attenuated (decreased) by landscape characteristics such as forested areas with increasing distance from Project activities (e.g. Yip et al. 2017; Albert 2004).</p> <p>Please refer to the response to #82 for the mitigation measures proposed to manage noise generated by the Project. Please also refer to Table 1, Responses to TAC: response # 13 regarding noise; and #18 regarding project effects on wildlife.</p>	Refer to mitigation measures proposed for response to #82 regarding noise.
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4; Email by Sonya May, received Nov. 1, 2021, public comments Batch #6	85	General - concern that noise levels from project operations were not adequately quantified, including noise levels after application of proposed noise mitigation measures	Refer to response for #82 regarding noise.	Refer to mitigation measures proposed for response to #82 regarding noise.
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	86	"...will they [diesel generators] have exhaust silencers?"	Refer to response for #82 regarding noise.	Refer to mitigation measures proposed for response to #82 regarding noise.
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	87	"Additional noise mitigation measures will be applied (e.g. portable noise barriers) as required" (EAP1, p. viii). What sort of "portable noise barriers"? Who will determine when it is required? Does the resident have to complain? To whom? How long will it take to get a response? Will it be taken seriously? Does a provincial mining inspector have to be involved?"	Refer to response for #82 regarding noise.	Refer to mitigation measures proposed for response to #82 regarding noise.
	Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	88	"We do not know what 7 operating simultaneously will sound like because the EAP is entirely lacking a measured decibel noise study on all equipment and operations."	Refer to response for #82 regarding noise.	Refer to mitigation measures proposed for response to #82 regarding noise.
	Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	89	Regarding noise: "Since a continual pressure needs to be maintained at the well heads and slurry lines, how will CanWhite shut down operations to abide by local bylaws?"	Refer to response for #82 regarding noise.	Refer to mitigation measures proposed for response to #82 regarding noise.

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Email by Meradith Anderson, received Nov. 1, 2021, public comments Batch #7	90	" <i>The plant is to run 24/7/365... we moved here for the silence of country life not EVERYDAY! Their rail yard and the “bumping” of cars is another noise problem .</i> "	Refer to response for #82 regarding noise. The design of the rail loop (part of the Facility Project) is such that the coupling and decoupling of railway cars will be very minimal. A train entering the loop will be filled with sand without the railway cars being broken apart when loading which drastically reduces noises associated with "bumping" of railway cars. CanWhite will comply with licensing requirements for the Facility Project, some of which relate to noise, as stipulated in the Environment Act Licence #3367 for that project.	Refer to mitigation measures proposed for response to #82 regarding noise.
Light Pollution	Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2; Report comments submitted by Jack Kowalchuk, received Nov. 1 2021, public comments Batch #3; Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4; Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5; Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1 , 2021, public comments Batch #7; Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7; Email by Janet Nylen, received Oct. 12, 2021, public comments Batch #7	91	General - concern regarding level of light pollution during operations (effects on human health and wildlife) and questions regarding how light pollution will be mitigated.	Fully shielded directional lighting fixtures will be used to focus light specifically to work areas to minimize the dispersal of light to the surrounding Project Site (EAP, Section 6.5.2, Wildlife). This measure is expected to mitigate effects of Project lighting on wildlife and human health. Existing forest cover (45% of the Project Site) is also expected to block or minimize the dispersion of light from Project activities to nearby residences and limit the dispersion of light within the Project Site and adjacent areas.	EAP, Section 6.5.2, Wildlife
	Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	92	" <i>Will a significant study on light pollution impacts to wildlife and humans be provided?</i> "	Refer to response for #91 regarding light pollution. The mitigation measure and Project Site characteristics described in the response for #91 are considered to be sufficient to mitigate adverse effects on wildlife and humans.	Refer to mitigation measures proposed for response to #91 regarding light pollution.
AQUATIC ENVIRONMENT					

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
Surface Water and Drainage	Erika MacPherson, Receive Nov. 1 2021, public comments Batch #2; Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5; Email by Druanne Naayen, received Nov. 1, 2021, Public comments Batch #6; Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1 , 2021, public comments Batch #7; Email by Meradith Anderson, received Nov. 1, 2021, public comments Batch #7; Email by Jennifer Vandenbosch, Forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #8	93	General - concern about the effect of the project on waterways / waterbodies.	<p>Project operations will not involve the use of, or discharge to, any surface waterbody of any kind. Therefore, there will be no overland flooding due to effluent discharge or potential for discharge to waterways / waterbodies.</p> <p>As indicated in the EAP, Section 4.3.1 (Surface Water and Drainage), there are no natural lakes, rivers, or streams within the Project Site and therefore no potential for fish habitat.</p> <p>Section 6.9.2 of the EAP (Spills and Leaks) describes the standard procedures that will be implemented to prevent spills and leaks from occurring during Project activities. The slurry line connecting the extraction sites with the Processing Facility will only contain a sand/water slurry and a residual amount of a non-toxic biodegradable flocculant (from recycled water as described in the Facility project EAP). The quality of the water within the slurry line will be of similar quality to the groundwater removed from the aquifer during extraction, as no toxic chemicals or other harmful contaminants are introduced into the slurry line during the extraction process. Therefore, there is no risk of toxic chemical or heavy metal contamination associated with the accidental release of water to a surface water body from the slurry line.</p> <p>The slurry line will be inspected on a daily basis, and after extreme weather events, to check for leaks and/or breaks in the line. Additionally, an automated pressure transducer for leak detection will be installed along the slurry line. If any leaks or breaks in the line that require repair are detected, flow to the line will be shut down, and appropriate spill containment and clean-up measures will be applied, and the line will be repaired or replaced. Segmentation of the line will allow for each section to be isolated so repairs can be done easily and quickly.</p> <p>As indicated in Section 8.5, an Erosion and Sediment Control Plan will also be implemented for the Project to mitigate sediment introduction to low-lying areas such as ditches. Additional mitigation measures to avoid or minimize potential effects on surface water quality, such as establishing drainage ditches and required to direct runoff from rain and snow are described in the EAP, Section 6.4.1 (Surface Water).</p> <p>An Environmental Emergency Response Plan (EERP) will outline the general procedures to be followed for environmental emergency situations and incidents (e.g. leak or spill) that could occur as a result of Project activities, equipment failure, human error, or natural causes. A copy of the ERPP will be maintained on-site during all phases of the Project.</p>	EAP, Section 6.4.1, Surface Water; EAP, Section 6.9.2, Spills and Leaks; EAP, Section 8.5, Erosion and Sediment Control Plan; EAP, Section 8.6, Environmental Emergency Response Plan
	Email from Anne Wowchuk, received Nov. 1, 2021, Public comments Batch #2; Email from Mark Wowchuk, received Nov. 1, 2021, public comments Batch #2; Email by Janet Nylen, received Oct. 12, 2021, public comments Batch #7	94	General - concern about the effect of the project on land drainage and potential for overland flooding, including potential for contaminants in runoff water.	Refer to the response above for #93 regarding surface water and drainage.	Refer to mitigation measures proposed for response to #93 regarding surface water and drainage.
	Email from Janice Brolly, received Nov. 1, 2021, Public comments Batch #2; Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1 , 2021, public comments Batch #7	95	General - concern about toxic runoff.	Refer to the response above for #93 regarding surface water and drainage.	Refer to mitigation measures proposed for response to #93 regarding surface water and drainage.
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	96	"Drawdown may also affect dugouts and ponds, if these are unlined and depend on the water table ."	Refer to the response above for #32 regarding potential effects on groundwater/aquifer, including during drought conditions.	N/A

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1 , 2021, public comments Batch #7	97	Concern about "... <i>accidental or intentional discharge of contaminants ..</i> " and effects on waterbodies such as the Brokenhead River.	Refer to the response above for #93 regarding surface water and drainage.	Refer to mitigation measures proposed for response to #93 regarding surface water and drainage.
	Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7	98	" <i>Selenium is toxic to aquatic organisms above two parts per billion, and the discharge would eventually flow into the Red River .</i> " " <i>A spill from the CWS slurry lines that would carry selenium, fluoride, arsenic, other toxic heavy metals, and harmful microbes could drain into fish-bearing water bodies such as the Brokenhead River and Cook’s Creek .</i> "	Refer to the response above for #93 regarding surface water and drainage.	Refer to mitigation measures proposed for response to #93 regarding surface water and drainage.
Fish and Fish Habitat	Report comments submitted by Jack Kowalchuk, received Nov. 1 2021, public comments Batch #3	99	Concern about the Brokenhead River: " <i>All of the surface and in between water will eventually enter into the Brokenhead River .</i> " " <i>This river should not become a dumping ground for industrial development and industrial waste in the RM of Springfield .</i> "	The Brokenhead River will not be affected by this Project. Refer to the responses above for #93 regarding surface water and drainage and the potential for extraction activities to affect regional surface waterbodies, and #32 regarding groundwater.	Refer to mitigation measures proposed for response to #93 regarding surface water and drainage.
	Email from Wayne Wasylenko, received Nov. 1 2021, public comments Batch #3	100	Concern about the Brokenhead River: " <i>I invite you, to come & visually look at the Brokenhead River, which will be environmentally destroyed by White Sands. The water levels in all our rivers are so low, all aqua & human life will be detrimentally affected .</i> "	The Brokenhead River will not be affected by this Project. Refer to the responses above for #93 regarding surface water and drainage and the potential for extraction activities to affect regional surface waterbodies, and #32 regarding groundwater.	Refer to mitigation measures proposed for response to #93 regarding surface water and drainage.
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	101	Concern about the Red River and other regional fish-bearing waterways: " <i>Groundwater moves relatively quickly in the carbonate aquifer eventually discharging into the Red River, a major fish-bearing water body. The contaminants including selenium introduced and formed in the aquifer by the re-injected aerated water would eventually discharge into the Red River .</i> " " <i>There may be hydrogeological connections between the aquifers and Cook’s Creek and the Brokenhead River causing discharge of contaminants into these fish-bearing waters. The large and ever growing area of subsidence and sinkholes would disrupt the local surface runoff patterns and may create permanent swamps that could drain into the Brokenhead River and Cook’s Creek carrying contaminants .</i> "	The Red River, Cook's Creek and Brokenhead River will not be affected by this Project. Refer to the responses above for #93 regarding surface water and drainage and the potential for extraction activities to affect regional surface waterbodies, and #32 regarding groundwater. Refer also to response #1 regarding ground subsidence, and responses #24, #25 and #26 regarding potential for contamination of the aquifers.	Refer to mitigation measures proposed for response to #93 regarding surface water and drainage.

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7; Email by Jennifer Vandenbosch, Forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #8	102	Concern regarding the adequacy of the EAP conclusions regarding project effects on aquatic life/fish-bearing waters.	Refer to the response above for #93 regarding surface water and drainage.	Refer to mitigation measures proposed for response to #93 regarding surface water and drainage.
TERRESTRIAL ENVIRONMENT					
Vegetation	Email from Robyn Ingram, received Nov. 1 2021, Public comments Batch #2; Email from Maureen Y., received Nov 1. 2021, public comments Batch #2; Email by Heatker Erickson, received Nov. 1, 2021, public comments Batch #7; Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7	103	General - concern about effects of the project on vegetation.	<p>Section 6.5.1 (Vegetation) concluded that there would be minor (Project Site) to negligible (Local Project Area) effects of the Project on vegetation. Most sites that have been selected for Project activities are on previously disturbed sites such as gravel quarries or open fields. Many of the selected sites up to and including year 2025 will be subject to minor clearing (see EAP, Section 6.5.1, Vegetation). Project activities and temporary components will be located on previously disturbed land to the extent feasible within a Project Site that consists of approximately 56% natural vegetation cover.</p> <p>Dust from the use of local gravel roads and temporary access trails to access extraction wells and other project components will be controlled using water when needed to minimize dust accumulation on vegetation (see Section 6.3.1, Air Quality, in the EAP). The Project Site does not have rare or unique vegetation communities. The cover types at the Project Site are common in the Regional Project Area. Revegetation of each annual extraction site will begin immediately upon completion of extraction activities.</p> <p>A Revegetation Monitoring Program (EAP, Section 8.7) will be developed during the Project construction phase prior to clearing of naturally vegetated areas. The Revegetation Monitoring Program will be implemented annually after the first year of Project operations to determine the success of the revegetation program and determine if follow-up reseeding or replanting is required. Details that will be incorporated into the Program include:</p> <ul style="list-style-type: none">-What will be monitored (plant abundance, height, or other measures of success) and at what frequency (e.g. monthly, annually);-Monitor qualifications, roles, and responsibilities;-Revegetation schedule, including a review of potential conflicts (e.g. migratory bird nesting season conflicts);-Reseeding and replanting methods (appropriate seed mixes, plant species, plant source and quality control, seeding and planting methods, including rates and spacing);-Erosion-control methods employed;-Use of existing infrastructure such as roads, trails or natural features;-Measures for the control of weeds and invasive species;-List of corrective actions in the event of poor vegetative success; and-Recordkeeping and reporting requirements. <p>Revegetation of each annual extraction site will begin immediately upon completion of extraction activities and it is expected that most natural vegetation will be very well established after approximately 4 years, with re-establishment of trees and shrubs expecting to be evident within 5 to 10 years following closure.</p>	EAP, Section 6.5.1, Vegetation; EAP, Section 6.3.1, Air Quality; EAP, Section 8.7, Revegetation Monitoring Program
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	104	"Will herbicides be used on private land or municipal/provincial/railway/hydro rights-of-way?"	CanWhite will not be using herbicides.	N/A

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	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	105	Concern regarding the additional vegetation clearing that will be required to accommodate rights-of-way for Manitoba Hydro poles and lines to power extraction project equipment.	As indicated in Section 2.7 (Power Use) in the EAP, the dewatering and pump station will be powered via direct mainline from Manitoba Hydro to reduce diesel consumption. Any additional vegetation clearing that may be required by Manitoba Hydro to accommodate power to the dewatering and pump station is expected to be minimal and completed in accordance with Manitoba Hydro's Environmental Management System and Policy (https://www.hydro.mb.ca/environment/env_management/). Additionally, CanWhite will make every effort to install lines within the Project Site in previously disturbed areas or along existing access points to reduce the amount of clearing needed.	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	106	Inquiry regarding if reports are available for vegetation/environment related surveys/reconnaissance done at the Project Site.	The introduction of Section 4 (Existing Environment) of the EAP lists the environmental surveys that were completed and overlapped with the Project Local and Regional areas from 2018 to 2020. Data and representative landcover photographs from environmental surveys are available, and the information was considered in the assessment of Project effects (Section 6 of the EAP). The mitigation measures proposed in the EAP (Section 6) to avoid or minimize Project effects on vegetation, wildlife and the environment considered the results of these environmental surveys, other scientific and academic resources, and professional judgement.	N/A
	Email by Sonya May, received Nov. 1, 2021, public comments Batch #6	107	Concern regarding tree clearing prior to issuance of an Environment Act Licence: <i>"...the clearing of 37 acres of trees which were under a no clearing ban from April 24-August 15th due to migratory and at-risk species being present . " "Then to see the firewood they were promised to collect for up to a year disappear in a matter of weeks was further betrayal. "</i>	CanWhite notified Manitoba Conservation and Climate prior to Facility Project Site clearing. To avoid adverse effects to migratory breeding birds, clearing of naturally vegetated land (e.g. forested areas) on the Facility Project Site was completed April 9 to 14, prior to the 2021 breeding bird season. Cleared lumber/firewood was piled in a designated area at the Facility Project Site. People who asked for access to harvested lumber/firewood that was piled were granted permission. When CanWhite's access gates to the Facility Project Site were vandalized and removed by unknown persons, CanWhite had to allow the clearing contractor to remove the lumber in a expedited fashion.	N/A
	Email by Darryl Speer, received Nov. 1, 2021, public comments Batch #7	108	<i>"Major environmental disruptions will be created in clearing for staging for equipment for drilling, extracting, pumping, and power access . " "Contrary to CWS assurances- "surface immediately returns to natural state within weeks of harvest completion"- not the case with the marginal soils in this locale . "</i>	As indicated in response #103 regarding vegetation, most sites that have been selected for Project activities are on previously disturbed sites such as gravel quarries or open fields. Many of the selected sites up to and including year 2025 will not need to be cleared. Project activities and temporary components will be located on previously disturbed land to the extent feasible within a Project Site that consists of approximately 56% natural vegetation cover. The EAP, Section 6.5.1 (Vegetation) indicates that most natural vegetation is expected to be very well established after approximately four years, with re-establishment of trees and shrubs expecting to be evident within five to 10 years following closure. A Revegetation Monitoring Program (EAP, Section 8.7) will be implemented annually after the first year of Project operations to determine the success of the revegetation program and determine if follow-up reseeding or replanting is required. The monitoring program will include monitoring during the growing season until the seedlings appear to be established. Also see the response to #103 regarding revegetation.	Refer to mitigation measures proposed for response to #103 regarding vegetation.

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
Wildlife	Email from Robyn Ingram, received Nov. 1 2021, Public comments Batch #2; Email from Maureen Y., received Nov 1. 2021, public comments Batch #2; Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4; Email by Heatker Erickson, received Nov. 1, 2021, public comments Batch #7; Email by Meradith Anderson, received Nov. 1, 2021, public comments Batch #7	109	General - concern about effect of the project on wildlife.	<p>Section 6.5.2 of the EAP concluded that there would be negligible effects of the Project on regional wildlife populations. Factors included in the assessment of potential Project effects on wildlife included expected presence of specific wildlife in the region, existing local and regional landcover, natural annual variation of wildlife populations, influences on wildlife from local and regional factors (such as predator-prey cycles; human activities such as hunting), the availability of nearby alternative habitat for wildlife and mitigation measures that will be applied to minimize effects on naturally vegetated areas (see response #103 regarding vegetation). The assessment also takes into account the temporary nature of the Project. Occupation of any site for extraction activities will last no longer than a year, and there will be no permanent infrastructure or occupation of any one site.</p> <p>As described in the EAP, particularly in Section 6.5.1 (Vegetation) and 6.5.2 (Wildlife), CanWhite's plan for the development includes provisions for the protection of potential habitat of species of local importance (e.g. white-tailed deer) and conservation concern (e.g. golden-winged warbler). These provisions include:</p> <ul style="list-style-type: none">- Vegetation clearing will be conducted outside of the bird breeding season;- Clearing will be minimized to the extent feasible;- A revegetation program including monitoring will be implemented (see response to #103). <p>Project components will be located on previously disturbed land to the extent feasible within a Project Site that consists of approximately 56% natural vegetation cover. Therefore, the amount of naturally vegetated area requiring clearing each year is expected to be minor, and is not expected to result in a measurable impact on wildlife populations in the Regional Project Area.</p> <p>Once the extraction activities have been completed, wildlife habitat at each site will be restored within a reasonably predictable period of time. Revegetation of each annual extraction site will begin immediately upon completion of extraction activities and it is expected that most natural vegetation will be very well established after approximately 4 years, with re-establishment of trees and shrubs expecting to be evident within 5 to 10 years following closure.</p> <p>Regarding the potential effects of noise, light pollution and air quality on wildlife, refer to responses to #84, #91 and #75).</p> <p>In summary, impacts on wildlife populations in the Regional Project Area are not expected to be measurable (changes are expected to be within natural annual variation).</p>	EAP, Section 6.5.2, Wildlife; EAP Section 6.5.1 Vegetation; Section 6.3.1, Air Quality; EAP, Section 6.3.3, Noise; EAP, Section 8.7, Revegetation Monitoring Program
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	110	"CWS has not surveyed the wildlife present and quantified the habitat disturbance that would occur ." "No mitigating measures for bird and wildlife habitat loss are given ." "There is no quantification of this light disturbance or any mention of mitigation of this detrimental effect on wildlife ." "There is no supporting evidence for this statement ." [from the EAP: Wildlife species present in the vicinity of the Project are anticipated to be accustomed (habituated) to some level of noise due to the presence of existing developments.]	Refer to the response above for #106 regarding environmental studies considered in the EAP and #109 regarding wildlife. Regarding the potential effects of noise and light pollution on wildlife, refer to responses to #84 and #91. As indicated in the response to #103, areas to be cleared will be minimized to the extent feasible by Project activities using previously disturbed land as much as possible.	Refer to mitigation measures proposed for response to #109 regarding wildlife.

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	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	111	Inquiry regarding if reports are available for wildlife/environment related surveys/reconnaissance done at the Project Site.	Refer to response #106 regarding environmental studies considered in the EAP.	N/A
	Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7	112	Concern regarding the adequacy of the EAP conclusions regarding project effects on wildlife including bird disturbance.	Refer to the responses above for #109 and #110 regarding wildlife.	Refer to mitigation measures proposed for response to #109 regarding wildlife.
	Email by Suzanne Dienstbier, received on Nov. 1, 2021, public comments Batch #7	113	"What guarantee do they have that slurry lines won't disrupt patterns of movement for area wildlife?"	The slurry lines will be temporary and relocated as needed, as well cluster sites are progressively closed / sealed each year, and disturbed areas rehabilitated throughout each year of Project operation. The well cluster that is furthest from the processing facility (during extraction years up to 2025) is approximately 3.5 km and will be located on previously disturbed land to the extent feasible. Also, the slurry lines are relatively small (35.6 cm [14-inches]) in diameter (in comparison to an oil/gas pipeline or culvert, for example); therefore, the slurry lines are not expected to be a major obstacle to the movements of most wildlife and are not expected to measurably impact regional wildlife populations.	N/A
Species of Conservation Concern	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	114	Inquiry regarding if plant Species at Risk surveys were conducted for the Project Site.	Surveys were not conducted at the Project Site because our desktop review indicated that the probability of occurrence at the Project Site of the three potential plant Species at Risk is generally low. Please see Table 4-4 in the EAP which discusses the factors that were considered in the assessment.	Refer to mitigation measures proposed for response to #103 regarding vegetation.
SOCIOECONOMIC ENVIRONMENT					
Labour Force and Employment	Email from Mark Wowchuk, received Nov. 1, 2021, public comments Batch #2	115	Concern that local people will not be hired. "...I question the numbers that CanWhite states as far as employing local people. Will they be Manitobans or people from Alberta?"	<p>The numbers stated in the EAP for employment are based on the determined need for the extraction to operate. CanWhite will be hiring 35-45 people for the extraction portion of the Project with an additional 40-50 people for the Facility. The extraction portion will employ largely seasonal staff (70-85% seasonal) for Extraction operations April to November. The positions that will be hired are listed in the EAP Section 2.5, and include positions such as heavy equipment operators, welders, managers, electricians, supervisors and general labor.</p> <p>As previously stated in public forums, CanWhite is committed to hiring locally. On rare occasions, the expertise is not available locally. This is not an isolated occurrence, and is seen in all businesses and industries. In which case the most qualified individual for the role will be selected regardless of location.</p>	EAP, Section 6.6.1, Labour Force and Employment
	Email from Mark Wowchuk, received Nov. 1, 2021, public comments Batch #2	116	Concern that CanWhite will not continue to own and operate the project. "...I question the sustainability of CanWhite being apart of the community of the Rural Municipality of Springfield."	CanWhite is committed to being a community member. Whenever possible CanWhite invests in the local community from Food Banks to local science competitions. CanWhite is planning for long-term, lasting involvement.	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	117	"There is no indication of how many of these jobs will be Manitoba hires." "How many of these hires will be minimum-wage jobs?" "How much procurement of goods will be within Manitoba?" "How many of the company officers or executives or Board members will be moving to Springfield to reside permanently and raise their families?"	<p>As stated in response #115 above, hiring for both the Facility and the Extraction project will be focused on local. In addition to this, the construction, procurement, and services needed to begin and maintain operations will lead to indirect business locally leading to an additional 250 indirect jobs in the Springfield and surrounding area.</p> <p>As previously stated in public forums, CanWhite is committed to hiring locally. On rare occasions, the expertise is not available locally. This is not an isolated occurrence, and is seen in all businesses and industries. In which case the most qualified individual for the role will be selected regardless of location.</p>	EAP, Section 6.6.1, Labour Force and Employment

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Infrastructure and Services	Email from Mark Wowchuk, received Nov. 1, 2021, public comments Batch #2	118	<i>"I am concerned about the construction traffic and the damage that they larger vehicles and equipment can have on the roadway ."</i>	PR 302 will be the primary public road used to mobilize equipment to the Project Site. Table 2-1 on page 27 of the EAP lists the heavy equipment use expected during Project construction and operation. As indicated in Section 2.9 (Traffic) in the EAP, most of the larger vehicles and equipment will not be traveling back and forth on the local roads because the equipment will stay in and around the extraction site area. The map in Figure 2-5 on page 22 of the EAP shows the general layout of the temporary access trails where most of the Project vehicles and equipment will be located. Traffic related to the sand extraction activities combined with the traffic related to the Facility Project will result in only a minor increase to regional traffic volumes (Attachment C , Preliminary Traffic Projection memorandum).	N/A
	Email sent to Ms. Winsor, forwarded to CanWhite Nov. 1, 2021, by Alison Weiss public comments Batch #2	119	<i>"Based on the separation distance of approximately 4km between the extraction sites and the City's water supply infrastructure, the City does not have concerns with the currently proposed Vivian Sand Extraction Project. However, as the extraction area included in the 24-year life of the Vivian Sand Extraction Project is adjacent to the Shoal Lake Aqueduct and Greater Winnipeg Water District Railway, the City's water supply infrastructure may be impacted by expansion(s) of the Vivian Sand Extraction Project ."</i>	Please refer to response #4 regarding the Shoal Lake Aqueduct. Any future Notice of Alteration for operations that might fall within the proximity of the aqueduct will consider potential environmental effects on the aqueduct.	EAP, Section 6.2.3, Groundwater; EAP, Section 6.2.1, Geology/Topography
	Email from Roxanne Frechette, received Nov. 1, 2021, public comments Batch #2	120	General - concern that ground subsidence may adversely affect municipal, provincial and federal infrastructure, transmission lines or the Winnipeg aqueduct.	Refer to the response for #1 regarding ground subsidence and response #4 regarding the Shoal Lake Aqueduct. Please refer to Figure 1-2 in the EAP which provides the location of the proposed extraction wells for the first four to five years of operation, and revised Figure 1-1, which shows the location of the Greater Winnipeg Water District (GWWD) Shoal Lake Aqueduct in relation to the proposed Project Site (Attachment B).	EAP, Section 6.2.1, Geology/Topography
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	121	Concern regarding the Winnipeg aqueduct: <i>"The slurry lines and return recycled water loops would eventually have to cross the aqueduct likely multiple times. The aqueduct is known to have cracks that allow infiltration of surface water. Slurry line spills near the aqueduct could contaminate Winnipeg's drinking water supply with harmful microbes, arsenic, selenium, other heavy metals and the highly toxic acrylamide monomer ."</i> <i>"The land subsidence and wetlands created by the well clusters on either side of the aqueduct could destabilize the aqueduct and adversely affect drainage around the aqueduct. Flooding of the aqueduct from subsidence wet lands could occur ."</i>	Refer to response #4 regarding the Shoal Lake Aqueduct and response #93 regarding surface water and drainage.	Refer to mitigation measures proposed for response to #93 regarding surface water and drainage.

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	122	"Manitoba Hydro might not be willing to dismantle and reconnect power every year to the moveable pump stations. Such an operation would add to the project land disturbance and require expensive rehabilitation. CWS has not determined the additional land disturbance, cost and methods of required rehabilitation for the movement and installation of new hydro lines as the pump stations are moved ."	CanWhite is in discussions with Manitoba Hydro on logistics and power requirements for the extraction dewatering and pumping station to be powered. The design of the dewatering and pumping station provides for it to be relocated only once per year. Please also refer to response #105.	N/A
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	123	"The well clusters may cause ground disturbance of the transmission lines. CWS vehicles, equipment and slurry lines would cross the transmission lines ." "The subsidence would cause land depression and instability within and adjacent to the corridors and transmission lines ."	Please refer to response #1 regarding no subsidence.	Refer to mitigation measures proposed for response to #1 regarding geology / topography.
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	124	"CWS slurry lines and heavy equipment such as vacuum trucks and drill rigs would be required to cross highway 302 ." "The land subsidence that could occur from the well clusters could destabilize the road bed and would affect road drainage. CWS should have identified these engineering issues and documented the risks and planned mitigation ."	Please refer to response #1 regarding no subsidence.	Refer to mitigation measures proposed for response to #1 regarding geology / topography.
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	125	"Has CWS informed the City of Winnipeg of the requirement of the slurry lines to cross the Winnipeg Aqueduct and described safeguards that will mitigate the potential for contamination of the aqueduct water? Has CWS obtained a legal agreement with the City of Winnipeg and the Government of Canada to cross the aqueduct considering that the aqueduct crosses provincial boundaries and is therefore federal in scope? "	Refer to response #4 regarding the Shoal Lake Aqueduct.	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	126	"This project would place a substantial burden on MH [Manitoba Hydro] resources for 24 years ." "The results of consultation with MH cannot be found anywhere in the proposal. Has any such consultation even taken place? "	Manitoba Hydro is conducting a Load Interconnection Evaluation to determine the best option to supply CanWhite with the power required for the Project operations while not impacting local users. Manitoba Hydro was supplied with the electrical loading requirements for the Project for consideration in the evaluation.	N/A

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
Land and Resource Use	Email from Darrell Henzel, received Nov. 1, 2021, Public comments Batch #1;	127	General - concern about potential for contamination of the land.	<p>CanWhite's plans for the management of waste are described in Section 2.3 of the EAP.</p> <p>Project operations will not involve any wastewater discharge to land. Section 6.9.2 of the EAP (Spills and Leaks) describes the standard procedures that will be implemented to prevent spills and leaks from occurring during Project activities. The slurry line connecting the extraction sites with the Processing Facility will only contain a sand/water slurry and a residual amount of a non-toxic biodegradable flocculant (from recycled water as described in the Facility project EAP). The quality of the water within the slurry line will be of similar quality to the groundwater removed from the aquifer during extraction, as no toxic chemicals or other harmful contaminants are introduced into the slurry line during the extraction process. Therefore, there is no risk of toxic chemical or heavy metal contamination associated with the accidental release of water to land from the slurry line.</p> <p>The slurry line will be inspected on a daily basis, and after extreme weather events, to check for leaks and/or breaks in the line. Additionally, an automated pressure transducer for leak detection will be installed along the slurry line. If any leaks or breaks in the line that require repair are detected, flow to the line will be shut down, and appropriate spill containment and clean-up measures will be applied, and the line will be repaired or replaced. Segmentation of the line will allow for each section to be isolated so repairs can be done easily and quickly.</p> <p>As indicated in Section 2.3.2 (Solid Water and Hazardous Materials) in the EAP, domestic and commercial waste will be removed from the Project site by a licensed local contractor and disposed of at a licensed waste disposal facility. Hazardous materials such as fuel, oils and lubricants will be transported, handled, stored and disposed of in accordance with applicable federal, provincial and municipal regulations and requirements. Sand slurry brought to surface at the extraction wells will be pre-screened to remove 'overs' such as concretions (calcified sand) which will be temporarily stockpiled in a covered containment tank on site before being removed off site for disposal at a licensed facility or used in well sealing activities. Drill cuttings generated when extraction wells are drilled will be captured separately and contained during drilling. As containment fills up, these cuttings will be disposed of in accordance with applicable regulations. Drill cuttings that are used in the well sealing process will not have metal leaching or acid rock drainage (ML/ARD) potential.</p> <p>Section 6.9.2 of the EAP describes standard procedures that will be implemented to prevent spills (e.g. fuel, oil) from occurring during Project activities. As described in Section 8.6 of the EAP (Environmental Emergency Response Plan [EERP]), an EERP will be prepared prior to the initiation of Project activities that will provide procedures to be implemented in a variety of potential environmental emergency situations (e.g. spills of potentially hazardous materials such as fuel).</p>	EAP, Section 6.9.2, Spills and Leaks; EAP, Section 8.6, Environmental Emergency Response Plan
	Email from Maureen Y., received Nov 1. 2021, public comments Batch #2	128	General - concern about change in land use and resulting disruption to surrounding communities (e.g. Vivian).	As described in Section 6.6.3 (Land and Resource Use) in the EAP, Project activities will occur on private land sequentially from 2021 to 2025. Thus, activities will be temporary and restricted to a very limited portion of the Project Site land each year of the Project. Use of the land for other purposes will not be available in the locations of annual Project activities. However, due to the progressive annual reclamation of extraction sites and other Project-related disturbed areas, parcels of land used for Project activities during any given year of Project operation will be available for other uses the following year or once the activities are complete. Sand Extraction activities in any one area will span weeks rather than months, and individual wells will only operate for a few days. Annual revegetation of disturbed areas will mitigate effects on the naturally vegetated area within the Project site. Also see response #82 related to noise, #91 related to light pollution, #118 related to traffic and #75 related to air quality effects associated with the Project.	Refer to mitigation measures proposed for response to #82 regarding noise, #91 regarding light pollution, #75 regarding air quality and #103 regarding vegetation.

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Email from Anne Wowchuk, received Nov. 1, 2021, Public comments Batch #2	129	"There is a map on the page 26 that shows private and Crown land. There is more private land in the area than what you have indicated. Please address as to why this is an incomplete map?"	A corrected Figure 1-1 (Project Site Location and Land Ownership) has been submitted to MBCC and is available in the Public Registry (file: 6119.00) for this Project.	N/A
	Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2; Email by Joan and Allan Wiens, received on Nov. 1, 2021, public comments Batch #7	130	General - concern regarding decreased property values due to the project (e.g. impacts on drinking water concerns).	<p>There is no evidence to suggest that property values will decrease in the vicinity of the Project. An extensive study of property values by the Heartland Institute (2016) in the vicinity of silica sand extraction and processing facility locations in the United States found that there were “no documented circumstances of industrial sand mining causing a community-wide reduction of property values”. Note that the Heartland Institute study included open-pit silica sand extraction and processing projects, which would have a greater impact on land than the well extraction method proposed for the Project. Currently, there are numerous open-pit aggregate extraction operations in the Local Project Area, and any additional environmental influence resulting from the Project will be negligible in magnitude and temporary in duration.</p> <p>Limited annual vegetation clearing for the Project and annual revegetation of cleared areas will mitigate effects on the naturally vegetated areas and aesthetics within the Project Site. Refer also to the response for #19 regarding Project impacts to groundwater/ drinking water, #1 regarding geology/topography and subsidence; #103 regarding vegetation; #82 regarding noise; #91 regarding light pollution; #75 regarding air quality; and #93 regarding surface water and drainage.</p> <p>The Project will result in improvements to the existing infrastructure in the area (i.e. natural gas) and an increase in employment. Therefore, it is anticipated that there will be an increased demand for housing in the area which could result in an increase in property values.</p>	Refer to mitigation measures proposed for responses to #19 regarding groundwater; #1 regarding geology/topography and subsidence; #103 regarding vegetation; #82 regarding noise; #91 regarding light pollution; #75 regarding air quality; and #93 regarding surface water and drainage.
	Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2	131	"What royalties will CWS pay? Will it be charged for the use (rent) of water just like Manitoba Hydro pays?"	<p>CanWhite will have private landowner agreements with landowners in the area for sand extraction on their property. The details of the individual landowner agreements are private. The sand removed will be subject to a royalty paid to the landowner and/or the provincial government.</p> <p>Water usage charges are based on total volumes used and will be reported to Manitoba Hydro.</p>	N/A
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	132	General - concern regarding property damage and devaluation: " <i>The large project footprint of over 130 CFL football fields per year with extensive damaging land clearance for drill pads, pump stations and well clusters and slurry lines would be slow to rehabilitate and cause loss of property value and recreation opportunities. Land subsidence and sinkholes would cause permanent land disruption and change to drainage patterns that would damage and devalue private property. Aquifer damage could render the area uninhabitable and cause large outward population migration from the affected areas.</i> "	<p>Refer to the response above for #130 regarding property values and response to #136 regarding compensation for property damage.</p> <p>Refer also to the response for #19 regarding Project impacts to groundwater/ drinking water, #1 regarding geology/topography and subsidence; #103 regarding vegetation; and #93 regarding surface water and drainage.</p>	Refer to mitigation measures proposed for response to #130 regarding property values, and also mitigation measures proposed for responses to #103 regarding vegetation; and #93 regarding surface water and drainage.

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	133	General - concern about limited potential for land use after site / wells decommissioning.	Refer to the response above for #128 regarding changes in land use.	Refer to mitigation measures proposed for response to #128 regarding changes in land use.
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	134	<i>"The Corporation does not own or have rights to the trees. Lost trees will be associated with concomitant reduction in property value, esthetic/spiritual value and enjoyment of one's property."</i>	The trees on private land are owned by the landowner which is either CanWhite or a landowner with whom CanWhite has an agreement. Project activities will occur on private land sequentially from 2021 to 2025 which will result in temporary use of a very limited portion of the Project Site land each year of the Project (EAP, Section 6.6.3 'Land and Resource Use'). Also refer to responses above for #128 regarding changes in land use and #130 regarding property values.	Refer to mitigation measures proposed for response to #128 regarding changes in land use and #130 regarding property values.
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	135	<i>"It would be useful to provide a table which sorts out which is powered by what."</i>	Sources of power for key Project components are described in the EAP, Section 2.7 (Power Use).	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	136	<i>"The proponents estimate that 31% of the impacted area consists of agricultural lands (EAP1, p. ix). On cropland, how will the Corporation compensate farmers for loss of crop at the cluster sites and access routes? Will sites of abandoned well clusters be suitable for future tilling, fertilizing and other farm practices?" "Regarding sites situated within pastures and paddocks, how will livestock owners be compensated if they require alternate arrangements for pastured livestock? Will damage/destruction of enclosure fences be repaired? Will dugouts destroyed or impacted by the operations be replaced?"</i>	Land used for annual Project activities will not be available for other uses while active work is occurring (EAP, Section 6.6.3 'Land and Resource Use'). However, due to the progressive annual closure of extraction wells and rehabilitation/revegetation of Project-related disturbed areas, parcels of land used for Project activities during any given year of Project operation will be available for other uses the following year or once the activities are complete. Cropland will still be suitable for tilling following reclamation of the sites; however, there is limited to no cropland in the areas selected for the initial years of activities. No dugouts or other waterbodies are expected to be impacted by Project activities (refer to response #93 for surface water and drainage). CanWhite will have private agreements with landowners regarding any arrangements that might be required in relation to use of the land where Project activities will occur. The details of these landowner agreements are private.	Refer to mitigation measures proposed for response to #93 regarding surface water and drainage and #103 regarding vegetation.
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	137	Regarding property owners: <i>"There is virtually no information or even acknowledgement regarding the landowners. What are their rights, and how shall the company deal with these stressed human beings throughout the entire process?" "...how much will the activities of movement of heavy machinery and 24-hour traffic interfere with people's use of their driveways?" "What are the policies regarding damage to people's fences, gardens, sheds and other landscaping features and installations? Will the company repair and restore damaged items?" "Will the property owner be excluded from entering the site, even with a hard hat? What will be the legal mechanism and repercussions?"</i>	As stated in response #136 above, landowners will be compensated fairly for extraction to occur on their property. Landowner agreements are generated for each property that contain the details of each property and landowner preferences. CanWhite and the landowner will agree upon access points, reclamation and compensation prior to any access to the property. CanWhite will return fences and access points to original locations should they need to be temporarily moved. All of these items are subject to agreements with the landowner entered into prior to the initiation of Project activities. Also refer to response #118 regarding traffic and response #82 regarding noise. Regarding Project Site safety, only authorized personnel will be permitted on the active worksites.	Refer to mitigation measures proposed for response to #136 regarding landowner compensation.

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Email by Suzanne Dienstbier, received on Nov. 1, 2021, public comments Batch #7	138	"What will CanWhite Sands do to allow access to traditional harvesting land for berries and mushrooms?"	Land used for annual Project activities will not be available for other uses while active work is occurring (EAP, Section 6.6.3 'Land and Resource Use'). However, due to the progressive annual closure of extraction wells and rehabilitation/revegetation of Project-related disturbed areas, parcels of land used for Project activities during any given year of Project operation will be available for other uses the following year or once the activities are complete. It is important to note that only small portions of land within each annual extraction area will be active at a time per season. Therefore, the remaining Project Site area where Project activities are not occurring would be available for traditional harvesting if applicable landowner permissions are granted for private land access regarding such activities.	EAP, Section 6.5.1, Vegetation; EAP Section 8.7, Revegetation Monitoring Program
Human Health	Email from Robyn Ingram, received Nov. 1 2021, Public comments Batch #2; Email from Anne Wowchuk, received Nov. 1, 2021, Public comments Batch #2; Email from Roxanne Frechette, received Nov. 1, 2021, public comments Batch #2; Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1 , 2021, public comments Batch #7	139	General - concern about effects of the project on human health (e.g. water contamination; exposure to silica dust; health and well-being of workers and nearby residents)	Project activities are not expected to adversely impact the aquifers or result in drinking water contamination (refer to responses #24, #25 and #26 regarding potential for contamination of the aquifer/drinking water/water wells). Also see response to #75 regarding air quality and response #82 regarding noise. Appropriate personal protective equipment will be supplied to employees, contractors, and authorized visitors at the Project site.	Refer to mitigation measures proposed for response #75 regarding air quality and #82 regarding noise.
	Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2	140	Concern regarding mental health effects due to shortage of drinking water.	The Project will not result in a shortage of drinking water (refer to the responses for #32 regarding groundwater quantity).	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	141	"Will CWS record and report noise levels of such quarry operations and take adequate measures to avoid exposure to silica dust in such operations?"	Please note that there are no quarries associated with this Project. Refer to the response #82 regarding noise, and response #75 regarding air quality.	Refer to mitigation measures proposed for response to #82 regarding noise and #75 regarding air quality.
	Email written by L. L'Hirondelle received Nov. 1, 2021, public comments Batch #7	142	"Projects such as these have been known for causing long term health and environmental damage ."	Refer to responses #139 regarding human health, #19 to #34 regarding groundwater concerns, #93 regarding surface water and drainage, #103 regarding vegetation and #109 regarding wildlife.	Refer to mitigation measures proposed for response #139 regarding human health, # 19 regarding groundwater, #93 regarding surface water and drainage, #103 regarding vegetation and #109 regarding wildlife.
Indigenous and Treaty Rights	Email written by Deanna Kazina received Nov. 1, 2021, public comments Batch #7	143	"Part of the land CanWhite Sands proposes to work on is crown land. Metis people exercise their traditional hunting and gathering rights on these lands. What if these lands are poisoned by the chemical by-products of CanWhite Sand's industrial activities and affect the plants and the animals?"	There are no planned activities on Crown land. CanWhite's activities for years 2021 to 2025 will be situated on private land only. Please refer to the updated Figure 1-1 of the Extraction EAP showing the Project Site location and land ownership for extraction year 2021 to 2025 activities uploaded to the Public Registry for this project (File 6119.00: "Section 1.4 Figure 1-1 Corrected - posted October 7, 2021"). Any future Notice of Alteration for operations that might fall on Crown land would consider the potential for impact on the exercise of Indigenous rights. However, at this time, CanWhite does not foresee future extraction activities occurring on any Crown land throughout the 24-year life of the Project. Refer to the response to #127 regarding the lack of potential for contamination of the land.	Refer to mitigation measures proposed for response to #127 regarding potential for contamination of the land.

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
Heritage Resources	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	144	Concern regarding protection of unknown/undiscovered heritage resources during project operation activities.	<p>The results of an on-site archaeological investigation found the Project Site to have substantial previous disturbances and concluded that there were no heritage concerns regarding development of the Project at the Project Site (EAP, Section 4.6.5 and Appendix G of the EAP).</p> <p>If heritage resources are discovered within the Project Site during operations, work will be stopped, Historic Resources Branch will be advised, and the discovered historic resources will be recorded by an archaeologist and adequately protected as required. The heritage resources protection practices outlined in the Heritage Resources Protection Plan for the Facility Project will also be used for this Project.</p>	EAP, Section 6.6.6, Heritage Resources
OTHER					
Traffic	Email from Anne Wowchuk, received Nov. 1, 2021, Public comments Batch #2	145	<p><i>"How are you going to access the site? Obviously, you must be planning to build a road to the site – where is that going to be?"</i></p> <p><i>"Would traffic be disrupted?"</i></p> <p><i>"If they are utilizing temporary roads (trails) then are they allowed to access hydro line right-of-way for this purpose? I would suspect that Manitoba Hydro will need to be consulted and this temporary access along the hydro line is also used by snow machine organizations for recreation."</i></p>	<p>PR 302 will be the primary public road used to mobilize equipment to the Project Site. Table 2-1 on page 27 of the EAP lists the heavy equipment use expected during Project construction and operation, which will not all be operating simultaneously.</p> <p>As indicated in Section 2.9 (Traffic) in the EAP, most of the equipment and vehicles will not be travelling to and from the Project site on the local roads because the equipment will stay in and around the extraction site area. The Figure 2-5 map on page 22 of the EAP shows the general layout of the temporary access trails where most of the Project vehicles and equipment will be located. A permanent road(s) will not be built to access the sand extraction well clusters or other Extraction Project components. Therefore, there will be no daily back and forth travel of large vehicles. Progressive annual rehabilitation of temporary access trails will be completed.</p> <p>Traffic disruptions are not anticipated. The overall annual increased use of regional roads has been assessed as minor as described in Section 6.7 (Traffic) in the EAP. Traffic related to the sand extraction activities combined with the traffic related to the Facility Project will result in only a minor increase to regional traffic volumes (Attachment C, Preliminary Traffic Projection memorandum). Also see response #118 regarding traffic.</p> <p>Extracted sand will be transported to the sand Processing Facility by slurry line rather than by haul truck which will limit traffic associated with the Project staff and contractors during the Project construction and operation.</p> <p>The extraction sites selected for the first few years are in a gravel quarry that is already accessible from PR 302, so no additional access is needed. CanWhite is currently in discussion with Manitoba Hydro concerning temporary access to extraction sites where needed.</p> <p>CanWhite is temporarily using the Manitoba Hydro right-of-way to access the Facility site, but once the permanent access road to the Facility site has been constructed, there will be no further such use.</p> <p>CanWhite does not intend to use the snow machine trail along the Manitoba Hydro right-of-way for any extraction activities and, in any case, these activities will not occur during the winter.</p>	EAP, Section 6.7, Traffic
	Email from Mark Wowchuk, received Nov. 1, 2021, public comments Batch #2	146	<p><i>"I am unclear as to where they are going to access the site from Highway 302 like they stated they were going to do."</i></p> <p><i>"There are no access roads heading east along Highway 302 to provide accessibility. Therefore, they will have to construct a road that will be able to handle the weight of the vehicles and equipment."</i></p>	<p>Refer to the above response to #145 regarding traffic/access. A permanent road(s) will not be built to access the sand extraction well clusters or other Extraction Project components. Temporary access trails will be developed to access sand extraction well cluster sites (see Figure 2-5 of the EAP) that will be designed to accommodate required vehicles and machinery. Progressive annual rehabilitation of temporary access trails will be completed.</p> <p>An access road will be constructed for the Processing Facility site that will intersect with PR 302 once construction of the Facility project begins.</p>	N/A

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	Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2	147	Concern with amount of traffic generated during operations related to movement of slurry lines and other operations components <i>"...intensive, industrial assemblage of drilling rigs, hydraulic pumps, slurry lines, tractors, diggers and loaders operating around the clock ..."</i>	Refer to the above responses to #145 and #118 regarding traffic. As noted in the EAP, Section 2.2.4, the slurry loop system is a temporary line which transports sand to the facility site. The dewatering and pumping station is designed to be moved once per season. The main slurry line leading from the dewatering and pumping station to the Facility, or portions thereof, therefore will be moved a maximum of once per season as needed. The smaller slurry lines feeding from the well clusters into the dewatering and pumping station will be moved more frequently as needed within the extraction area for that season. The equipment needed to move these smaller slurry lines will operate within the active extraction site and therefore will not disrupt local traffic.	EAP, Section 6.7, Traffic
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	148	<i>"Will CWS specify the size and number of trucks per day required to transport the screened out waste such a concretions and the drill cuttings from the extraction area to the licensed disposal site? Will CWS identify the licensed disposal site?"</i>	Table 2-1 on page 27 of the EAP list the heavy equipment type and use expected during Project construction and operation, which will not all be operating simultaneously. As indicated in Section 6.6.2.2 (Community Services) in the EAP, solid waste (including the small amounts of concretions and any drill cuttings not suitable for wells/site decommissioning) generated at the temporary annual work areas will be transported by a licensed local contractor to a local licenced waste disposal facility. Transport of waste will occur as needed. The volume of waste generated will not require daily off-site removal.	N/A
	Email by Heatker Erickson, received Nov. 1, 2021, public comments Batch #7	149	Concern regarding increased traffic: <i>"Highway 15 on which over the years the traffic has increased will further be increased ."</i>	Refer to the above responses to #145 and #118 regarding traffic.	EAP, Section 6.7, Traffic
Aesthetics	Email from Robyn Ingram, received Nov. 1 2021, Public comments Batch #2; Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2	150	General - concern that the project will change the country setting / viewscape.	Section 6.8 of the EAP assessed the Project effects on aesthetics (i.e. if the Project will result in an unacceptable change to the viewscape). The impact of the Project on the aesthetics of the Local Project Area is anticipated to be minor for the following reasons: <ul style="list-style-type: none"> • Land disturbances and Project components will be temporary within a very limited area in the Project Site during each year of operation; • Most of the Project Site will remain undisturbed, and vegetation clearing to accommodate the Project footprint will be minimized to the extent feasible (refer to mitigation described in the EAP, Section 6.5.1 'Vegetation'. • Most of the land that will be used for the footprint of Project operations is previously disturbed (e.g. agriculture; gravel quarry). • Annual well cluster sites and wells will be progressively closed / sealed each year, and disturbed areas will be rehabilitated throughout each year of Project operation. • Setback distances where no activity will occur (e.g. from residences) will be maintained as described in Section 1.4 of the EAP. CanWhite will not be using an open pit quarry method; therefore, the Project will not resemble an open-pit mine or quarrying operation.	EAP, Section 6.8, Aesthetics; EAP, Section 8, Follow-up Plans; EAP, Section 8.7, Revegetation Monitoring Plan; EAP, Section 8.9, Closure Plan

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
Indigenous Consultation	Email forwarded, originally written by Carlos A. Jovel, received Nov. 1 2021, public comments Batch #3; Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4; Email written by Deanna Kazina received Nov. 1, 2021, public comments Batch #7; Email written by James Elmore received Nov. 1, 2021, public comments Batch #7; Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7; Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7	151	General - request for Indigenous peoples consultation (Sec. 35 of the federal <i>Constitution Act, 1982</i>).	<p>Please direct questions with respect to the Duty to Consult to the Manitoba Crown.</p> <p>As indicated in the EAP, Section 4.5 (Indigenous Peoples), the Project Site is located within Treaty No. 1 area (Indigenous and Northern Affairs Canada, 2017). There are no First Nation reserve lands within the Local or Regional Project Area. The closest First Nation reserve lands to the Project Site is the Brokenhead Ojibway Nation’s Na-Sha-Ke-Penais Indian Reserve (3 ha) surrounded by East St. Paul and located approximately 38 km northwest of the Project Site.</p> <p>The Regional Project Area is within an area recognized by the Manitoba Metis Federation as an area for Metis Natural Resource Harvesting (The Metis Economic Development Organization, 2018) which corresponds with the Manitoba Conservation and Climate Game Hunting Areas (GHAs) numbers 34A, 35 and 35A within which the Project Site is located (Manitoba Sustainable Development 2019).</p> <p>The Project Site is comprised of privately-held land subject to private surface rights and is currently designated as ‘Aggregate’, ‘Agriculture Preserve Area’ and ‘Mixed Rural and Agriculture Area’ in the RM of Springfield Development Plan. Therefore, use of the Project Site for the exercise of Indigenous or Treaty rights would be restricted or limited.</p> <p>As indicated in the EAP, Section 6.6.5 (Indigenous and Treaty Rights), the Project is not expected to adversely impact the exercise of Indigenous or treaty rights because:</p> <ul style="list-style-type: none">• The Project Site consists of private land covered under private surface rights that do not have public access unless by permission;• No fish or fish habitat will be affected by the Project (Section 6.4.2 of the Extraction Project EAP);• The residual environmental impact of the Project on vegetation beyond the Project Site is assessed to be negligible (Section 6.5.1 of the Extraction Project EAP); and• The residual environmental impact of the Project on regional wildlife populations is assessed to be negligible (Section 6.5.2 of the Extraction Project EAP). <p>CanWhite also notes that the federal Impact Assessment Agency of Canada (IAAC) conducted an initial review of the Project to determine if there were potential impacts to areas of federal jurisdiction (including impacts on Indigenous and treaty rights) that would warrant a review under the <i>Impact Assessment Act</i> . IAAC concluded that a review under the <i>Impact Assessment Act</i> was not required.</p>	N/A
	Email from Anne Wowchuk, received Nov. 1, 2021, Public comments Batch #2	152	" <i>It is common knowledge that the Indigenous population utilized this area for sage harvesting. Indigenous persons from Manitoba and Ontario travel to this area to harvest sage. I do not see any documentation that Indigenous persons from Ontario have been consulted. I have conversed with the Indigenous people who were harvesting the sage from Ontario and they were not aware that this facility and operation was being considered ."</i>	Refer to the response above for #151.	N/A

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
Project Description - Sand Extraction Method	Email from Mark Wowchuk, received Nov. 1, 2021, public comments Batch #2	153	Concern regarding the success of the sand extraction method. <i>"From the literature that I have seen, I do not see any scientific validation to their unproven methodology, especially given the tonnage that CanWhite is expecting to extract. "</i>	<p>CanWhite's drilling and extraction method utilizes an air lift method that is routinely used in water well drilling throughout the world, including in Manitoba and the local area where thousands of these wells have historically been drilled. The key difference is that normally once a water well is drilled a screen is installed in the sandstone to prevent sand from entering the well. The CanWhite method excludes the installation of the screen so that the sand and water are extracted at the same time. In the water well industry, the airlift method is commonly used to drill wells and develop them (clean them out) once they have been installed.</p> <p>The design is proprietary to CanWhite (patent pending), but a diagram of the extraction method and description is provided in the EAP Section 2.2.1 and Figure 2-2. While the exact activity of extracting sand from the ground through a water well drill hole using an airlift method does not exist anywhere else that CanWhite is aware of, the use of airlift drilling methods is a common practice and can be applied to extract sand.</p> <p>Since April of 2019, many successful tests have occurred demonstrating the feasibility and repeatability of the method. The results and data collected have been thoroughly studied by engineers, scientists, geotechnical engineers and hydrogeologists. Additional studies have been conducted and results modeled and analyzed: (geotechnical report [Stantec 2022]; and Hydrogeology and Geochemistry Assessment Report [EAP, Appendix]). Thus, the extraction method is well understood and has been successfully demonstrated.</p> <p>Although sand can also be borehole mined, and this form of mining is used in other parts of the world, borehole mining was ultimately not selected for this project due to the high volumes of injected water and injection pressure that would be required, which could impact the aquifer.</p>	N/A
	Email from Roxanne Frechette, received Nov. 1, 2021, public comments Batch #2; Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	154	General - concern regarding potential failure of extraction wells and/or slurry lines resulting in contamination.	<p>Please refer to responses #162 regarding the integrity of wells.</p> <p>As described in response #93, CanWhite will be monitoring the slurry line and leak detection will be used in addition to visual inspection and non-destructive testing. The slurry line will be made of HDPE (high density polyethylene) which is not prone to leakage and which is very commonly and successfully used in similar industrial applications with high flow volumes, including for transportation of industrial sand. HDPE systems are also used locally for agricultural use in Manitoba to move animal manure used as fertilizer on crop fields.</p> <p>As indicated in the EAP, Section 2.4.2, 'Slurry Lines and Water Return Lines', CanWhite will be monitoring and inspecting the slurry line throughout operation. The slurry line will be equipped with a leak detection system and will have shut-off valves placed throughout the slurry line to allow for isolation in the unlikely event of a leak.</p> <p>As stated in response #93, the slurry line will contain only a sand/water slurry and a residual amount of a non-toxic biodegradable flocculant (from recycled water as described in the Facility project EAP). The quality of the water within the slurry line will be of similar quality to the groundwater removed from the aquifer during extraction.</p> <p>No toxic chemical or other harmful contaminant will be introduced into the slurry line during any point in the process. Therefore, there is no risk of toxic chemical or heavy metal contamination associated with the accidental release of water from the slurry line.</p>	Refer to mitigation measures proposed for response to #93 regarding monitoring of slurry lines and #19 regarding groundwater / aquifer(s).

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	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	155	Concern that details of the pressure transducers to be installed along the slurry line to automatically monitor for leaks are not provided in the EAP and general concern that leaks of slurry line contents will result in contamination.	<p>The following information was provided in the EAP, Section 2.4.2 'Slurry Lines and Water Return Lines': "Constant flow, pressure and [visual] monitoring will occur 24/7 while slurry lines are in use". Pressure transducers are standard industry components which will be sourced in the market in accordance final design specifications.</p> <p>As indicated in the response for #93, the slurry line, which will contain a sand and water slurry for transport to the processing facility, will not contain harmful chemicals/contaminants. Also please refer to response for #197 regarding the slurry line.</p>	Refer to mitigation measures proposed for response to #197 regarding the slurry line.
	Email from Janice Broily, received Nov. 1, 2021, Public comments Batch #2	156	Concern regarding the sand extraction method: " <i>.....and this unconventional mining method is to be done by a company that has no history of any involvement with any silica sand projects (or any projects other than this one) and whose Board members have no practical experience in the silica sand mining industry?</i> "	<p>Please refer to response #153 regarding the extraction method.</p> <p>CanWhite is working with experts in the field of geotechnical engineering, hydrogeology, water treatment, water well drilling and slurry pipeline design to design each component of the extraction Project to meet the highest safety and environmental standards.</p>	N/A
	Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2	157	" <i>The "proposed sand extraction activities using a method similar to standard water well drilling" is grossly misleading .</i> " " <i>The scale of drilling and extraction proposed by CWS is, to the say the least, imprudent. It will guarantee failures of wells, pipelines and UV treatment.</i> "	<p>Please refer to response #153 above regarding the extraction method.</p> <p>Also refer to response #19 regarding groundwater; response #167 regarding sealing and decommissioning of wells; response #197 regarding the slurry line and response #211 regarding UV treatment.</p>	Refer to mitigation measures proposed for response #19 regarding groundwater; response #167 regarding sealing of wells; response #197 regarding the slurry line and response #211 regarding UV treatment.
	Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2	158	Concern regarding the success of the sand extraction method. " <i>On April 11, 2019 the Winnipeg Free Press quoted Trevor Martens of Evolve Surface Strategies, a company engaged by CWS, as declaring that he was not aware of underground sand mines anywhere in the world. Mr. Martens said "This has never been done before."</i>	<p>The statement from Mr. Martens was made in 2019 while the extraction method was still undergoing testing and studies to assess feasibility of the method. Since April of 2019, many successful tests have occurred demonstrating the feasibility and repeatability of the method. The results and data collected have been thoroughly studied by engineers, scientists, geotechnical engineers and hydrogeologists. Additional studies have been conducted and results modeled and analyzed: (geotechnical report [Stantec 2022]; and Hydrogeology and Geochemistry Assessment Report [EAP, Appendix]). Thus, the extraction method is well understood and has been successfully demonstrated.</p> <p>While the exact activity of extracting sand from the ground through a water well drill hole using an airlift method as the primary purpose does not exist anywhere else that CanWhite is aware of, the use of airlift drilling methods is a common practice and can be applied to extract sand.</p> <p>Although sand can also be borehole mined, and this form of mining is used in other parts of the world, borehole mining was ultimately not selected for this project due to the high volumes of injected water and injection pressure that would be required, which could impact the aquifer.</p>	N/A

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	Forwarded letter from Christine Hutlet, CAO, RM of Tache, Oct. 5, 2021, public comments Batch #3	159	<i>"This project is very complex and the methodology for extraction appears to be unproven ..."</i> <i>"Very little detail is provided in regard to the extraction methodology."</i> <i>"Given that it appears that this methodology has never been used before, it seems quite risky to approve it until it is in some way proven."</i>	Please refer to response #153 regarding extraction method and testing. Also refer to response #179 which responds to environmental concerns regarding the extraction method.	N/A
	Forwarded letter from Christine Hutlet, CAO, RM of Tache, Oct. 5, 2021, public comments Batch #3	160	<i>"The applicant simply states that they intend to seal the shale layer in each well hole with grout. We are skeptical with the long-term performance of these seals. As well, no details are provided regarding how this would impact the aquifer hydraulics or how the shale layer would respond to this."</i>	<p>CanWhite's extraction wells will be sealed across the shale layer. This is a standard industry practice when a well is installed into the Sandstone Aquifer. Extraction wells will be installed by licensed contractors and constructed in a manner that is designed to prevent aquifer interconnection and surface runoff and precipitation from entering the well. Upon conclusion of extraction activities at each well site, the wells will be decommissioned in accordance with provincial guidelines and best practices established by CanWhite.</p> <p>CanWhite utilizes an industry-accepted grout/cement mixture that provides both stability (from the cement) and sealing properties (from the bentonite grout) to establish a competent seal in the shale layer and up into the limestone.</p> <p>Aquifer hydraulics and interactions with the shale layer are described in detail in the Hydrogeological and Geochemistry Assessment in Appendix A of the EAP. (Check with Ryan)</p> <p>Please also refer to response #162 and #167 on well sealing and decommissioning.</p>	N/A
	Email forwarded by Shandi Strong, originally written by Jon Gerrard (MLA), received Nov. 1, 2021, Public comments Batch #3	161	<i>"The method of extraction, while combining a number of already utilized techniques, has not been tested on such a large scale as is proposed."</i>	Refer to the above responses #153 regarding the extraction method and testing.	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s).
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	162	<i>"How will CWS prevent well seals from failing due to subsidence that has been demonstrated will assuredly occur?"</i>	<p>Stantec was commissioned to conduct a thorough geotechnical study that includes the measures to prevent subsidence (Stantec 2022). In the absence of subsidence, well seal failure would not be expected. However, as a best practice bentonite will be added to the grout, which will expand to fill cracks that may occur over time from natural ground movement or accidental damage to casing.</p> <p>Please also refer to response #1 regarding geology, and responses #160 and #167 on well sealing and decommissioning.</p>	Refer to mitigation measures proposed for response to #1 regarding geology / topography.
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	163	Concern regarding the sand extraction method: <i>"How can such an endeavor proceed without fully defined and proven methodologies ..."</i>	Refer to the above responses #153 regarding the extraction method.	N/A

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	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	164	Concern regarding setbacks (distances and from which features): " <i>Setbacks from homes and domestic wells, and hamlets, will be only 100 m. No setbacks are specified for barns ."</i> " <i>It is not clear whether this distance applies to the nearest extraction well, or to the extraction site boundary ."</i> " <i>Does this setback apply only to the drill sites, or does it also include access trails..</i> ." " <i>How will CWS prevent well seals from failing due to subsidence that has been demonstrated will assuredly occur?</i> " " <i>There is no mention of setbacks for barns and farmyards, hog or poultry operations, lagoons, cattle and horse enclosures. On agricultural land, will extraction wells be situated on manure spread fields, or in or beside feed lots and pastures? Near fuel or agricultural chemical storage sites?"</i> " <i>Clearing activities (bulldozing) of trails and digging of drainage ditches (EAP1, p. viii) may encounter various underground utility lines. The EAP does not mention setback policies regarding buried electrical lines, telephone or cable service lines, or natural gas lines on private property"</i> " <i>What are the setbacks for extraction wells from rail lines?"</i>	<p>We assume that the comments concerning setbacks relate to potential impacts from noise. There are no mandated provincial or municipal sound setback distances that would apply to this Project, and there are many factors that influence the distance that noise can travel and the intensity of noise generating activities. These factors include sounds characteristics (pitch, intensity), topography, surrounding features (buildings, open water, tree cover), climate conditions (temperature, humidity), wind direction, and existing ambient noise in the area. In the absence of mandated setback distances and the various influences on noise, setbacks are determined on a case-by-case basis.</p> <p>Based on the findings of the Noise Impact Assessment completed by AECOM for the CanWhite Vivian Sand Facility Project, an initial setback distance of 100 m of Project activities from the nearest residences has been selected as an initial measure to mitigate nuisance noise that may be generated by Project activities at local residences. The minimum 100 m setback distance will be calculated from the periphery of the well cluster (as compared with the specific location of the well). A review of the isopleths from the Noise Impact Assessment indicates that noise levels typically do not exceed an average of 60 dBA (the Manitoba Guidelines Maximum Desirable Sound Level for year-round operations) at a distance of 100 m from the loudest noise generating activities at the Processing Facility during daytime hours. We consider the highest sound level generated at the Processing Facility to be comparable to the noise that will be generated during extraction activities.</p> <p>Please also refer to Table 1, Responses to TAC: response # 13 regarding noise.</p>	EAP, Section 6.3.3, Noise Additional Proposed Mitigation: CanWhite will have a Noise Mitigation Plan in place prior to initiating Project operations.
				<p>Prior to commencement of drilling activities, CanWhite will test the noise-generating equipment used during the extraction process and collect sound measurements at multiple points at 100 m distance from the extraction site (or at the nearest residence) to confirm that sound levels meet the 60 dBA limit at these monitoring points. Ambient sound levels (background noise) will also be collected at each location. Noise generated from extraction equipment shall not exceed 60 dBA at these monitoring locations, unless the ambient noise level exceeds the 60 dBA limit.</p> <p>Mitigation will be applied in all cases where noise exceeds the 60 dBA limit. Mitigation measures may include engineered controls such as soundproofing material or insulation around noise-generating equipment, portable noise barriers, and equipment maintenance. Operation controls can also be applied, including limited operating hours, minimizing acceleration and deceleration of motors, and limiting activities that create noise (e.g. hammering pipe; limiting the use of vehicle back-up alarms).</p> <p>Any noise complaints will be investigated and addressed as quickly as possible.</p>	

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				<p>CanWhite arranges for a utility line assessment prior to any work on-site. CanWhite will operate outside of railway line and utility rights-of-way. See Section 1.4.1 of the Extraction EAP for details on setbacks (e.g. for hamlets, utilities).</p> <p>If the comments concerning livestock and other agricultural activity and proximity to private facilities such as fuel storage reflect a concern about the potential for contamination of groundwater via surface water infiltration, please see response #93.</p> <p>If these comments reflect a concern about potential impacts on landowners, please see response #136 and #137.</p> <p>Regarding well sealing, refer to response to #162.</p>	
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	165	"Some form of air lifting will be used, but the actual design is not disclosed, only an example is given ." "Why is the real design not disclosed, particularly since air lifting has already been conducted at a number of wells (WDR)?" "	<p>Airlift is commonly used in the water well industry for both drilling of water wells and development/cleaning of wells that have been installed to remove drill cuttings and drilling fluids from the wells. The design is proprietary to CanWhite (patent pending), but a diagram of the extraction method and description is provided in the EAP Section 2.2.1 and Figure 2-2. Please also refer to response #153 regarding the design of the extraction method.</p> <p>The air lift method used for extraction is represented in detail with diagram (Figure 2-2) in section 2.2.1 Extraction method of the EAP. As is described, a production pipe is placed inside the well with an air line inside the production pipe. As with standard air lift activities, when the air is turned on it creates a circulation of water and air that brings the water to the surface. This is because the air displaces the water immediately at the end of the airline inside the production pipe and this displacement pushes the water to surface, much like blowing bubbles in a cup of water. As the water comes to surface, it brings with it the sand.</p> <p>A further water well industry description of airlift can be found in the Groundwater and Wells, Third Edition, By Robert J. Sterrett, PhD, RG. Chapter 7 - Well-Drilling Methods and Chapter 11 - Development of Water Wells, beginning on page 522.</p>	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	166	"The disposition of the extracted sand in winter is not disclosed ."	<p>No sand extraction will take place during winter conditions and therefore the slurry lines and extraction sites will not be operational in the winter time. The commencement of operations in April and cessation of operations in November will be determined based on the favourability of weather conditions during these months (consistently above freezing to avoid the risk of a freeze up of water in any of the systems).</p> <p>Sand is stockpiled wet at the Processing Facility site to allow for continuation of sand processing during the winter months.</p>	N/A

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	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	167	<i>"Decommissioning of wells is presented in two separate contradictory protocols: the casing will remain/or it will be removed when the well is sealed. In the version where it will remain, it will apparently be severed below ground and capped, then camouflaged at the surface. People won't know it is there until at some point it may be eroded or accidentally excavated. There will be many thousands of these abandoned wells ." "Since the decommissioned wells will remain in perpetuity, the seals and casings (decommissioning version 1) will eventually fail on at least some of them, as there will be many thousands of them ."</i>	<p>The decommissioning protocol is not contradictory. The well casings will be cemented in place for the duration of the extraction activities. Upon well sealing ("abandonment") the upper section of the casing above the grouted section will be removed for re-use in other wells. This reduces the amount of casing left in the ground. The well is then sealed in accordance with all statutory and regulatory requirements, as well as best practices developed by CanWhite for long-term protection of the environment (please see responses to #160, #162 and #258). These practices will be described in detail in the Closure Plan that applies to the Project. Please also see the EAP Section 2.2.6 'Progressive Annual Closure and Rehabilitation of Extraction Wells'.</p> <p>Statutory and regulatory requirements include: <i>The Groundwater and Water Well Act</i> and the regulations made thereunder; Manitoba guidance documents including "Constructing and Sealing Wells in Manitoba" and "Information for Well Drillers and Well Sealers and Constructing and Sealing Wells in Manitoba - Information for Private Well Owners"; and <i>The Mines and Minerals Act</i> and regulations thereunder governing well drilling and "abandonment" (set out in the Drilling Regulation, 1992, Manitoba Regulation 63/92) and mine closure. Please also see the EAP, Section 1.7 'Regulatory Framework'.</p>	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	168	Regarding swampy/boggy areas: <i>"Will wells be drilled in these conditions?" "Wet conditions present a potential for direct contamination of wells with surface water ."</i>	<p>See response to #40 for well design to prevent surface water infiltration.</p> <p>There are no plans to install wells in swampy areas.</p>	Refer to mitigation measures proposed for response to #19 regarding groundwater/aquifer(s) and #93 regarding surface water/drainage.
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	169	<i>"How will the [well] casings be protected and secured in the interim from vandalism or damage (e.g. farm machinery, recreational and other vehicles, etc.)? Will the cap be welded or removable? Will the casings be mounded to safeguard them from spring runoff?"</i>	<p>Refer to response #167 regarding procedures for the establishment and decommissioning of wells and response to #40 regarding well design to prevent surface water infiltration.</p> <p>Well casings will be secured (capped and locked) at all times when no active work is occurring at the well. All wells will be installed with a lockable cap and will be identified with a tag and flagging to mark their locations to prevent accidental damage from vehicles. Caps will be secured so that only authorized personnel will have access to them.</p>	Refer to mitigation measures proposed for response #93 regarding surface water/drainage.
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	170	<i>"Since the proponent indicates some extraction could also occur in winter (EAP1, p. 11, 14), how will the extracted water be returned to the aquifer onsite, specifically, how will screening, dewatering and disinfection work at freezing temperatures?" "Where will the sand be contained during extraction in winter, since it won't be conveyed to the processing plant at this time? Will it be stockpiled at the extraction site until spring?"</i>	Refer to response #166 regarding seasonal timing of sand extraction activities and over-winter stockpiling of sand at the Processing Facility site.	N/A

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	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	171	"There is confusion regarding the actual months of extraction. On p. 11 of EAP1, we see: "Sand extraction activities will occur 24/7 from April through November (and winter, weather dependant)", and on the same page as well as p. 15 we see: "In the winter months, the water in the system is stored on site in tankage". What sort of tankage and how secure will it be? How much tankage will be required, especially as the volume will eventually increase with extension of the slurry pipe system?"	Refer to response #166 regarding seasonal timing of extraction activities. There will be no standing water in the slurry loop system when there is no extraction activity occurring (generally mid- to late-November to early- to mid-April) so there is no risk of freeze fracturing of the slurry lines or pumps during winter. Water in the slurry loop system will be drained into appropriate portable tanks to hold water over the winter months for re-use in the spring. These temporary water storage tanks will be large volume modular tanks (lined) which will vary in size from 1,300 m ³ to 6,000+ m ³ , as needed. Water tanks will be temporarily stored in appropriate locations depending on the length and location of the slurry line that year.	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	172	"No information is given regarding what the maximum number [of well clusters] might be on an individual parcel."	The number of well clusters and wells each extraction year is determined by the available land area that is accessible (e.g. terrain suitable for equipment access) land owner agreements and the geotechnical conditions (e.g., overburden, caprock thickness; as described in the Project geotechnical assessment [Stantec 2022]) in the extraction area. The combination of these factors will determine the maximum number and placement of wells per parcel of land.	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	173	"up to seven extraction wells may be operating simultaneously in one well cluster at any given time" (EAP1, p.3). However in section 6.5.1 of EAP2 (no page numbers), we see: "with only seven well clusters active any one time". Which is correct? Is this a typo? Will wells from seven different clusters operate at the same time?"	Thank you for your comment. The wording in Section 6.5.1 (Vegetation) in the EAP has a typographical error in the first sentence of the second paragraph of that section. The wording "...with only seven well clusters active any one time..." should read: "...with only seven extraction wells active at any one time..."	N/A
	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	174	Concern regarding new sand extraction method and effects on the aquifer/water quality: "Let us not tamper with it and subject it to a new under-developed, unproven mining method that has no established safe outcome ..."	Please refer to responses #153 regarding the extraction method.	N/A
	Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	175	"The Report does not provide data on the pressure. What is the pressure amount used for injection? What is the increase of pressure to the aquifer from injection wells?"	No pressure is applied to the well or the formation during re-injection of the water. Water is returned to the aquifer by gravity only via the wells in operation. Therefore, water returns to the aquifer passively and is not forced.	N/A
	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	176	Concern regarding the number and dimensions of extraction wells: "The massive dimensions and the amount of wells to be used will leave a permanent potential source for surface contamination."	See response to #40 for well design to prevent surface water infiltration. The Project utilizes standard diameter well pipe available to all well drilling contractors. Well dimensions are of similar size to wells used to source water for larger use community and industrial supply. See also response to #172 regarding placement of wells.	N/A
	Email by Druanne Naayen, received Nov. 1, 2021, Public comments Batch #6	177	Concern regarding method of drilling: "How can they assure us that the aquifer will not destabilize or become contaminated with this unsubstantiated method of drilling?"	The drilling methods used to install the wells are standard drilling methods commonly used throughout the water well industry in Manitoba and across Canada. All drilling activities will be conducted by licenced drilling contractors. If question is referring to the extraction method, please refer to response #153.	N/A

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	Email by Reeve Trudy Turchyn, RM of Reynolds, received Nov. 1, 2021, public comments Batch #6	178	"Can the production casing be securely grouted, up to 200' below ground level, to prevent mixing of aquifers under the Manitoba Water Rights Act?"	Refer to responses #40 and #160 regarding well casing and grouting. The production pipe is not a permanent fixture in the well. It is suspended from the surface equipment during extraction activities and removed immediately thereafter. The (permanent) inner casing (EAP, Figure 2-2) is grouted into place, which isolates the sandstone, shale and limestone from each other. This is a standard procedure for water well construction.	N/A
	Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1, 2021, public comments Batch #7; Email by Sonya May, received Nov. 1, 2021, public comments Batch #8; Email by Jennifer Vandenbosch, Forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #8	179	General concern regarding new sand extraction method and potential impacts (e.g., aquifer contamination; general environmental and health impacts).	Refer to the above response #153 regarding the extraction method and testing. Additionally, the modelling described in both the geotechnical study (Stantec 2022) and the Hydrogeology and Geochemistry Assessment Report (EAP, Appendix A) will be periodically updated and improved over time as more data continues to be collected in accordance with hydrogeological and geotechnical monitoring plans. The testing described above in response #158 is sufficient to support a projection of success for the operations that will be carried out during the first four years.	Refer to mitigation measures proposed for response #139 regarding human health, #19 regarding groundwater, #93 regarding surface water and drainage, #103 regarding vegetation and #109 regarding wildlife.
	Email by Megan Henry, received Nov. 1, 2021, public comments Batch #7	180	"My family has concerns with this project moving forward as is. The are too many pieces missing in the planning to realistically approve this project."	CanWhite is working with the local land owners, stakeholders and the province to make sure all questions and concerns are answered and that the Project will not adversely impact humans or the environment.	N/A
	Email by Alex, received on Nov. 1, 2021, public comments Batch #7	181	Request for: "Applicant to clarify where else in the country this extraction method is used?"	This method for sand extraction is not currently used elsewhere in the country that CanWhite is aware of. Please also refer to response #153 regarding the extraction method and its unique application for this Project.	N/A
	Email by Alex, received on Nov. 1, 2021, public comments Batch #7	182	Request for: "Applicant to provide sealed engineered drawings for Sand Extraction Circuit Process and method"	The design is proprietary to CanWhite (patent pending), but a diagram of the extraction method and description is provided in the EAP Section 2.2.1 and Figure 2-2. Refer also to response #165 describing the airlift method.	N/A
	Email by Suzanne Dienstbier, received on Nov. 1, 2021, public comments Batch #7	183	"What guarantee do they make that this method of drilling won't contaminate the aquifer?" "What evidence can they provide that slurry lines and drilling are 100% safe?"	The potential impact of the extraction process on the subsurface environment (geotechnical and hydrogeology) has been assessed by third party engineers and scientists as follows: geotechnical report (Stantec 2022); and Hydrogeology and Geochemistry Assessment Report (EAP, Appendix A). Also refer to responses to #1 regarding geology/topography; #24, #25 and #26 regarding potential for contamination of the groundwater; and #197 regarding the slurry line.	Refer to mitigation measures proposed for response #1 regarding geology / topography; #19 regarding groundwater; EAP, Section 8, Follow-up Plans
	Email by Janet Nylen, received Oct. 12, 2021, public comments Batch #7	184	Concern that the project is utilizing untested methodologies and incomplete testing models.	Refer to response #153 concerning the extraction method and history.	N/A
	Email by Janet Nylen, received Oct. 12, 2021, public comments Batch #7	185	Concern about the sand extraction method and why the project approval application is only for activities up to 2025 when the life of the project is estimated at 24 years: "The current application is for only 4 years and CanWhite states this is "because it anticipates advancement in extraction methods and operations that are expected to increase efficiency and reduce the overall footprint." It would be another opinion that it is a period to determine if the untried extraction process is experimental or if it can be a viable project."	Refer to response #153 concerning the extraction method and history. The extraction method at this time is proven and repeatable as tests have been conducted and successfully carried out. Separating the Project into 4-5 year groupings, with Notices of Alteration to be filed as needed, will allow for improvements in methodology as well as any changes in environmental impact that might arise from relocating the specific sites of extraction activities. Improvements could include, for example, potential efficiencies in the extraction method to reduce the overall number of wells needed per year. Additionally, land ownership and uses do change over time, and therefore site selection for a full 24 years would not be efficient or appropriate.	N/A

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Email by Janet Nylen, received Oct. 12, 2021, public comments Batch #7	186	<i>"The specific process of how the materials will be pumped from the cluster of wells is not clearly identified but it will most likely add air into the well systems, which along with the proposed re-injecting of "excess" water from the groundwater slurry could likely cause a chemical change to the groundwaters ."</i>	<p>The process for the sand and water transportation from the well cluster to the dewatering and pumping station is described in Section 2.2.3, 'Sand Slurry Pre-Screening and Overs/Fines Temporary Stockpiling' and 2.2.4, 'Sand Slurry Conveyance to Processing Facility' in the EAP. The sand and water brought to the surface from each extraction well feed via a 15 cm (6-inch) thick-walled high density polyethylene (HDPE) line to a temporary (mobile) dewatering and pumping station at the extraction site. In the dewatering and pumping station, the water is separated and sent back to the extraction well (after UV treatment) and the sand enters the main slurry loop system with the recycled water (refer to Figure 2-1 in the EAP).</p> <p>Air will not be used to pump water or sand around on surface or to move water back underground to the aquifer. No pressure will be applied during the reinjection process, as water will be returned to the aquifer by gravity only (see response #175). Also refer to the response to #19 regarding quality of groundwater.</p> <p>See also response #191 below which provides more information about the pumping station.</p>	N/A
	Email by Margaret Marion-Akins and E.Allan Akins, received Nov. 1, 2021, public comments Batch #7	187	<i>"The proposed method for mining the silica is not supported in their EAP and it is understood to be new and untested. It is concerning that unproven methodologies would be allowed particularly without the company having in place fully accountable, mitigation, rehabilitation and compensatory plans for area residents ."</i>	<p>Please refer to responses #153 regarding the extraction method. Also refer to response #234 regarding follow-up, monitoring plans and closure plan.</p> <p>As stated in responses #131 and #137, CanWhite will enter into agreements with landowners for access to private land and compensate landowners where extraction is occurring. The content of these agreements is private and confidential.</p>	EAP, Section 8, Follow-up Plans
	Email by Darryl Speer, received Nov. 1, 2021, public comments Batch #7	188	Concern regarding the sand extraction method: "For a pristine water source with glacial origins to now be subject of an experimental mining enterprise is Dead Wrong."	Please refer to response #153 regarding the extraction method. Refer to responses #19 to #34 regarding groundwater concerns.	EAP, Section 8, Follow-up Plans
	Email by Christine Hutlet (CAO, RM of Tache), originally sent to Minister Guillemard, forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #8	189	Concern regarding the sand extraction method: <i>"This project is very complex and the methodology for extraction appears to be unproven, and the potential for significant negative impacts to the groundwater resource in southeastern Manitoba is too risky not to have the project more fully scrutinized by the public, municipalities, subject matter experts and other interested parties ."</i>	<p>Please refer to response #153 regarding the extraction method. Refer to responses #19 to #34 regarding groundwater concerns.</p> <p>A Clean Environment Commission public hearing will be held early in 2022 that will provide the public with additional opportunity to ask questions about the Project, and receive information from professional subject matter specialists about the Project and the various environmental investigations that were completed for the Project.</p>	N/A
Project Description - Extraction Waste Quantity	Public Registry from Anessa Maize, received Nov. 1, 2021, public comments Batch #3	190	<i>"No calculations for mine waste materials, also brought to surface during extraction, are provided by CanWhite/AECOM ."</i>	Mine waste (e.g., overs) is estimated to range from 0.1% to 0.8% of the extracted material.	N/A

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
Project Description - Equipment Components Details	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	191	"Pumping stations of undisclosed design and configuration will maintain pressure in the slurry lines ." "Slurry lines, i.e. HDPE tubing of inadequate description and specifications, will be placed on the ground, will be moveable to different locations, and will cross under or over roads ."	A description of the sand slurry conveyance and pumping station is provided in Section 2.2.3, 'Sand Slurry Pre-Screening and Overs/Fines Temporary Stockpiling' and 2.2.4, 'Sand Slurry Conveyance to Processing Facility' in the EAP. Additional information regarding the pumping station equipment and dewatering process has been provided in Table 1, Responses to TAC, response #9, which reads as follows: "The sand and water extracted from wells will first pass through a cyclone at the well cluster site to remove some water. Then the sand and water at 65% sand will pass over a dewatering screen. A dewatering screen is a one layer inclined screen. The screen catches the sand, and allows the water to pass through. The wet sand then travels off the inclined screen into a sump, and the water that flows out the bottom of the screen feeds into the UV light treatment system before reinjection (by gravity flow) back to the sandstone aquifer. When the wet sand enters the sump it is mixed with recycled water from the Processing Facility and is then transported (pumped) as a sand and recycled water slurry through a slurry line to the Processing Facility." Please also refer to responses #154 and #197 for additional information about the slurry lines.	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	192	"While the undescribed onsite dewatering station and the undescribed slurry pumping stations will run on mainline power, no mention is made of where hydro poles and power lines will be routed and the additional clearing required ."	CanWhite is in discussions with Manitoba Hydro at this time regarding appropriate locations and routes of the temporary power lines for pumping stations. These locations and routes will be confirmed in consultation with Manitoba Hydro prior to site construction. Please refer to response #191 for further information on pumping stations. Please also refer to responses #105, #122 and #126 for further details on Manitoba Hydro and power lines.	Refer to mitigation measures proposed for #103 regarding vegetation.
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	193	"No information is given regarding a critical component of the air lifting process, i.e. the compressors. What are their pumping capacity and hp? How many wells will be serviced by one compressor? What is the rate of air injection into one well? "	At this stage of application for the Environment Act Licence, detailed design information (e.g., pumping capacity and horsepower) is not yet available. Such proprietary information would be provided only to regulatory authorities. Compressed air will be used only during extraction, not for slurry conveyance. All wells comprising a 'cluster' will be serviced by one rotary screw, oil-free compressor for the duration of operations.	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	194	"We are not given any information regarding the details of the onsite dewatering operation ..." "Will any chemicals be used? "	Please refer to response #191 for details on the sand dewatering operations. No chemicals are used in any part of the Project extraction process.	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5; Two emails by Oleksiy, received Nov. 1, 2021, Public comments Batch #6	195	General - request for more details regarding all project components and activities (e.g. technical drawings engineer sealed/stamped).	At this stage of application for the Environment Act Licence, detailed design information is not yet available. Such proprietary information would be provided only to regulatory authorities. Please also refer to response #182 concerning request for detailed drawings.	N/A
	Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	196	"Many details of how the systems work remain unanswered ."	It is unclear which details specifically the author is requesting. Please refer to response #192 for details on the pumping station, response #153 on the extraction method, #186 on sand transport from the clusters, and #195 regarding requirements for detailed engineering drawings.	N/A

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
Project Description - Slurry Transport Method	Email from Anne Wowchuk, received Nov. 1, 2021, Public comments Batch #2	197	<i>"How are you going to transfer the slurry from Queens Valley Road to the site south of Vivian?" "What type of pipe would be utilized?" "What are the companies' plan to prevent any breakage or malfunction in the slurry lines? What is the clean up procedure for a sand spill, if one is to occur?"</i>	<p>Please refer to Figure 1-2 in the EAP which provides the location of the proposed extraction wells for the first four to five years of operation. Note that none of the extraction sites proposed in this application approach or cross Queens Valley Road.</p> <p>Where road crossings are necessary, CanWhite will work with the Province and Municipality to determine the most suitable option which would include crossing above or below the road. Regardless of the crossing type (above or below), the piping material will remain the same.</p> <p>As indicated in Section 2.2.4 of the EAP (Sand Slurry Conveyance to Processing Facility), the slurry loop system is a temporary line made of high-density polyethylene (HDPE) tubing. This type of tubing/piping is not prone to leakage and is very commonly and successfully used in similar industrial applications with high flow volumes, including the conveyance of industrial sand. HDPE systems are also used locally for agricultural use in Manitoba to move animal manure used as fertilizer on crop fields.</p> <p>As described in response #93, CanWhite will be monitoring the slurry line and leak detection will be used in addition to visual inspection and non-destructive testing. The slurry line will be inspected on a daily basis, and after extreme weather events, to check for leaks and/or breaks in the line. Additionally, an automated pressure transducer for leak detection will be installed along the slurry line. If any leaks or breaks in the line that require repair are detected, flow to the line will be shut down, and appropriate spill containment and clean-up measures will be applied, and the line will be repaired or replaced. Segmentation of the line will allow for each section to be isolated so repairs can be done easily and quickly.</p> <p>Section 6.9.2 of the EAP (Spills and Leaks) describes the standard procedures that will be implemented to prevent spills and leaks from occurring during Project activities. The slurry line connecting the extraction sites with the Processing Facility will only contain a sand/water slurry and a residual amount of a non-toxic biodegradable flocculant (from recycled water as described in the Facility project EAP). The quality of the water within the slurry line will be of similar quality to the groundwater removed from the aquifer during extraction, as no toxic chemicals or other harmful contaminants are introduced into the slurry line during the extraction process. Therefore, there is no risk of toxic chemical or heavy metal contamination associated with the accidental release of water to a surface water body from the slurry line.</p>	EAP, Section 8.2, Water Management Plan; EAP, Section 8.6, Environmental Emergency Response Plan
	Email forwarded by Shandi Strong, originally written by Jon Gerrard (MLA), received Nov. 1, 2021, Public comments Batch #3	198	Concern regarding use of HDPE pipes to transport sand slurry resulting in spills and leaks due to abrasive sand and pipes being continuously decoupled and moved.	<p>The HDPE type slurry lines are used in many industries and are utilized to move abrasive materials. This type of HDPE material was purposely selected for robustness and wear resistance.</p> <p>Please refer to response #93 and #197 for more information describing the slurry line and how the slurry line will be monitored for leaks.</p>	Refer to mitigation measures proposed for response to #197 regarding the slurry line.
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	199	<i>"Will CWS install leak detection on their lines with automated pump shut down? Will CWS use interior wear inspection tools at regular intervals to determine the extent of slurry line wear?"</i>	<p>The operation and maintenance procedures regarding the slurry lines will be included in standard operating procedures prepared in accordance with the detailed design and manufacturer specifications, and will include monitoring and repair.</p> <p>Also refer to responses #93 and #197 regarding inspection, spill prevention, leak detection and emergency management.</p>	Refer to mitigation measures proposed for responses to #93 and #197 regarding the slurry line.
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	200	<i>"Some of the water in the slurry line system will contain water from the facility clarifier and thus potentially residues of polyacrylamide, which degrades to toxic acrylamide. Some well grouting agents and borehole linings also contain polyacrylamide."</i>	<p>The slurry line, which will contain a sand and water slurry for transport to the Processing Facility, will not contain harmful chemicals/contaminants. Please also see the response to #93.</p> <p>CanWhite uses only industry-standard well grouting materials that are used in the water well industry. Also, the well casings used are the same as what is used in the water well industry which are either PVC piping or steel pipe.</p>	Refer to mitigation measures proposed for response to #93 regarding water management.

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	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	201	General concern regarding the type of slurry piping used and request for more details on slurry line components; monitoring of slurry line pressure and leakage; placement method/location for slurry line; mitigation/response in case of rupture/leakage: <i>"Use of HDPE tubing for this application raises concerns: it is not optimal for high pressure applications, becomes brittle at cold temperatures, withstands less pressure at warm temperatures, it will be continually abraded by silica sand, and it requires gentle handling and protection from scratches. It will be exposed to the rigors of the environment, periodic manipulation, and potential human/animal interference. Risks of leakage or rupture are significant."</i> <i>"Presumably, remotely continuously reporting pipe pressure gauges and flow meters will be used: how will they be deployed?"</i> <i>"There is no information in the EAP how volumes within the system will be adjusted if the pressure rises or drops outside the optimal or safe range, nor what apparatus will be incorporated into the design for this purpose. Additional water will also be required as the movable slurry pipe system expands with increasing distances (EAP1, p. 18)."</i>	<p>Please refer to #93, #113, #154, #197 and #199 for detailed information describing the slurry lines, including leak detection and spill response.</p> <p>CanWhite is not aware of the origin of the concern in relation to HDPE pipes/tubing. Pipe-grade HDPE is durable, and therefore commonly used in a multitude of outdoor year-round applications in northern climates (e.g., underground piping; plumbing; irrigation systems; mining applications). Further, as noted in the responses listed above, the CanWhite process is not a high-pressure application, and the slurry line will not be used in the winter time as extraction activities are only April through November, weather dependent.</p> <p>As noted in the author's comment, additional water may occasionally be required to provide slurry conveyance as the distance increases from the active well pads to the Processing Facility. Under these circumstances, some of the extracted water will be retained within the slurry loop rather than being returned immediately to the aquifer. Water in the slurry loop system is recycled. Therefore, the slurry loop system will not need to be continuously fed with additional water.</p>	Refer to mitigation measures proposed for response to #93 regarding water management.
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	202	<i>"According to Figure 2-5 in EAP1, some of the slurry pipes will be routed along a Manitoba Hydro transmission line corridor. Manitoba Hydro conducts weed and brush control on its rights-of-way using spraying and/or brush cutting/mowing. How will these maintenance activities ensure that the slurry lines are not damaged? Is an easement required?"</i> <i>"What happens if power lines are damaged in storms and fall onto the pipes?"</i> <i>"Unless the pipes and spill are located in the open where they are readily accessible, how will it be possible for the above vehicles and equipment to reach the spill site?"</i>	CanWhite is in discussions with Manitoba Hydro to determine the best access for each individual case. Operational and maintenance details concerning Manitoba Hydro rights-of-way will be agreed upon between CanWhite and Manitoba Hydro.	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	203	Concern that: <i>"The fluid in the lines may potentially contain residues of polyacrylamide (PAM) from the processing plant."</i> <i>"...polyacrylamide biodegrades into highly toxic acrylamide ..."</i>	Please note that, as indicated in the response to #93, the slurry line, which will contain a sand and water slurry for transport to the Processing Facility, will not contain harmful chemicals/contaminants.	Refer to mitigation measures proposed for response to #93 regarding water management.
	Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	204	<i>"The Proposal is devoid of any substantiating evidence to support a working slurry system."</i>	Please refer to #93, #154, #197, #198 and #199 for information on the slurry line.	N/A

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	205	"...CanWhite mentioned installing pressure transducers to automatically shut down the slurry lines in the event of a leak but again no supportive material for an automatic shut down system has been provided." "At what pressure will leak/break detection initiate? Will it detect small tears?" "Will containment and clean-up be started immediately?" "In the event of a breach, How will CanWhite ensure the safety of the environment and public health?"	As stated in the response to #155, the following information was provided in the EAP, Section 2.4.2, 'Slurry Lines and Water Return Lines': "Constant flow, pressure and [visual] monitoring will occur 24/7 while slurry lines are in use". Pressure transducers are standard industry components which will be sourced in the market in accordance final design specifications. Please also refer to responses for #93, #155 and #197 regarding the slurry line.	Refer to mitigation measures proposed for response to #197 regarding the slurry line.
	Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	206	"The EAP does not specify what contaminants from mining operations are in the lines. These lines will contain residues of polyacrylamide from the clarifier tank. Polyacrylamide biodegrades into highly toxic acrylamide. A break or leak can contaminate surface water bodies and the underlying Carbonate Aquifer."	Please note that, as indicated in the response to #93, the slurry line, which will contain a sand and water slurry for transport to the processing facility, will not contain harmful chemicals/contaminants. Also, please refer to response for #197 regarding the slurry line.	Refer to mitigation measures proposed for response to #197 regarding the slurry line.
	Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	207	"Silica sand is used as an abrasive for sandblasting. The EAP does not provide any details on the wear and tear that silica, although in a slurry, has on the pipe line."	Please refer to response #198 regarding the slurry pipe.	Refer to mitigation measures proposed for response to #197 regarding the slurry line.
	Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7	208	"The slurry line would be expected to carry the extremely toxic acrylamide monomer from the clarifier tank, and it would continue to be increasingly toxic as recycled water continues to be put through the loop." "In the CWS Virtual Open House, when concerns about a leak from the slurry line were brought up, they responded by describing infrastructure that was not included in the EAP."	The slurry line, which will contain only a sand and water slurry for transport to the processing facility, will not contain acrylamide (see response to #93). Also, please refer to response for #197 regarding the slurry line.	Refer to mitigation measures proposed for response to #197 regarding the slurry line.
	Email by Janet Nylen, received Oct. 12, 2021, public comments Batch #7	209	"How will the lines be monitored for ruptures or breaks at the flanged connections? How often will they be inspected and/or replaced? After use each move to another cluster, how will the lines be cleaned and tested? What happens to the lines over the winter months how will they be secured? These concerns will only increase over time as the well clusters move further away from the processing plant and the transport lines become longer."	The operation and maintenance procedures regarding the slurry lines will be included in standard operating procedures prepared in accordance with the detailed design and manufacturer specifications, and will include monitoring and repair. Also refer to response #93 regarding inspection, spill prevention, leak detection and emergency management and to response #166 regarding winter operation of the slurry line.	Refer to mitigation measures proposed for response to #197 regarding the slurry line.
	Email by Darryl Speer, received Nov. 1, 2021, public comments Batch #7	210	"Slurry line transports pose serious logistics for relocating every 5-7 days on multiple wells, and back to the main processing plant with road crossings and draining and rupture cleanups, etc."	Please refer to response #197 and #209 on road crossings and slurry lines.	Refer to mitigation measures proposed for response to #197 regarding the slurry line.

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
Project Description - Effectiveness of Ultraviolet (UV) treatment	Email from Sue Ziemski, received Nov. 1, 2021, Public Comments batch 1; Email from Dennis Leneveu, received Nov. 1, 2021, Public comments Batch #1; Email from Roxanne Frechette, received Nov. 1, 2021, public comments Batch #2; Email from Deborah Thompson, received Nov. 1, 2021, public comments Batch #2; Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2; Email from Herman and Marilyn Bouw, Nov. 1, 2021, public comments Batch #3; Forwarded letter from Christine Hutlet, CAO, RM of Tache, Oct. 5, 2021, public comments Batch #3; Email forwarded by Shandi Strong, originally written by Jon Gerrard (MLA), received Nov. 1, 2021, Public comments Batch #3; Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	211	General - Concern about the reintroduction of UV treated groundwater back into the aquifer / effectiveness of UV treatment method (e.g., due to high levels of iron, manganese or high turbidity levels) / no data available regarding testing of effectiveness of UV system at the project site; no UV system design provided.	<p>Water returned to the aquifer following the sand extraction process will be of similar or improved quality as the water removed from the aquifer during the extraction process. The extracted water will be contained and under continuous flow during extraction, and therefore will not be exposed to contaminants (including organic materials and chemicals) throughout the extraction and treatment process. As an additional measure, UV sterilization will be applied to the extracted groundwater prior to it being returned to the aquifer to remove naturally occurring microorganisms that may be present in the groundwater.</p> <p>CanWhite is working with industry leading UV treatment specialists and a certified laboratory to determine the required level of UV treatment and filtration. UV systems are widely used to disinfect industrial and municipal water for potable and non-potable uses. To support the design of the UV treatment system, CanWhite will be undertaking additional water quality testing to support the design of the UV treatment system. Several parameters will be monitored in the field and verified by the analytical laboratory to guide system design.</p> <p>As indicated in Table 1, Responses to TAC, response #11: "Regarding technical specifications of the UV treatment system, a design dose of 25-30 mJ/cm2 is typical for waste water treatment systems designed to meet 200 MPN/100mL fecal coliform limit, but a higher dose may be required based on local water quality and UV lamp fouling estimates. At this preliminary stage, the final design criteria for the UV treatment system are being developed. The final system design may also include a system that provides a target of 3-log (99.9%) inactivation of both Giardia and Cryptosporidium in accordance with local drinking water standards, although this is a higher level of treatment than is typically used in other applications when returning treated water back to the environment. An upstream filtration system may be required.</p> <p>The control narrative related to pumping operation is still in the preliminary design stages, but will include industry-standard operational fail safe requirements such as: alternating Duty/Standby UV disinfection units, the inability for the UV system to be bypassed, separate alarms to indicate lamp failure, low UV intensity and other causes of UV disinfection unit failure. A dedicated programmable logic controller (PLC) may be provided given the mobile nature of the systems, and multiple PLCs may be provided as necessary to ensure continuous treatment, depending on the final controls design.</p> <p>Treatment will use previously validated UV disinfection equipment which will provide the required pathogen inactivation based on a set UVT (UV transmittance), UVA (UV absorbance) and turbidity. It is likely that this system will be designed based on an incoming UVT of >65%. Online metering of UVA and UVT will be included in accordance to the United States Environmental Protection Agency's UV Disinfection Guidance Manual, which is considered the industry standard for this type of treatment. Additional testing related to fecal/total coliforms would also be considered.</p> <p>At this design stage a detailed level of scheduled maintenance and upgrades is not practical, but would likely include regular UV lamp replacement, regular calibration of sensors, and the potential for additional UV disinfection units to be installed within the overall piping system based on projected changes in flow."</p>	EAP, Section 2.1, Components and Activities; EAP, Section 8.2, Water Management Plan

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5; Tangi Bell, received Nov. 1, 2021, Public comments Batch #6; Email by Druanne Naayen, received Nov. 1, 2021, Public comments Batch #6; Email originally written by Elizabeth Worden, sent to Laura Pyles and forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #7; Email by Janet Nylen, received Oct. 12, 2021, public comments Batch #7; Email by Margaret Marion-Akins and E.Allan Akins, received Nov. 1, 2021, public comments Batch #7; Email by Darryl Speer, received Nov. 1, 2021, public comments Batch #7	212	General - Concern about the reintroduction of UV treated groundwater back into the aquifer / effectiveness of UV treatment method (e.g., due to high levels of iron, manganese or high turbidity levels) / no data available regarding testing of effectiveness of UV system at the project site; no UV system design provided.	Refer to the response above for #211 regarding UV light treatment.	Refer to mitigation measures proposed for response to #211 regarding UV light treatment.
Project Description - Exploration / Drilling / Testing Activities	Forwarded letter from Christine Hutlet, CAO, RM of Tache, Oct. 5, 2021, public comments Batch #3	213	<i>"It appears that this study is assuming that the isolated area where they performed well testing is representative of the entire project area. Should this testing program not be expanded to have a more representative picture of the entire project area and provide an idea of the variability that could be encountered?"</i>	<p>With respect to well testing, the study area for the Hydrogeological and Geochemistry Assessment is shown in Figure 6-1 of the assessment (Appendix A of the EAP). This area extends from Winnipeg east into the Sandilands area, and is much larger then the isolated area referred to in this question.</p> <p>Although the test wells utilized for this specific study were within a small area, the Hydrogeology and Geochemistry Assessment utilized information collected from a large number of historical studies that cover the entire study area over a period spanning several decades. The aquifers have been well studied and are relatively homogeneous (consistent) across the full extent of the Project area.</p> <p>This Environment Act application fully addresses the first 4 to 5 years of extraction. Any change in potential environmental impact that could result from relocating operations in subsequent years will be addressed through the Notice of Alteration process set out in section 14 of the Act, and as described in the regulatory framework section of the EAP (Section 1.7). Each future Notice of Alteration for proposed extraction activities beyond 2025 will project a block of proposed annual extraction areas, describe in detail the existing environment in that block and include a thorough environmental assessment using monitoring data collected during extraction operations and the follow-up activities proposed in the EAP (Section 8).</p>	EAP, Section 8, Follow-up Plans

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Email forwarded by Shandi Strong, originally written by Jon Gerrard (MLA), received Nov. 1, 2021, Public comments Batch #3	214	<i>"What is worrisome is that we are have already heard from people who live nearby where the test drilling has been done and we are told their wells now have an unusual odour, taste, increased iron content and the water is less clear than it was. When considered in the context of concerns which have already been raised with regard to a lack of care in putting in the original test boreholes, this finding is extremely worrying."</i> <i>"The potential for widespread effects exist. This is of significant concern, and is a reason why great care needs to be exercised in reviewing the CanWhite Sands proposal. The concern is even greater given the reports during the exploratory phase that CanWhite Sands was not following specified procedures sufficiently enough when it came to test wells."</i>	<p>Groundwater aesthetics can be adversely impacted by a number of natural biological, chemical and environmental factors, as well as by inadequate maintenance of specific wells. Foul odour, taste and colour can result from naturally elevated metals in the groundwater or from the presence of naturally occurring bacteria, protozoans and other microbes. Microbial concentrations and metal precipitates may become elevated in the event of poor or infrequent well maintenance. The severity of aesthetic impacts can be exacerbated during periods of hot weather and drought. Wells are also known to develop biofilms over time and require rehabilitation or replacement at the end of their useful life.</p> <p>Based on our records, CanWhite has received two complaints concerning poor water quality. In both cases, CanWhite hired a third-party qualified hydrogeologist to investigate the problem. It was determined that the cause of the water quality concern was not the result of CanWhite operations.</p> <p>Upon commencement of Project activities, CanWhite will provide local residents with contact information to file any complaint or concern. Early operations will be intentionally located in an area with very few wells, allowing for sufficient time to update the operational plan based on data from a purpose-built groundwater monitoring program for each year of operations.</p> <p>The Groundwater Monitoring and Impact Mitigation Plan (EAP, Section 8.4) prepared in advance of commencing operations will include the following:</p> <ul style="list-style-type: none">- A pre-condition well survey will be conducted to physically inspect the well, determine the elevation of the pump and evaluate the potential for any impacts in advance of operations.- If landowners' existing well pumps are located below but near the static water level, CanWhite will assume the cost of lowering the pumps, or will modify its operational plan (e.g. pumping rate, setback distances) to avoid or mitigate any impacts.- Groundwater elevations will be monitored in real time so that operations can be stopped if water levels approach intolerable ranges.	EAP, Section 8.4, Groundwater Monitoring and Impact Mitigation Plan
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	215	Regarding exploration / testing boreholes: <i>"Will these extra wells be considered supererogatory in terms of reported production numbers, yet in themselves also pose (additional) environmental risks?"</i>	<p>To be clear, there is no "production" associated with exploration wells. All exploration activities were conducted in compliance with mining claim permits, borehole licences and landowner agreements for private land access.</p> <p>The EAP, Section 1.5, describes CanWhite's previous Exploration activities. These previous sand deposit exploration activities occurred from 2017 to 2020 in southern Manitoba east of Winnipeg within an approximate 20 km west to east width area extending from approximately 30 km south of Steinbach, north to PTH 15 near Anola.</p>	N/A

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	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	216	"Artesian wells flow under hydraulic pressure; water cannot be returned to the well and sand extraction is problematic. According to WDR, two of the 41 wells already drilled were artesian, approximately 5% (Well PID 200824, 200861). WDR is ambiguous whether both of these wells have been sealed or not, as there are no sealing records for either." "This matter raises some issues. The flowing well will flood the extraction site (Figure 3). Will the purpose of some of the drainage ditches mentioned in EAP1 (p. viii) be to divert this water before (or even if) the well can be stoppered?"	<p>Regarding the two wells referenced in this question, neither was artesian at the time of drilling. They were capped and therefore did not have the opportunity to flood the surrounding area due to potential artesian conditions. These wells have since been sealed, and reports of the sealing have been filed with Manitoba by the drilling contractor.</p> <p>Artesian wells are not unusual in Manitoba, and the guidelines and regulations provide for steps to manage and seal artesian wells. There are no areas that are expected to be artesian for the majority of the 24-year mine life. However, if flowing artesian wells are encountered, they will not be allowed to flood the site and will be contained. In many cases, if a well is artesian it is only artesian at a certain time of year (usually spring). In these cases extraction activities can take place when water levels are seasonally low.</p>	N/A
	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	217	Concern regarding discoloured water during CanWhite exploration / testing boreholes: "As the complaint was never independently investigated by our regulators it is unknown what exactly caused the discolouring and brown waters. It could also have been turbidity from operations."	Refer to response #214 about concerns for operations impacts to existing wells.	N/A
	Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	218	"Have permits been issued for all CanWhite injection wells since 2017?" "CanWhite has been mining since 2017." "Why was this monitoring data, taken during actual extraction operations, withheld from the EAP and the Report?" "What treatment was provided for this water and where is that data?"	<p>There has been no 'mining' to date; nor will there be any mining unless and until an Environment Act Licence and any other applicable approvals have been granted for the Project. Refer to response #215 regarding exploration / testing boreholes.</p> <p>CanWhite has been issued injection permits for any and all wells that were re-injected. Not all wells were re-injected, as some well water was diverted to surface, and a permit was also issued for this. Re-injected water was treated with chlorination in accordance with CanWhite's application for the re-injection permit. Monitoring data was collected and would be made available to regulatory authorities upon their request.</p>	N/A
	Email by Sonya May, received Nov. 1, 2021, public comments Batch #6	219	Concern that noise levels generated during CanWhite's exploration/testing activities did not abide by the RM of Springfield noise bylaw (e.g. noise timing restrictions) and that complaints were not addressed. Concern that the same will occur during Project operations.	CanWhite will develop a Noise Mitigation Plan for the Project that will include a strategy for addressing community concerns in discussion with the Environmental Compliance and Enforcement (ECE) Branch to confirm the recommended scope for the plan. The draft plan will be submitted to ECE for review and will be finalized prior to the initiation of Project operations. Any noise complaints will be investigated and addressed as quickly as possible. Please also refer to Table 1, Responses to TAC: response # 13 regarding noise. Also refer to response #82 regarding noise.	Additional Proposed Mitigation: CanWhite will have a Noise Mitigation Plan in place prior to initiating Project operations.

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	Email by Reeve Trudy Turchyn, RM of Reynolds, received Nov. 1, 2021, public comments Batch #6	220	<i>"Is the data collected from the test drilling input into computer software to obtain results or have physical models with atmospheric conditions created?" "Is the small sampling of area test wells a good representation of the results of almost 400 extraction wells created each year for 25 years?"</i>	<p>The data collected from test drilling was combined with publicly available data and used to construct a digital geological model of the aquifers. The geological model was then used as the basis for construction of a digital numerical groundwater model that utilized aquifer properties, water levels, atmospheric conditions and surface water elevations as input parameters and boundary conditions. This is an industry-standard approach that is utilized for development and calibration of numerical groundwater models used to simulate impacts of natural and human stressors on groundwater water resources.</p> <p>Although the test wells utilized for this specific study were within a small area, the Hydrogeology and Geochemistry Assessment utilized information collected from a large number of historical studies that cover the entire study area over a period spanning several decades. The aquifers have been well studied and are relatively homogeneous (consistent) across the full extent of the Project area.</p> <p>Refer to response #213 which also states: "This Environment Act application fully addresses the first 4 to 5 years of extraction. Any change in potential environmental impact that could result from relocating operations in subsequent years will be addressed through the Notice of Alteration process set out in section 14 of the Act and described the regulatory framework section of the EAP (Section 1.7). Each future Notice of Alteration for proposed extraction activities beyond 2025 will project a block of proposed annual extraction areas, describe in detail the existing environment in that block and include a thorough environmental assessment using monitoring data collected during extraction operations and the follow-up activities proposed in the EAP (Section 8)."</p>	N/A
	Forwarded email, originally written by Janine G. Gibson, Receive Nov. 1, 2021, public comments Batch #7	221	<i>Concern regarding CanWhite exploration/testing sites: "...CWS responded to our concerns about no control of access to the site, by saying they had erected a gate at the Centreline Rd site and it had been stolen. Close examination of the approaches by myself in June of 2020 revealed no supports of any kind had been erected or removed, because there was no ground disturbance at any of their site approaches. If a gate had ever been purchased by CWS it must have been stolen before it was erected, if in fact such a gate ever existed. From the unfenced, unmarked, ungated Vivian CWS site, in June of 2020, I collected a number of sand samples ..."</i>	<p>CanWhite has never installed a gate at Centre Line Road. There is a barbed wire fence around the perimeter of the Centre Line Road property and barbed wire fence gate that restricts entry to the driveway accessing this property. CanWhite did install a metal gate within its Vivian site at the entrance to the area where extraction tests were to be conducted. The gate was located entirely on private property. This gate was subsequently vandalized and stolen in its entirety. After the specific test was completed, a chain was installed to secure the main access road leading to the property. This chain was vandalized (cut) by trespassers. Plans for future site security are being developed and will be implemented prior to operations.</p> <p>Refer to #169 for additional information regarding well security.</p> <p>The comment also appears to admit that samples were collected from clearly marked private property without permission. "No Trespassing" signs have been posted at this site and others (such as the Centre Line Road site), but have been repeatedly stolen or vandalized. Access by unauthorized individuals is considered trespassing and poses a significant safety risk. Sites on private property should not be approached without permission from the operator of the Project.</p>	N/A

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	Email by Darryl Speer, received Nov. 1, 2021, public comments Batch #7	222	Concern regarding exploration/testing sites/activities: " <i>Their exploratory boreholes evidenced breeches of mining protocols</i> " " <i>Dying trees bulldozed into live trees</i> " " <i>Unkempt [unkept] sites</i> " " <i>Unsealed boreholes</i> " " <i>Silica sand piles uncovered, un posted, unmonitored and accessible for locals to recreate in .</i> "	CanWhite's operations are situated on private land, and any tree clearing activity has been with landowner permission. Where possible, local residents were permitted to harvest firewood from these sites while no active exploration was underway. In accordance with the borehole license conditions, wells are permitted to be left unsealed for up to one year after they are drilled. Some wells (which are located in private land) have been intentionally left unsealed to allow for monitoring, and continue to be unsealed to accommodate ongoing testing. All remaining silica sand piles are encapsulated in waterproof synthetic silage wrap. Permission to maintain these piles on site has been granted by the landowner. CanWhite complies with: <i>The Groundwater and Water Well Act</i> and regulations; Manitoba guidance documents, including Constructing and Sealing Wells in Manitoba, Information for Well Drillers and Well Sealers and Constructing and Sealing Wells in Manitoba - Information for Private Well Owners; and <i>The Mines and Minerals Act</i> and regulations thereunder governing well drilling, construction and well sealing procedures and standards. Please refer to response #221 for further comments on sites and unauthorized site access.	N/A
Project Description - Dust Control Method	Email from Anne Wowchuk, received Nov. 1, 2021, Public comments Batch #2	223	" <i>In part two of their proposal, they discuss dust control and using water for the gravel roads. Water is not effective and would question why they would not utilized other substances like calcium chlorate and magnesium chloride that are commonly used for this purpose .</i> "	Use of water to control dust on gravel roads was proposed in the EAP, Section 6.3.1 'Air Quality' because the application of water (with no chemical additives) has no adverse environmental impact when appropriately applied. Therefore, CanWhite will use water only for dust control to the extent possible, but will consider the controlled use of chemical additives if required during certain conditions.	N/A
Project Description - Water Usage / Local Water Well Quantity Effects	Email from Joshua Aimola, received Nov. 1 2021, Public comments Batch #2; Email from Maureen Y., received Nov 1. 2021, public comments Batch #2; Email from Anne Wowchuk, received Nov. 1, 2021, Public comments Batch #2; Forwarded letter from Christine Hutlet, CAO, RM of Tache, Oct. 5, 2021, public comments Batch #3; Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	224	General - concern regarding changes in water availability from existing local water wells during Project extraction activities, including during drought conditions.	Refer to the response #32 regarding potential Project effects on water wells, including during drought conditions, and plans for monitoring and mitigation of any such effects.	Refer to mitigation measures proposed for #32 regarding Project effects on water wells during drought conditions.
Project Description - Sand Stockpiles	Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2	225	" <i>Given the drought cycle that we have endured in the last 3 years, CWS, via AECOM, cannot deliver on the promise that "At no time will dry silica sand be left exposed". It was hard enough keeping my garden watered this year. How will CWS cope with mountains of silica? "</i>	Refer to the response to #75 regarding air quality.	Refer to mitigation measures proposed for response to #75 regarding air quality.

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
Project Description - Overs Stockpiles and Disposal	Email from Anne Wowchuk, received Nov. 1, 2021, Public comments Batch #2	226	<i>"In section 2.2.3 of their proposal they discuss 'These 'overs' that are captured will be temporarily stockpiles in a containment tank on site before being removed off site for disposal at a licenced facility'. Where is this licenced facility? What licenced facility are they referring to? And how will it be transported to the licenced facility? "</i>	As indicated in Section 6.6.2.2 (Community Services) in the EAP, solid waste (including the small amounts of concretions and any drill cuttings not suitable for wells/site decommissioning) generated at the temporary annual work areas will be transported by a licensed local contractor to a local licenced waste disposal facility. Transport of waste will occur as needed. The volume of waste generated will not require daily off-site removal. Refer also to response #148 regarding waste disposal.	N/A
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	227	General - concern regarding proper disposal of overs and drill cuttings and potential for resulting contamination (e.g. from shale layer constituents; concern that volume of waste material is not quantified in the EAP; concern that potential for acid generation of overs was not determined/information not provided in the EAP).	CanWhite will be developing a Waste Characterization and Management Plan as indicated in Section 8.1 of the EAP. The Plan will be consistent with industry guidance pertaining to the characterization and management of waste materials to prevent, manage and mitigate any potential metal leaching/acid rock drainage (ML/ARD) risk. Also refer to response #226 on waste and #190 on percentage of waste.	EAP, Section 8.1, Waste Characterization and Management Plan
Project Description - End use of Final Sand Product	Email from Evan Robert, received Nov. 1 2021, public comments Batch #2; Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2; Email forwarded by Shandi Strong, originally written by Jon Gerrard (MLA), received Nov. 1, 2021, Public comments Batch #3; Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1 , 2021, public comments Batch #7	228	General - Concern about fracking / potential use of sand product for fracking.	CanWhite has not, and will not be conducting fracking activities. CanWhite's current business model targets high purity silica markets such as the medical glass industry, float glass, renewable energy industry (e.g., solar panel production), electronics (e.g. cell phones, computer chips) and telecommunications (e.g., fibre optics).	N/A
	Email forwarded by Shandi Strong, originally written by Jon Gerrard (MLA), received Nov. 1, 2021, Public comments Batch #3	229	<i>"It is my understanding that the levels of iron in the Vivian sand is such that it makes the use of the sand less desirable for electronics ."</i>	The standards required for sand grade for use in electronics varies depending upon the manufacturers' and product specifications. The grade of CanWhite's sand has been independently tested and it has been confirmed that it is suitable for use in most electronics.	N/A
	Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1 , 2021, public comments Batch #7	230	<i>"It is also unclear as to what the extracted and processed silica sand will be used for ."</i>	Refer to response for #228 regarding the end use of the sand product.	N/A
Project Description - Project Schedule	Email from Anne Wowchuk, received Nov. 1, 2021, Public comments Batch #2	231	<i>"I have observed that the project dates are constantly changing. CanWhite is very ambitious and unrealistic in regards with their timeline of commencing operation. It would appear this is for the investors' sake and not for the residents of the communities ."</i>	Project dates are adjusted as needed to accommodate regulatory review processes and special restrictions created by the COVID-19 ('coronavirus') pandemic.	N/A

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	232	"How will the community be kept informed as the project proceeds?"	CanWhite continues to host open houses/information sessions, and provides updates as needed via local media and our company Website. CanWhite has issued and will continue to issue newsletter updates to the local community as the Project progresses. The Vivian Sands project website will also be kept up to date with the latest information as new information is available.	N/A
Project Description - Personnel	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	233	"How many people will be at the site per shift? Are these 8 or 12 hour shifts?"	Employees will be working two 12-hr shifts per day with shift changes occurring at 7:00 am and 7:00 pm. CanWhite estimates between 13 and 20 employees will be required per shift.	N/A
Project Description - Follow-up/ Monitoring Plans and Closure Plan	Email from Roxanne Frechette, received Nov. 1, 2021, public comments Batch #2	234	"CanWhite has not supplied any Follow-up Plans for its licensing review process which could lead to unaccountable future renewals ." "The Project is currently under a review for project licensing, so where is the Mine Closure and Financial Assurance Plan? This plan is intended to be "living documents...updated periodically, as needed...available on site as reference documents for Project staff and contractors". These changes or alterations will be contained in-house without need to alert regulatory agencies or apply for a Notice of Alteration. Exactly what are the terms that CanWhite has deemed "as needed" ?	<p>As set out in Section 8 (Follow-up Plans) of the EAP, CanWhite commits to preparing and implementing all of these Plans. CanWhite will submit them to the regulatory authorities prior to commencing operations.</p> <p>It is best and common practice for mitigation and monitoring plans, and operating procedures, to be prepared in association with or on completion of detailed design of the project, and for these plans to be reviewed and updated periodically. In this manner, continual environmental planning is built into both the commencement and on-going operation of the project, and environmental management reflects current operational, legislative and permitting requirements.</p> <p>Thus, it is essential that such plans and operating procedures be handled as 'living documents' to ensure that they will be subject to ongoing and periodic revisions to capture operational refinements that are acquired through experience, monitoring and inspection, compliance review, equipment upgrades, and follow-up assessments. Plans and procedures will also be reviewed and revised when there are any changes to licensing and permitting conditions, applicable legislation, or roles and responsibilities within CanWhite. Maintaining current plans and procedures will allow for continuous operational improvement and further protection of the environment. Where required revisions to these documents will be prepared with the cooperation of the applicable regulatory authority and will be provided for regulator review.</p>	EAP, Section 8, Follow-up Plans
	Email from Deborah Thompson, received Nov. 1, 2021, public comments Batch #2	235	"Who will monitor every single well?" Regarding UV treatment system: "Who will inspect them? Would there be any inspections and quality control ?	A Groundwater Monitoring and Impact Mitigation Plan will be prepared prior to the initiation of Project operations as described in the EAP, Section 8.4. Refer to the response for #234 regarding the submission of this Plan and other follow-up plans outlined in the EAP.	EAP, Section 8.4, Groundwater Monitoring and Impact Mitigation Plan
	Email from Janice Brolly, received Nov. 1, 2021, Public comments Batch #2	236	"There is a lot of missing and misleading information and a complete lack of procedures for response, reporting, investigation and mitigation ." "What is further disturbing is the "Plans" are intended to be "living documents...updated periodically, as needed...available on site as reference documents for Project staff and contractors". These changes or alterations will be contained in-house without need to alert regulatory agencies or apply for a Notice of Alteration? Exactly what are the terms that CanWhite has deemed "as needed" ?	<p>Refer to response #234 regarding follow-up, monitoring plans and closure plan.</p> <p>Also refer to response #280 regarding Notice of Alteration.</p>	EAP, Section 8, Follow-up Plans

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2	237	<i>"Does anyone really believe that there will be no mistakes, no carelessness, no cover-ups and no technical failures?" "I have zero confidence that CWS will efficiently seal decommissioned wells ." "CWS promises "Progressive annual rehabilitation" of the various trails and other footprints that it will impose on our landscape. This is not going to happen because it will be neither a priority, nor will MCC leave its bunker in Winnipeg to check. "</i>	Refer to response #234 regarding follow-up, monitoring plans and closure plan. Also see response #242 regarding Closure Planning and required financial assurances.	EAP, Section 8, Follow-up Plans
	Forwarded letter from Christine Hutlet, CAO, RM of Tache, Oct. 5, 2021, public comments Batch #3	238	<i>"Nine mitigation and monitoring follow-up plans are identified and described in the EAP ." "It is concerning that the details of the plans will not be available until after the deadline for comments has passed ." "For example, in the Groundwater Monitoring and Impact Mitigation Plan, what are the primary mitigation measures that aim to avoid impacts?"</i>	Refer to response #234 regarding follow-up and monitoring plans.	EAP, Section 8, Follow-up Plans
	Response to EAP from D Kerr, received Nov. 1, 2021, public comments Batch #3	239	<i>"I have not heard any info from CanWhite as to their responsibilities to correct or compensate (including purchase of my home) should they damage the aquifer."</i>	CanWhite is committed to protecting the aquifer and will implement a comprehensive Groundwater Monitoring and Impact Mitigation Plan that will be prepared prior to the initiation of Project operations as described in the EAP, Section 8.4. Refer to the response for #234 regarding the submission of this Plan and other follow-up plans outlined in the EAP. Refer also to response #19 regarding groundwater.	EAP, Section 8.4, Groundwater Monitoring and Impact Mitigation Plan
	Letter from Mayor Shelly Hart, RM of East St. Paul, Original letter sent October 6, 2021, forwarded by Suzanne Ward, public comments Batch #3	240	<i>"What monitoring of the affected aquifer(s) will be undertaken during the life of the project? Will the monitoring measure impacts pertaining to either water quality or depletion? How will monitoring of the aquifer occur, and will data be available in real-time or logged for download at a later date?"</i>	A Groundwater Monitoring and Impact Mitigation Plan will be prepared prior to the initiation of Project operations as described in the EAP, Section 8.4. The Plan will address both water quantity and quality. Refer to the response for #234 regarding the submission of this Plan and other follow-up plans outlined in the EAP. See also: response #19 regarding groundwater; response #32 regarding monitoring of groundwater quantity; and responses #24, #25 and #26 regarding groundwater quality. Responses to TAC (Table 1, response #35) includes information about real-time monitoring of water levels. Refer also to response #253 regarding monitoring of groundwater quantity.	EAP, Section 8.4, Groundwater Monitoring and Impact Mitigation Plan
	Letter from Mayor Shelly Hart, RM of East St. Paul, Original letter sent October 6, 2021, forwarded by Suzanne Ward, public comments Batch #3	241	<i>"What response plans are in place in the event the impact of the CanWhite Sands Project is not as anticipated, or in the event an unforeseen Operational or Environmental incident occurs during construction or operation of the proposed project? Will these response plans be made public? Will incidence of the activation of these plans be publicly disclosed ?"</i>	Refer to response #234 regarding follow-up, monitoring plans and closure plan and response to #93 regarding an Environmental Emergency Response Plan. Regulatory agencies release project-specific information in accordance with applicable legislation.	EAP, Section 8, Follow-up Plans

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Report comments submitted by Jack Kowalchuk, received Nov. 1 2021, public comments Batch #3	242	"Who will be responsible for the cleanup after the silica sand has been removed and restoring the property to its original state?"	<p>CanWhite will be responsible for cleanup, including detailed mitigation and monitoring activities that will be implemented to rehabilitate the Project Site during the closure phase of the Project.</p> <p>A Closure Plan, together with financial assurance, will be developed and submitted to the Manitoba Director of Mines in accordance with <i>The Mines and Minerals Act</i>, the Manitoba Mine Closure Regulation 67/99 and the General Closure Plan Guidelines. As well, this Project subject to licensing under <i>The Environment Act</i> and a copy of the Closure Plan will be submitted to the Director of the Environmental Approvals Branch.</p> <p>In accordance with the Manitoba Mine Closure Regulation 67/99, the Closure Plan will include a detailed schedule of costs for proper closure and rehabilitation activities, including costs for programs to monitor and manage the site after closure, if required. Financial assurance based on the detailed schedule of costs will be provided to the Manitoba government in a form and amount acceptable to the Director of Mines.</p>	EAP, Section 7 and 8.9, Closure Plan
	Report comments submitted by Jack Kowalchuk, received Nov. 1 2021, public comments Batch #3	243	Concern regarding CanWhite honouring responsibility to address costly environmental issues and mining or processing problems if they occur.	CanWhite will be responsible for addressing environmental issues related to Project activities, if they occur, in accordance with applicable legislation and as outlined in follow-up Plans for the Project (see response # 234 regarding follow-up, monitoring plans and closure plan). An Environment Act Licence will stipulate environment-related requirements for the Project.	EAP, Section 8, Follow-up Plans
	Email from Shaun Sturby, received Nov. 1, 2021, public comments Batch #3	244	"Protocol's need to be in place for any change in the quality, color or taste of our drinking water if it is compromised ." "I want to see frequent fail-safe testing performed. I want these tests explained to the public. How these tests are performed, why they do them, and what the data is telling us ."	<p>Refer to response #240 regarding groundwater monitoring.</p> <p>Refer also to response #253 regarding communication with nearby well owners.</p>	EAP, Section 8.4, Groundwater Monitoring and Impact Mitigation Plan
	Email forwarded by Shandi Strong, originally written by Jon Gerrard (MLA), received Nov. 1, 2021, Public comments Batch #3	245	"There is no plan to address [ground] subsidence should it occur ."	Refer to response #1 regarding ground subsidence.	EAP, Section 6.2.1, Geology/Topography
	Email forwarded by Shandi Strong, originally written by Jon Gerrard (MLA), received Nov. 1, 2021, Public comments Batch #3	246	"The CanWhite Sands submission does not adequately address actions to be taken were a major spill to occur ." "The CanWhite Sands project does not quantify the chance of a major or frequent minor spills " "While detection methods are in place to detect a leak, damage will already be serious before it could remedied. The detection measure will not however detect any gradual leakage which over the long term could be more damaging as it goes unmitigated ."	<p>Refer to response #234 regarding Project follow-up plans. Please note that as indicated in the response to #93, the slurry line, which will contain a sand and water slurry for transport to the processing facility, will not contain harmful chemicals/contaminants.</p> <p>Response #93 also describes the daily slurry line leak detection measures, which will be designed to detect and respond to any minor or gradual leaks that could occur in the slurry loop system.</p> <p>Refer also to response #93 regarding the Environmental Emergency Response Plan.</p>	EAP, Section 8, Follow-up Plans; EAP, Section 6.9.2, Spills and Leaks

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4; Email by Reeve Trudy Turchyn, RM of Reynolds, received Nov. 1, 2021, public comments Batch #6; Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1, 2021, public comments Batch #7	247	General - request for submission/public review of all mitigation/monitoring/follow-up plans/closure plan referenced in the EAP.	The Project follow-up plans as outlined in Section 8 of the EAP (including closure plan) will be submitted to the Environmental Approvals Branch. Regulatory agencies release project-specific information in accordance with applicable legislation. Also refer to response #234 regarding Project follow-up plans.	N/A
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	248	<i>"Given that contaminants will continually build up in the slurry and recycle water lines, will CWS develop and supply a recycled water treatment and associated contaminant waste generation plan?"</i>	Contaminants will not build up in the slurry loop (recycled water) system. Recycled water for the slurry loop system is sourced from the Processing Facility site water treatment process. The water enters the system for treatment at the Facility after the sand is removed and prior to the water being returned to the extraction site to collect more sand. This process utilizes a food grade biodegradable flocculant as an aid for fines settling. The levels of flocculant remaining in the water after leaving the clarifier will be virtually undetectable. The water treatment system closely resembles that of a typical water treatment facility. Fines removed from the water treatment process will be pumped to a belt press which will compress the fines and remove the remaining water, forming 'mud cake' style bundles, also known as Filter Cakes, for handling of wet solid fines. The Filter Cakes will be stored in an enclosed structure on-site and periodically transported from the Processing Facility in appropriate containment for use in alternate markets. This system is further described in the Facility EAP (contained in Public Registry file # 6057) in Sections 2.1.1. and 2.3.	EAP, Section 8.1, Waste Characterization and Management Plan; EAP, Section 8.2, Water Management Plan
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	249	<i>"The revegetation and restoration plans are deemed inadequate in multiple ways. Most of the restoration appears to be based on allowing areas to "revegetate naturally", i.e. walk away. There is noncommittal nebulous mention of possible reseeding with "native seed mixtures" in some cases."</i>	Refer to response #103 regarding revegetation.	EAP, Section 6.5.1, Vegetation; EAP Section 8.7, Revegetation Monitoring Program
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	250	<i>"The proposal ignores or minimizes the role and rights of the property owner. There is no provision for compensation for damaged property such as fences, etc., or other nuisance, or provision in the event a family has to stay at alternate accommodations for the duration of the disturbance, which may extend to weeks."</i> <i>"There is no mechanism for adjudication/arbitration by a neutral party in the event of disputes."</i>	Refer to responses #136 and #137 regarding landowner compensation. With respect to the mechanism for adjudication of disputes between a surface landowner and a holder of mineral interest, please see Part 3 of <i>The Mines and Minerals Act</i> which creates and provides for the operation of the Mining Board. Refer to: https://www.manitoba.ca/iem/board/mboard.html	Refer to mitigation measures proposed for response to #136 regarding landowner compensation.
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	251	<i>"Post-closure, any long-term accountability is absent."</i>	Also see response #242 regarding Closure Planning and required financial assurance.	EAP, Section 7 and 8.9, Closure Plan

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	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	252	"Who will independently monitor/oversee how many wells are actually created and how they are decommissioned?"	A borehole licence is required from the Mines and Minerals Branch to drill extraction wells. Therefore, Manitoba has a record of the maximum number of wells that can be drilled. Once the well has been drilled, the driller must tag and file the well records with the Groundwater Management Section within 45 days of well construction or well sealing. Please refer also to this website: https://www.gov.mb.ca/iem/mines/index.html	N/A
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	253	Regarding location of extraction activities in proximity to local water wells and potential for effects on wells: "Will potentially affected well owners be alerted regarding these anticipated effects?"	<p>Early operations will be intentionally located in an area with very few wells, allowing for sufficient time to update the operational plan based on monitoring data from a purpose-built groundwater monitoring network associated with each year of operations. Landowners nearby will be notified of activities nearby and expected timelines. They will also be provided with a 24 hour phone line and email that can be reached in the event that they believe there is a problem with their well.</p> <p>The Groundwater Monitoring and Impact Mitigation Plan (EAP, Section 8.4) prepared in advance of commencing operations will include the following:</p> <ul style="list-style-type: none"> - A pre-condition well survey will be conducted to physically inspect the well, determine the elevation of the pump and evaluate the potential for any impacts in advance of operations. - If landowners' existing well pumps are located below but near the static water level, CanWhite will assume the cost of lowering the pumps, or will modify its operational plan (e.g. pumping rate, setback distances) to avoid or mitigate any impacts. - Groundwater elevations will be monitored in real time so that operations can be stopped if water levels approach intolerable ranges. 	EAP, Section 8.4, Groundwater Monitoring and Impact Mitigation Plan
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	254	Regarding mitigation methods such as lowering water well pumps of potentially affected residents: "Who will actually do this, and who will pay? Many pumps are already installed at the bottom of the well and cannot be lowered any further." "Where will affected homeowners or neighbors be able to report the problem?" "How will that process occur and how long will it take? Who will conduct it?"	<p>CanWhite will be responsible for contracting with a licensed water well driller and paying the costs related to lowering a water well pump for any water well that may be temporarily affected. Nearby landowners will be notified of extraction activities and expected timelines. They will also be provided with a 24-hour phone line and email that can be reached in the event that they believe there is a problem with their well. Please also see response #32 groundwater quantity, and Table 1, Responses to TAC, response #36.</p> <p>Also refer to response #253 on the Groundwater Monitoring and Mitigation Plan.</p>	EAP, Section 8.4, Groundwater Monitoring and Impact Mitigation Plan
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	255	"What long-range commitment is there to ensure any aftermath will continue to be addressed after the company has left?"	Also see response #242 regarding Closure Planning and required financial assurance.	EAP, Section 7 and 8.9, Closure Plan
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	256	General - concern regarding how project components (e.g. slurry pipe system) will be made secure from existing land use activities (e.g. farming; recreational vehicles), vandals and natural events such as wildfires.	<p>Regarding Project Site security, only authorized personnel will be permitted on the active worksites. "No Trespassing" signs will be in place, and additional provisions for future site security and authorized access are being developed and will be implemented prior to operations.</p> <p>An Environmental Emergency Response Plan (EERP) will be prepared prior to the initiation of Project activities that will outline the general procedures to be followed for environmental emergency situations and incidents that could occur as a result of Project activities, equipment failure, human error, or natural causes. The EERP will identify roles and responsibilities, emergency contact numbers, equipment and resources, and training requirements. A copy of the EERP will be maintained on-site during all phases of the Project.</p> <p>Refer to #169 for additional information regarding well security, and response #136 regarding landowner agreements for use of the land where Project activities will occur.</p>	EAP, Section 8.6, Environmental Emergency Response Plan

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	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	257	General - request for more details regarding monitoring of proper functioning of equipment/components, project site security, emergency response, contingency plans, and clean-up.	Refer to response for #234 regarding follow-up plans and response #242 regarding Closure Planning. Refer to response #256 regarding Project site security and Environmental Emergency Response Plan.	EAP, Section 8, Follow-up Plans
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	258	<i>"The proponents indicate that the wells will be sealed on decommissioning (EAP1, section 2.2.6). Sealing "will occur sequentially over the April to November timeframe with all wells being sealed (i.e. decommissioned) sequentially" (EAP1, p. 13). Does this mean that the wells will be sealed individually as they are abandoned? How soon afterwards? Or will all of the wells in a cluster or block be sealed at the same time?"</i>	<p>In the Manitoba statute and regulations governing water well drilling, the term "well sealing" is used to describe the process for permanent closure of a well, whereas the term "abandonment" is used for a similar purpose in the statute and regulations governing the mining industry. Thus, both the terms "well sealing" and "abandonment" may be used to describe the process of taking a CanWhite well offline and reclaiming it (see response #167 which lists the applicable statutes and regulations).</p> <p>The EAP (Table 1-2 'Proposed Scheduling') describes the timing of Project activities. Each well will operate for five to seven days before the well is capped and equipment is moved to the next well. When a well is no longer producing sand, the production piping will be removed, the slurry line connection will be disconnected, and the well will be securely "capped", pending "well sealing" (which will permanently close the well). All equipment will then be moved to the next well in the cluster and re-connected.</p> <p>A dedicated crew will be active at all times sealing wells as extraction is completed at each cluster of wells. Wells will be sealed sequentially, in a similar order to the order in which they were developed. Therefore, one cluster may be sealed all at once over the course of a few days. The process of well sealing takes a few days because the grout must be allowed to set before additional well sealing material can be placed in the well. Please refer to the EAP, Section 8.3 (Progressive Well Abandonment Plan) which describes the well sealing process in detail.</p> <p>Progressive Rehabilitation: A separate crew will reclaim the ground surface, including the surface above each well cluster. This is best done during the warmer months of the year to facilitate revegetation activities. The areas to be reclaimed will include temporary drilling rig access trails, equipment laydown areas, slurry line trails and return water line trails. Disturbed areas will be allowed to revegetate naturally, but revegetation may be augmented using an approved native seed mixture and/or native plants.</p> <p>Details of progressive annual closure and rehabilitation will be provided in a Closure Plan prepared in accordance with the Manitoba Mine Closure Regulation 67/99 and the General Closure Plan Guidelines.</p>	EAP, Section 8.3, Progressive Well Abandonment Plan; EAP, Section 7 and 8.9, Closure Plan
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	259	<i>"Usage (of coarse overs material) for well sealing activities will only be for approved cuttings" (EAP1, p. iv). What are the criteria for "approved cuttings"?"</i>	<p>In accordance with <i>The Groundwater and Water Well Act</i> and guidance provided by Manitoba in "Construction and Sealing Wells in Manitoba – Information for Well Driller and Well Sealers" (Manitoba Government, 2018), materials used for well sealing can include bentonite, pea gravel and native material. In this case, native material would include drill cuttings provided that they are returned to the formation from which they originated. Approved cuttings must be cuttings that were native to the same section of the formation to which they are being returned.</p> <p>Also refer to response # 167 on well decommissioning.</p>	EAP, Section 8.3, Progressive Well Abandonment Plan; EAP, Section 7 and 8.9, Closure Plan

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	260	Clarification request regarding if well casings are being removed or left in place: " <i>The above Progressive Well Abandonment Plan in EAP2 conflicts with the protocol given in the Hydrogeology and Geochemistry Assessment Report (AppA1, p. 20) which explicitly states as the last step in the well decommissioning process: "Remove casing and progressively rehabilitate well clusters and other temporarily disturbed areas". Thus according to this version of events, casings will not remain. "</i>	The decommissioning protocol is not contradictory. Refer to response #167 which provides information regarding well decommissioning.	EAP, Section 8.3, Progressive Well Abandonment Plan; EAP, Section 7 and 8.9, Closure Plan
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	261	General - concern regarding the number of decommissioned extraction wells and potential for seals to be damaged/dislodged/fail over time (e.g. due to farm machinery; leveling and grading site decommissioning activities) and potential for agriculture chemicals and manure to seep into groundwater exterior of well casings.	Refer to response #169 regarding extraction well protection, #167 for information regarding decommissioning of wells, and response #93 regarding surface water and drainage.	EAP, Section 8.3, Progressive Well Abandonment Plan; EAP, Section 7 and 8.9, Closure Plan
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	262	Regarding noise monitoring: " <i>Will decibel readings be taken? According to WHO "</i> [World Health Organization]	Refer to response #82 regarding noise mitigation and plan for noise monitoring.	Refer to mitigation measures proposed for response to #82 regarding noise.
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	263	" <i>The proposal indicates that the decommissioning process will "minimize soil erosion" (EAP1, p. vi). In the BMP for the Erosion and Sediment Control Plan (EAP2, section 8.5), soil replacement is mentioned. Will this soil consist of restored topsoil, which has been saved, or simply be a mashup of the bulldozed material and other waste left over from the drilling and extraction? "</i>	Soil used to rehabilitate and revegetate disturbed areas will be topsoil that has been saved during the preparation of annual extraction well cluster sites and other temporarily disturbed areas required for annual Project activities.	EAP, Section 8.5, Erosion and Sediment Control Plan; EAP, Section 8.7, Revegetation Monitoring Program

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	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	264	Regarding revegetation: <i>"What is an 'approved native seed mixture' – is it native to the specific area/ecozone, or a generic commercial mixture from outside the province or even the country? It should not contain any invasive or exotic species. " "The BMP for the Erosion and Sediment Control Plan (EAP2, section 8.5) states that restoration will occur 'using an appropriate seed mix or fast-growing cereal crops for late fall or spring germination.' Why and where would cereal crops be planted – not in natural areas, not in agricultural fields where it would conflict with the existing crop?" "In contradiction to the above two text bullets, 'disturbed areas [will be] allowed to revegetate naturally' (EAP1, p. ix). " "What criteria will be used to determine success or failure? Who will determine if reseeding/replanting is required? Who will run this program? Will there be a mechanism in place for appeal?"</i>	Please note that, for the most part, the land to be revegetated is privately held (not Crown land) and details of rehabilitation will be determined through discussions with the landowners prior to operations. A Revegetation Monitoring Program will be developed during the Project construction phase prior to clearing of naturally vegetated areas (see the response to #103 regarding revegetation).	EAP, Section 6.5.1, Vegetation; EAP Section 8.7, Revegetation Monitoring Program
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	265	<i>"Throughout the report, we see the recurring phrase 'progressive annual reclamation of extraction sites' (e.g. EAP1, p. x), but nowhere is its meaning clarified. Does it mean that each site will be addressed in stages, stretched out over a year after it is abandoned, or does it mean reclamation of all the yearly sites will occur annually as a block at the same time within the same year?"</i>	Refer to response #258 regarding progressive annual reclamation and rehabilitation of extraction sites.	EAP, Section 8.3, Progressive Well Abandonment Plan; EAP, Section 7 and 8.9, Closure Plan
	Report by Eva Pip, forwarded to CanWhite, received Nov. 1, 2021, Public comments Batch #5	266	<i>"Will there be a dedicated contact person available where people can take their questions and concerns?" "How will disputes be resolved and what mechanisms for appeal will be available and enforceable?"</i>	Please refer to response # 253 for information on questions and concerns.	EAP, Section 8.4, Groundwater Monitoring and Impact Mitigation Plan
	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	267	<i>"Have Emergency Measures been developed for public protection in the case of poisoned water?"</i>	CanWhite is committed to protecting the aquifer and will implement a comprehensive Groundwater Monitoring and Impact Mitigation Plan that will be prepared prior to the initiation of Project operations as described in the EAP, Section 8.4. Refer to the response for #234 regarding the submission of this Plan and other follow-up plans outlined in the EAP. Refer also to response #19 regarding groundwater.	EAP, Section 6.2.3, Groundwater; EAP, Section 6.9, Accidents and Malfunctions; EAP; EAP, Section 8.6, Environmental Emergency Response Plan; EAP, Section 8, Follow-up Plans
	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	268	Concern that follow-up plans are intended to be 'living documents' that will be updated periodically, as needed: <i>"'Living documents' give far too much unsupervised leeway, lacks transparency and must be eliminated."</i>	Refer to response #234 regarding follow-up, monitoring plans and closure plan.	EAP, Section 8, Follow-up Plans

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	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	269	Regarding the Progressive Well Abandonment Plan outlined in Section 8.3 of the EAP: <i>"Follow-up plans contained in the EAP are contradictory to the text in the EAP or simply envisioned and undeveloped to a proficient level. The materials and procedures in the Progressive Well Abandonment Plan differ significantly to the narrative in the EAP. The Plan makes no mention of using till, mine waste materials, limestone, overs, concretions, shale and drill cuttings or removal of well casings in the abandonment of over 500 wells drilled annually. Certainly mine waste materials etc would not meet Manitoba Well Standard Regulation 7(1) "suitable for potable water" and "clean and free of contamination" Why are there such discrepancies?"</i>	<p>Thank you for your comment. To clarify, Section 8 of the EAP was intended to list and give general overviews of each of the follow-up plans that will be prepared at appropriate times in the future before operations commence, not to comprise the plans themselves. Section 8.3 of the EAP is an outline of the standard procedures that will be used to abandon or seal Project wells; the detailed Progressive Well Abandonment Plan will be completed and submitted to Manitoba regulators, along with the other plans and procedures described in the EAP, prior to the commencement of operations. Please also refer to response #234 regarding follow-up plans.</p> <p>As indicated in the EAP, Section 2.1 (Components and Activities), overs material and well drill cuttings will be contained and temporarily stored at the well clusters for disposal or for use in annual progressive sealing and decommissioning of extraction wells. Usage for well sealing activities will only be for approved cuttings and may include sandstone or limestone.</p> <p>For more information on the usage of the drill cuttings please refer to response #258.</p>	EAP, Section 8.3, Progressive Well Abandonment Plan; EAP, Section 7 and 8.9, Closure Plan
	Email by Alex, received on Nov. 1, 2021, public comments Batch #7	270	Request for: <i>"A Waste Characterization and Management Plan, Groundwater Monitoring and Impact Mitigation Plan to be developed and [submitted] for review prior license is issued."</i> <i>"A Progressive Well Abandonment Plan to be developed and [submitted] for review prior license is issued."</i>	Refer to response #234 regarding follow-up, monitoring plans and closure plan.	EAP, Section 8, Follow-up Plans
	Email written by Denis Funk, received Nov. 1, 2021, public comments Batch #7	271	<i>"Drilling a bunch of holes through our precious aquafer doesn't seem like a good idea, especially if there is no plan to seal the wells."</i>	All wells will be sealed. Please refer to responses #167 and #258 regarding well sealing, decommissioning and the applicable regulatory framework.	EAP, Section 6.2.1, Geology/Topography; EAP, Section 6.2.3, Groundwater
Project Description - Land/Vegetation Restoration	Email from Anne Woodchuck, received Nov. 1, 2021, Public comments Batch #2	272	<i>"CanWhite has recently cleared trees on the land that they hope to build the processing facility." "If their proposal is not approved by the provincial government, what is their plan to restore what they have already damaged? Would they be obligated to restore the environment that they have already damaged?"</i>	Yes, should the project not go forward, CanWhite would reclaim the area to an appropriate level should such a requirement apply, noting that CanWhite is the owner of the land identified in the comment.	EAP, Section 8, Follow-up Plans
Project Description - Financing	Response to EAP from C. Hugh Arklie, received Sept. 27, 2021, public comments Batch #2	273	General - concern that CanWhite does not have sufficient <i>"...short term working capital, long term financing, dependable investors, affordable interest rates from supportive bankers, adequate liability insurance and so on."</i> <i>"...can CWS pay the damages? Can its anonymous investors be held liable? Will the company post bond?"</i>	Refer to the response for #242 regarding Closure Planning and requirement for financial assurance to the Manitoba government.	EAP, Section 7 and 8.9, Closure Plan

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	Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1, 2021, public comments Batch #7	274	Concern regarding "...potential that CanWhite would not be able to cover the cost of future closure and remediation activities, especially if an emergency spill and contamination of groundwater were to occur."	Refer to the response for #242 regarding Closure Planning and requirement for financial assurance to the Manitoba government. Section 6.9.2 of the EAP describes standard procedures that will be implemented to prevent spills (e.g. fuel, oil) from occurring during Project activities. As described in Section 8.6 of the EAP (Environmental Emergency Response Plan [EERP]), an EERP will be prepared prior to the initiation of Project activities that will provide procedures to be implemented in a variety of potential environmental emergency situations (e.g. spills of potentially hazardous materials such as fuel).	EAP, Section 7 and 8.9, Closure Plan; EAP, Section 6.9.2, Spills and Leaks; EAP, Section 8.6, Environmental Emergency Response Plan
	Email by Megan Henry, received Nov. 1, 2021, public comments Batch #7	275	"I personally want want more information and accountability in regards to their exit strategy."	Refer to the response for #242 above regarding Closure Planning.	EAP, Section 7 and 8.9, Closure Plan
Cumulative Effects	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	276	"...a cumulative noise impact study is missing on the entire proposed 24/7/365 project; mining, processing and rail transport. " "Will a comprehensive noise impact study on the project and on the cumulative impacts from the entire mining, rail way and processing operation be provided?"	See the response to #82 which describes why a 'cumulative' noise study was not indicated and how noise generated from extraction activities will be monitored and managed. During extraction activities, the noise monitoring carried out before the extraction activity on each extraction site will measure the ambient or background sound level near that specific site, including noise from the Processing Facility and rail line, local traffic and all the other non-Project activities that can be heard at that site. Noise monitoring during the Project extraction activity will record the 'cumulative' sound levels, including both ambient sound levels and site generated sound levels, and mitigation measures will be carried out if needed.	N/A
	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	277	"Cumulative emissions for the overall proposed CanWhite Project, processing, rail, extraction and all other residential and industrial users on a proposed new gas line extension to the processing facility, have not been calculated."	We assume that the comment was referring to greenhouse gas emissions. The total emissions expected to be generated by the Processing Facility, (including the associated railcar mover operating on CanWhite's Processing Facility site), and extraction activities are described in #80. A new industrial user of natural gas who comes forward in the future would be subject to such Manitoba environmental approvals as apply at that time. Similarly, any new residential use would be subject to such review processes as might apply at that time.	N/A
	Letter by Manitoba Eco-Network, forwarded through email by Glen Koroluk, received Nov. 1, 2021, public comments Batch #7	278	"There has also been minimal to no discussion of cumulative impacts and climate change considerations despite the clear connection between all proposed silica sand activities and the significant amount of truck and rail transportation involved."	The potential for the Project to influence climate change was assessed in the EAP, Section 6.3.2 (Climate/Greenhouse Gases). The impact of the Project on Greenhouse Gas (GHG) contributions to the atmosphere was assessed as negligible. Therefore, the potential for the Project to influence climate change is also negligible. The CanWhite Project does not involve any truck traffic related to sand transport that is traditionally seen at sand mines and other minerals. The use of rail is limited to transportation of the product from the Facility to market, utilizing existing rail infrastructure. Please also not that the end use of the product is intended to be in industries such as renewables (e.g. solar panels), electronics (e.g. cell phones), rechargeable batteries (e.g. for electric cars), and the medical industry. Please refer also to response #228 regarding product end uses. Also refer to additional information provided in responses #80 and #81 regarding GHGs.	Refer to mitigation measures proposed for response to #81 regarding GHGs.
	Forwarded letter from Christine Hutlet, CAO, RM of Tache, Oct. 5, 2021, public comments Batch #3	279	"Appendix C lists mining claims and the note at the bottom of the page states "Expiry date for all listed mining claims: 2021-12-03." Does the proponent have plans to renew these claims as well as all the other claims throughout southeast Manitoba (i.e., BRU, DEN and ALY Properties)?"	Yes. Claims are valid for a certain time period based on the date of their assignment to CanWhite. To maintain these claims, CanWhite must file reports to the Mines and Minerals Branch every 1 to 3 years demonstrating work completed and expenditures on those claims. The Mines and Minerals Branch reviews and approves those reports and extends them based on the allocated expenditures.	N/A

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Email by Don Sullivan (with two attached reports) sent to Laura Pyles (EAB), forwarded to CanWhite, received Nov. 1, 2021, public comments Batch #4	280	"Will CWS in the interest of transparency and proper independent technical review of any future Project alterations apply for a license for the full period of 24 years and include all anticipated future alterations in the current EAP? "	This Environment Act application fully addresses the first 4 to 5 years of extraction. Any change in potential environmental impact that could result from relocating operations in subsequent years will be addressed through the Notice of Alteration process set out in section 14 of The Environment Act as indicated in the regulatory framework section of the EAP (Section 1.7). Each future Notice of Alteration for proposed extraction activities beyond 2025 will: project a block of proposed annual extraction areas; describe in detail the existing environment in that block; and will include a thorough environmental assessment using monitoring data collected during extraction operations and the follow-up activities proposed in the EAP (Section 8).	N/A
	Email by Tangi Bell, received Nov. 1, 2021, Public comments Batch #6	281	"As the Project has the likelihood of going beyond 25 years, Will the EAB and/or the Impact Assessment Agency of Canada assess all CanWhiteSands Corp/HD Minerals BRU, DEN, ALY, RWM claims for federal jurisdiction? "	<p>The regulatory framework for the Project is explained in Section 1.7 of the EAP. Currently, there are no federal permits or approvals expected to be required for the Project. The proposed Project is not listed as a 'Designated Project' under the Physical Activities Regulations of the federal <i>Impact Assessment Act</i> .</p> <p>As indicated in response #151, the federal Impact Assessment Agency of Canada (IAAC) conducted an initial review of the Project to determine if there were potential impacts to areas of federal jurisdiction (including impacts on Indigenous and treaty rights) that would warrant a review under the Impact Assessment Act. IAAC concluded that a review under the Impact Assessment Act was not required.</p> <p>Please also refer to #280 which describes the processes expected to occur over the next approximately 25 years under <i>The Environment Act</i> .</p> <p>Any activity beyond the 25 year horizon and, as well, any regulatory framework that might apply in the future, would be too speculative for any useful environmental assessment to be carried out at this time.</p>	N/A
	Email by Janet Nylen, received Oct. 12, 2021, public comments Batch #7	282	Concern regarding "...dividing the project into two separate applications ..." "...one for the extraction of the silica sand and the other for the processing it ..."	<p>CanWhite's environmental assessment activities contemplate the potential environmental effects of both the Extraction Project and the Facility Project. Both projects are 'developments' which require licensing under <i>The Environment Act</i> . The processing plant is being treated as a 'manufacturing and industrial plant' which is a Class 2 development in section 3 of the Classes of Development Regulation under group 4 "Manufacturing". It makes sense to license the Facility Project separately and in advance of extraction because: it consists of a permanent building and other infrastructure similar to other manufacturing operations located in urban or semi-urban settings; it can be operated on a commercial basis to process and transfer sand that is not mined by the same owner, provided that the sand is of the same nature and quality; special license conditions will have to be contemplated for extraction which contemplates changing of sites, which is not typical for Environment Act licenses and which will not be relevant to the Processing Facility; and construction of the Processing Facility will take time to achieve, whereas extraction involves portable drills which will move frequently and for which no construction season is required.</p> <p>Extraction is mining which must also be licensed under <i>The Environment Act</i> as a Class 2 development. However, the extraction Project is also subject to the closure planning and financial assurance provisions of <i>The Mines and Minerals Act</i> and to the specific regulation applicable to drilling and closing boreholes. Thus all aspects of both CanWhite projects are being taken into account in the regulatory review process.</p>	N/A

ENVIRONMENTAL COMPONENT	PUBLIC COMMUNICATIONS	KEY ISSUE / QUESTION #	KEY ISSUE / QUESTION RAISED	RESPONSE	PROPOSED MITIGATION SUMMARY
	Email by Margaret Marion-Akins and E.Allan Akins, received Nov. 1, 2021, public comments Batch #7	283	" <i>The splitting of CanWhite Sands Silica Sand Project into two separate environmental licensing applications fails to provide a full and clear scope of the potential impact that this project will cause to the area residents. "</i>	Refer to the response above for #282.	N/A

Notes:
N/A = Not applicable
MBCC = Manitoba Conservation and Climate
EAB = Environmental Assessment Branch
EAP = Environment Act Proposal
For 'Key Issue / Question Raised' column, wording in italics is direct wording from the comments submitted. Where wording is not italicized, the comment / question has been summarized for clarity.
Where there are numerous comments, questions or concerns raised regarding the same issue, a summary is provided preceded by ‘General – ‘.
References to ‘Batch #1 through Batch #8’ in the ‘Public Communications’ column are used to track the batches of public comments received by Manitoba Conservation and Climate (see Public Registry file #6119.00)
Table 1, Responses to Technical Advisory Committee (TAC): available in the Manitoba Conservation and Climate Public Registry file #6119.00

References:
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- Attachments:**
Attachment A: Geotechnical Analysis for Sio Silica Extraction Project - Public Version
Attachment B: Updated EAP Figure 1-1 to show GWWD Shoal Lake Aqueduct
Attachment C: Preliminary Traffic Projections Memorandum

Table 2, Attachment A

Geotechnical Analysis for Sio Silica
Extraction Project - Public Version



**Geotechnical Analysis for Sio
Silica Extraction Project**

Project # 129500426

January 14, 2022

Prepared for:

Sio Silica Corporation

Prepared by:

Stantec Consulting Ltd.



Executive Summary

Sio Silica Corporation (Sio Silica) formerly CanWhite Sands Corp. retained Stantec Consulting Ltd. (Stantec) to complete geotechnical analyses for caprock stability following sand extraction at the BRU property located 52 km east of the city of Winnipeg, Manitoba (the Project Site). The Project Site includes Sio Silica's operating area for the first 5 years. This report presents the information sources, site conditions, design basis, and methodologies used to complete the analyses as well as the analyses results, conclusions, and recommendations.

Sand extraction will utilize an airlift extraction technique that involves drilling through the quaternary till, carbonate limestone and shale, into the underlying Carman Sand. Boreholes will be cased and grouted, isolating overlying aquifers from the Winnipeg Formation. Air will then be circulated in the casing to extract Carman Sand.

Stantec previously analyzed the caprock and extraction cavity shear failure mode stability. Sio Silica has since gathered additional information to close gaps and support analyses of other failure modes identified by Stantec. As the additional information and subsequent analyses impacts results, this report presents the combined and updated geotechnical analyses design basis, results and recommendations.

The site geology includes a Quaternary overburden on a carbonate Limestone and a shale layer under the Limestone on top of the target Carman Sand. The groundwater in the area includes upper and lower aquifers with an upper to lower gradient between 0 and 0.072 (AECOM 2021). The short-term horizontal gradient toward the extraction location in the lower aquifer is estimated to be less than 0.1. The Project site is located in a low seismicity area.

The caprock intact strength and deformation parameters are estimated based on the laboratory, field and borehole logging data. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]. The analysis showed that the in-situ sand has cohesion which contributes to short-term vertical extraction cavity walls.

[REDACTED]

[REDACTED]. Surface subsidence monitoring around three of the extraction wells detected at or near zero deformation after extraction.



Stantec developed the basis of geotechnical design to meet the short- and long-term stability requirements for the extraction cavity and caprock. The analysis is completed to identify stable allowable extraction cavity sizes as well as distances between extraction boreholes and multi-borehole patterns that will not generate surface subsidence and to eliminate potential for connection to occur between the upper and lower aquifers as a result of caprock subsidence. The target design stability factor of safety (FoS) of 2.0 was selected based on the long-term stability requirement.

[REDACTED]

[REDACTED]

Based upon the results of geotechnical assessment and with the understanding that Sio Silica will follow guidance provided by Stantec including continuing to assess the geotechnical characteristics and performance of the sand deposit and overlying materials during the project life and to adjust design accordingly, no large scale surface subsidence is expected to occur as a result of sand extraction.

Based upon the geotechnical analysis, the following recommendations are provided:

- Design the borehole arrangement and depth to limit the extraction disturbance geometry to the design extraction geometry presented in Table 9 in this document.
- Limit extraction to areas with competent limestone thicker than 15 m.
- Locate extraction group wells with at least 60 m edge to edge distance between their expected long-term cavity disturbance zone (approximately 70 m for short-term cavity disturbance zones)
- Complete a full-scale extraction test to confirm conditions with pre-extraction measurement and monitoring requirements listed in this report.
- Update the FLAC model as more data becomes available for the extraction boreholes and surface settlement data.
- Measure the overburden, caprock, competent limestone, and sand thickness at each extraction location before the start of extraction. Apply the relevant extraction design based on the recommendations in Section 3.9 or the refined design as needed based upon full-scale extraction testing results.
- Follow the monitoring guidance provided in this report, including development and use of a Trigger Action Response Plan (TARP) for extraction locations. This includes surface, caprock and piezometric monitoring and review during and after extraction.



Table 1: Project Site Lithology

Eon	Era	Period	Geologic Unit	Member	Lithology	Role/Impact on Stability
Phanerozoic	Cenozoic	Quaternary			Diamicton (Till)	Overburden Load
	Paleozoic	Ordovician	Red River Formation	Selkirk, Cat Head, Dog Head Members	Carbonate (Limestone)	Supporting Caprock
					Shale	Not Supporting
			Winnipeg Formation	Carman Sand Member	Sand	Target Extraction Zone
				Equiv. Ice Box Member	Shale	Not Drilled
				Black Island Member	Sand	Not Drilled
Archean					Granitoid	Not Drilled

Quaternary

The Pleistocene-aged diamicton (till) is heterolithic, varies in material size distribution from silty to rocky, and typically has a calcareous component. In the Project Site area, the diamicton ranges from 5 m to 43 m in thickness.

This member imparts load on the underlying rock units and is not considered to be a supporting member for stability analysis.



Table 9: Allowable Extraction Disturbance Zone Dimensions

Competent Limestone Thickness (m)	Overburden Thickness (m)	Long-term Allowable Limestone Unsupported Span (Diameter) (m) (Notes 1 and 2)	Extraction Disturbance Zone Dimensions (Notes 3 and 4)	
			Top Diameter (m)	Bottom Diameter (m)
10	25	26	16	0 (Note 5)
	35	24	14	0 (Note 5)
15	25	35	25	6
	35	32	22	3
20	25	43	33	14
	35	40	30	11
25	25	50	40	21
	35	47	37	18

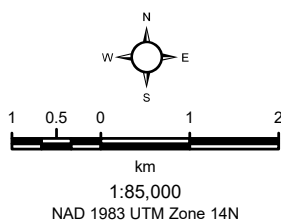
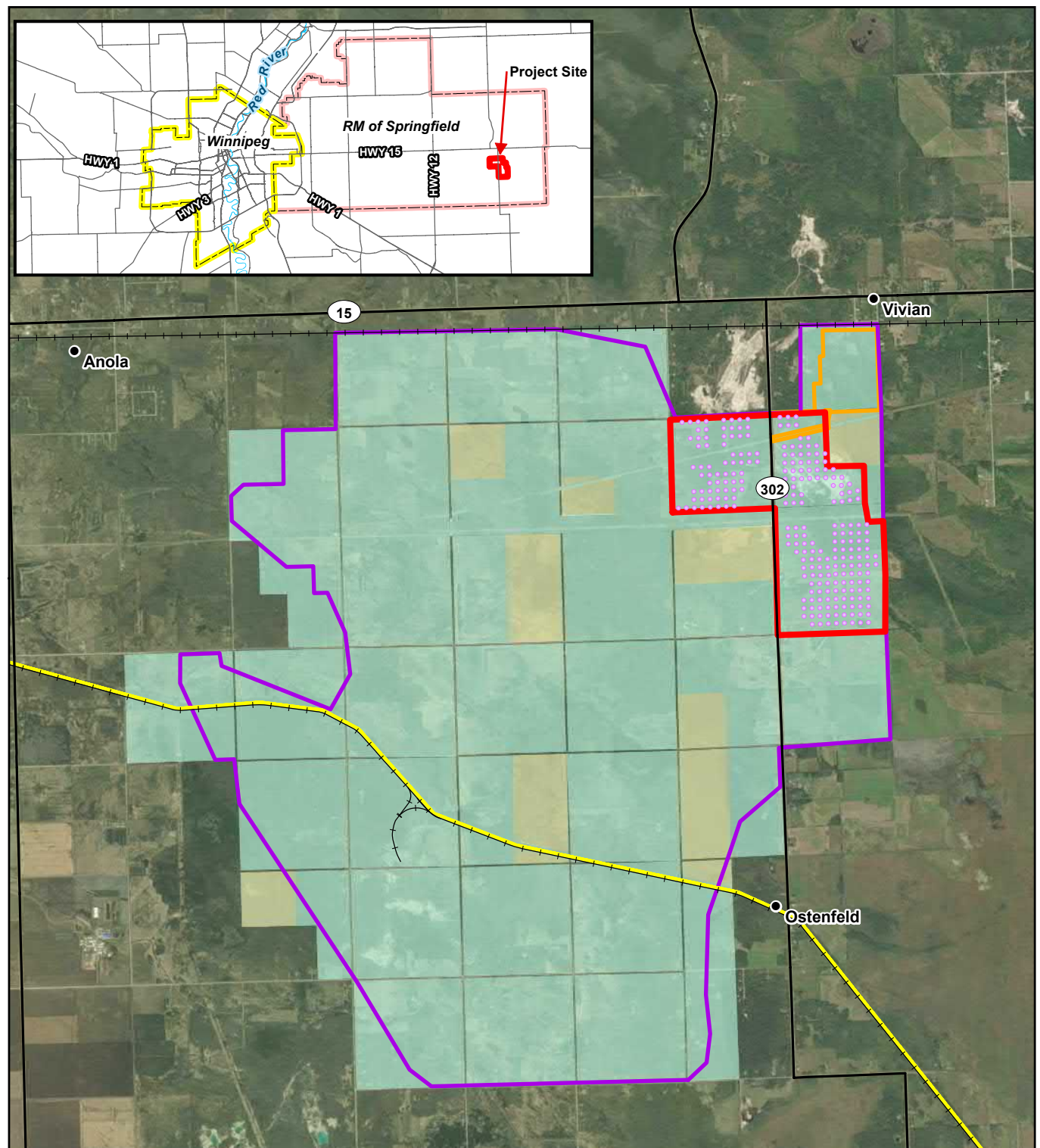
Notes:

- 1) Bending (Tensile) is the controlling failure mechanism to determine the long-term allowable span.
- 2) Single beam maximum long-term allowable span is 7 m. Average competent limestone bedding thickness is 0.7 m.
- 3) Extraction zone side wall slope of 65°.
- 4) Extraction depth is 20 m.
- 5) The long-term diameter of the extraction cavity is expected to be 10 m larger than the short-term diameter.
- 6) Due to possible long-term cavity expansion, limit the extraction zone to the long-term allowable unsupported span.
- 7) Extraction in areas with only 10 m of competent limestone is discouraged due to competency uncertainties.



Table 2, Attachment B

Updated EAP Figure 1-1 to show GWWD
Shoal Lake Aqueduct



- Greater Winnipeg Water District Shoal Lake Aqueduct
- Project Site Area
- 24-Year Life of Project Area
- Sand Processing Facility Area *
- Annual Sand Extraction Areas ****
- Proposed Extraction Years 1 to 4

- Land Ownership**
- Crown Land
- Private Land
- General Features**
- Highway
- Railway

* The sand processing facility (i.e. the sand wash plant, dry plant and associated infrastructure) are not components of the Project and is being reviewed by regulatory authorities under a separate Environment Act Licence application.

** Progressive annual decommissioning and rehabilitation of sand extraction boreholes, equipment laydown areas, drill rig access trails, slurry pipe right-of-ways and temporary pumping stations will occur within each annual sand extraction area each extraction year.

NOTE

The Project Site is the boundary within which the Project footprint for years 2021 – 2025 will occur, excluding required setback areas, e.g., property not owned by CanWhite or not under agreement with CanWhite for development

Vivian Sand Extraction Project
Project Site Location and Land Ownership
 CanWhite Sands Corp.

AECOM

Figure: 1-1

Table 2, Attachment C

**Preliminary Traffic Projections
Memorandum**



AECOM Canada Ltd.
99 Commerce Drive
Winnipeg, MB R3P 0Y7
Canada

T: 204.477.5381
F: 204.284.2040
aecom.com

To:
Marlene Gifford
AECOM

Project name:
Vivian Sand Facility – Sand Extraction
Project
File: 6119.00

CC:
Laura Weeden, P.Eng., CanWhite Sands Corp.
Brent Bullen, CanWhite Sands Corp.
Cliff Samoiloff, AECOM

Project ref:
60640258.7

From:
S. Brad Cook, P.Eng.
AECOM

Date:
December 13, 2021

Memo

Subject: Proposed Vivian Sand Extraction Project - Preliminary Traffic Projections

Background

AECOM Canada Ltd. (AECOM), was previously retained by CanWhite Sands Corp. (CanWhite), to develop traffic data for the proposed Vivian Sand Processing Facility (Processing Facility), located south of PTH 15 and east of PR 302 southwest of Vivian, Manitoba, in the Rural Municipality of Springfield. Traffic data for the Processing Facility is detailed in a memo dated September 18, 2020 (attached in **Appendix A**) and includes trip generation estimates for the Processing Facility, anticipated traffic distribution, and estimates of traffic volume increases at the PTH 15 and PR 302 intersection during AM and PM peak periods. This information was requested by Manitoba Infrastructure (MI) as part of their review of a July 2, 2020, Vivian Sand Facility Project Environment Act Proposal (EAP) to determine if a more detailed Traffic Study was required. Based on the relatively low trip generation, MI determined that significant impacts to Highway traffic operations were unlikely and did not require a detailed Traffic Impact Study be completed for the project.

AECOM was retained by CanWhite to complete a second Environment Act Proposal (EAP) for the Vivian Sand Extraction Project (SEP) which involves extraction of sand from the Sandstone aquifer for processing at the Processing Facility. A copy of the EAP for the SEP (file no. 6119.00) dated July 23, 2021, was submitted to the Technical Advisory Committee and, as part of their review comments, MI again requested that preliminary traffic projections for the SEP be submitted to determine if a more detailed Traffic Impact Study is required.

The purpose of this Memo is to estimate site traffic volumes generated by the proposed SEP. The study was conducted according to the following methodology:

- Conduct a review of the SEP site area and determine access points to the site from the adjoining road network,
- Estimate trip generation at full build-out of the proposed SEP, and
- Project full build-out traffic generated by the SEP during AM and PM peak hours at key intersections in the study area.

The study limits for the preliminary traffic projections includes PTH 15 north of the SEP area, PR 302 for approximately 5.0 km south of PTH 15, and Road 42E (Queens Valley Road) for approximately 1.8 km south of PTH 15. Because MI is concerned about the impact of overall traffic volume increases on highways adjacent to the proposed development, traffic generated by the SEP was combined with the traffic projections for the Processing Facility which are attached in **Appendix A**.

Sand Extraction Project Location

The location of the SEP site area is illustrated in **Figure 1** and includes sand extraction well sites on the east and west sides of PR 302 south of PTH 15. As shown, sand extraction operations are located east of PR 302 during the first three years of SEP operations with access from PR 302 only. During years four and five, the extraction sites are located between PR 302 and Road 42E with access to these areas expected from both roadways.

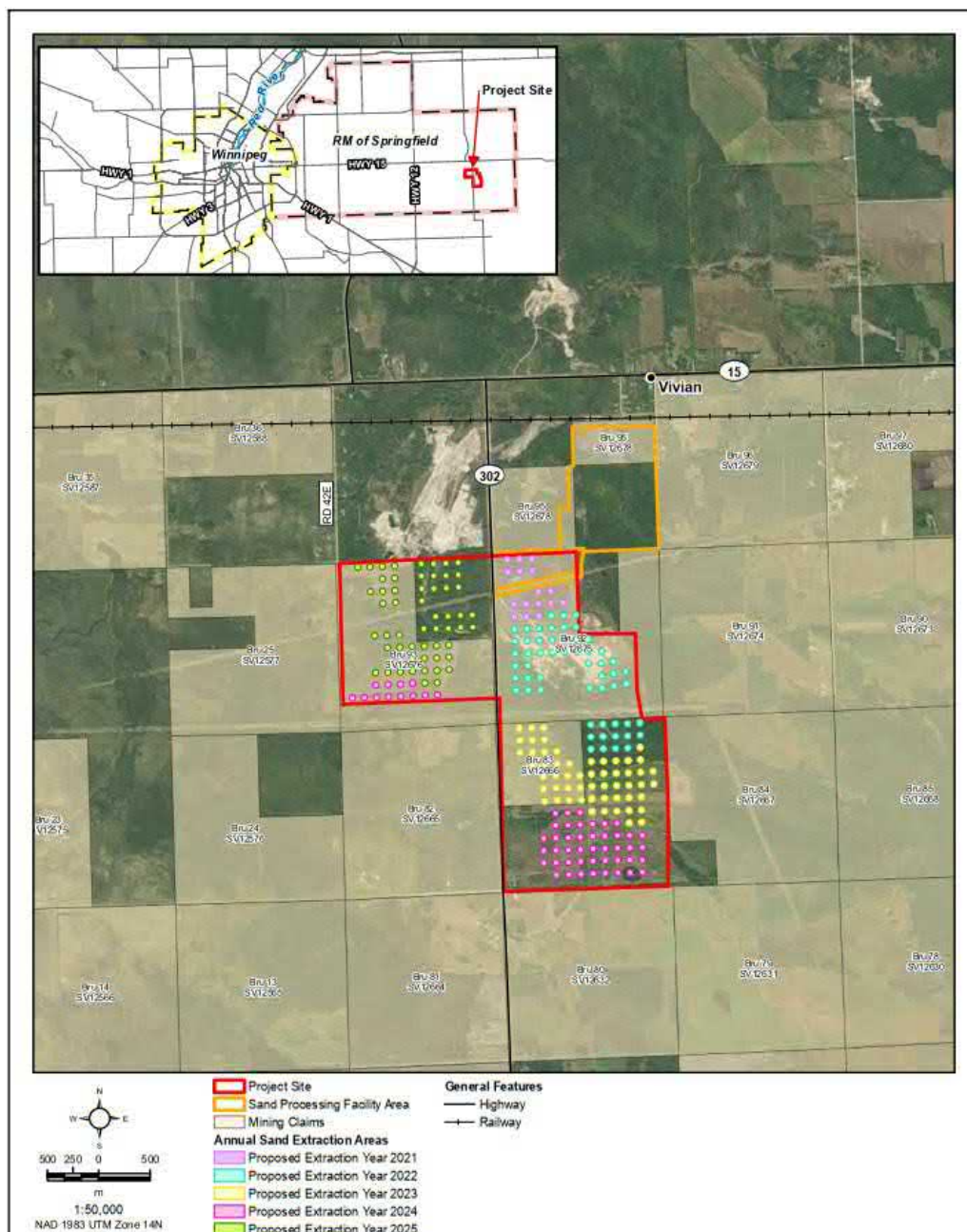


Figure 1: Sand Extraction Project Site Area

Sand Extraction Project Description

CanWhite is proposing to extract silica sand from the Winnipeg Sandstone aquifer in an area southwest of Vivian, Manitoba. Due to the depth of the sand deposits, the SEP will use well drilling rigs and water extraction rather than open pit quarry extraction method. Sand extraction will occur from April to November with an annual average of 56 well clusters with seven extraction wells per cluster. A maximum of seven extraction wells will operate 24 hours per day for 5 to 7 days each before the extraction wells are decommissioned and operations move to a different well cluster. Temporary slurry lines and associated pumping stations will be constructed to transport the sand directly to the Processing Facility instead of transporting the material by truck. The SEP includes construction of temporary access trails from PR 302 and Road 42 E (Queens Valley Road) to the sand extraction areas to accommodate well drilling rigs and installation of the slurry lines.

Trip Generation

Sand Processing Facility

As per the September 18, 2020, memo attached in **Appendix A**, the processed sand product will be transported by rail and not hauled by truck. The only truck traffic will be the occasional service vehicle (e.g. septic tank pump out, supply shipments) which would access the facility during off-peak periods. As a result, trips generated by the Processing Facility during the AM and PM peak periods will be limited to employee trips:

- AM Peak: 25 veh/hr inbound, 25 veh/hr outbound
- PM Peak: 25 veh/hr inbound, 25 veh/hr outbound

Sand Extraction Project

As discussed above, sand extraction is expected to occur from April to November with employees working two 12-hr shifts per day with shift change occurring at 7:00am and 7:00pm. Sand will be transported to the processing facility using temporary slurry lines instead of trucks. Therefore, the traffic generated by all SEP phases is associated with the drilling of wells, well operations, well decommissioning, construction of temporary access trails and installation of slurry lines.

From information supplied by CanWhite, it is expected that most of the equipment and vehicles required for the work will stay in and around the active extraction sites rather than travelling back and forth on local roads or highways. As a result, new trips generated by the SEP during the AM and PM peak periods will be limited to employee trips, with most employees travelling directly to an active extraction site or parking at the Processing Facility for their shift. CanWhite estimates that between 13 and 20 employees will be required per shift for SEP operations. For analysis purposes AECOM has assumed 20 employees with one vehicle trip per employee. The resulting SEP trip generation during the AM and PM peak periods is as follows:

- AM Peak: 20 veh/hr inbound, 20 veh/hr outbound
- PM Peak: 20 veh/hr inbound, 20 veh/hr outbound

Some additional trips will be generated by the SEP due to mechanic services or fuel delivery to the extraction sites, but these will typically occur during off-peak periods.

Trip Generation Summary

The total number of trips generated by both the Sand Processing Facility and the Sand Extraction Project are summarized as follows:

- AM Peak: 45 veh/hr inbound, 45 veh/hr outbound
- PM Peak: 45 veh/hr inbound, 45 veh/hr outbound

Trip Distribution

The trip distribution determined as part of the Processing Facility traffic projections detailed in the attached memo (**Appendix A**) was assumed to be applicable to trips generated by the SEP:

- 25% to/from Winnipeg,
- 25% to/from Steinbach,
- 10% to/from Anola,
- 10% to/from St. Anne,
- 10% to/from Vivian,
- 10% to/from Beausejour,
- 10% to/from Richer.

The sand extraction sites shown in **Figure 1** include areas along both PR 302 and Road 42E. However, for the first three years of SEP operation all sites are located on the east side of PR 302. To be conservative, it was assumed all generated traffic will utilize the PTH 15 at PR 302 intersection to access SEP sites except traffic travelling to/from Richer to the south. The resulting trip distribution is listed in **Table 1** and the trip assignment at the PTH 15 and PR 302 intersection during the 7:00 am and 7:00 pm shift change is shown in **Figure 2**.

Table 1: Sand Processing Facility and Sand Extraction Project Trip Distribution at PTH 15 & PR 302

Employee Vehicles per Shift	Workforce Location	Trip Distribution	PTH 15 at PR 302							
			AM Shift (7:00am - 7:00pm)				PM Shift (7:00pm - 7:00am)			
			EBR	WBL	NBR	NBL	EBR	WBL	NBR	NBL
40 ¹	Winnipeg	25 %	10			10	10			10
	Steinbach	25 %	10			10	10			10
	Anola	10 %	4			4	4			4
	St. Anne	10%	4			4	4			4
	Vivian	10 %		4	4			4	4	
	Beausejour	10 %	4			4	4			4
		Total	32	4	4	32	32	4	4	32

¹ Does not include 10 % (5 trips) per shift that arrive/depart from Richer using PR 302 south of the SEP site

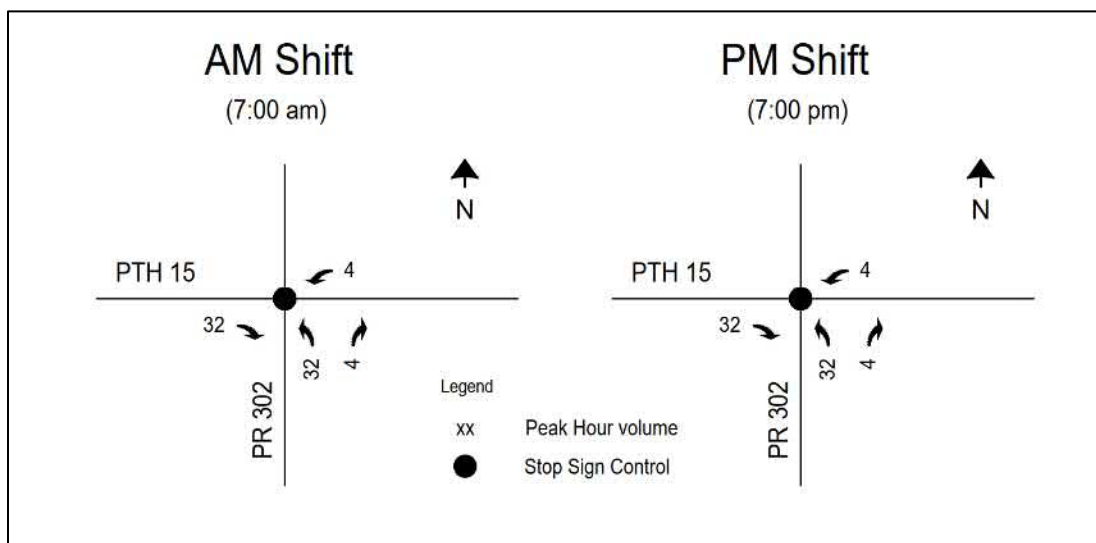


Figure 2: PTH 15 at PR 302 Trip Assignment

Summary

PTH 15 is classified by MI as a Secondary Arterial Highway which, according to MI Transportation Planning Policy 2/98, can typically accommodate annual average daily traffic (AADT) volumes of up to 6,000 veh/day. Assuming 12% of AADT occurs during peak hours, the traffic volume that can be accommodated by a Secondary Arterial during a peak hour is approximately 720 veh/hr.

From MI's 2019 Traffic Flow Map, the current AADT on PTH 15 west of PR 302 is 2,850 veh/day or approximately 342 veh/hr during peak periods. The relatively low AADT and peak hour volume indicates there is substantial capacity remaining on PTH 15 west of PR 302 to accommodate additional traffic. East of PR 302 the AADT on PTH 15 is extremely low at 910 veh/day.

During the AM and PM shift changes, traffic generated by the proposed Sand Processing Facility and Sand Extraction Project will result in 64 additional trips per hour on PTH 15 west of PR 302 and 8 additional trips east of PR 302. Even with this additional traffic, the total peak hour traffic volume on PTH 15 is well below the hourly volume that can typically be accommodated by a Secondary Arterial. For this reason, no significant impacts to traffic operations are anticipated due to traffic generated by the proposed Sand Processing Facility and Sand Extraction Project.

APPENDIX A

Preliminary Traffic Projections – Proposed Vivian Sand Facility Project

To:
Marlene Gifford
AECOM**CC:**
Laura Weeden, P.Eng., CanWhite Sands Corp.
Brent Bullen, CanWhite Sands Corp.
Cliff Samoiloff, AECOM**Project name:**
Vivian Sand Facility Project
File: 6057.00**Project ref:**
60625356**From:**
James McCutcheon, P.Eng.
AECOM**Date:**
September 18, 2020

Memo

Subject: Preliminary Traffic Projections – Proposed Vivian Sand Facility Project

AECOM Canada Ltd. ("AECOM"), was retained by CanWhite Sands Corp. ("CanWhite"), to develop a Traffic Projections Memo ("Memo") for the proposed Vivian Sand Facility Project ("Facility"), just east of Highway PR 302, and south of Highway PTH15 southwest of Vivian, Manitoba in the Rural Municipality of Springfield. This Memo provides preliminary traffic projection information requested by Manitoba Infrastructure to support their review of the July 2, 2020 Vivian Sand Facility Project Environment Act Proposal, and to determine if a more detailed Traffic Study is required. The study limits include PTH 15 to the north to a point 1.7 km south along PR 302. The purpose of this Memo is to estimate site traffic volumes generated by the proposed Facility. The study was conducted according to the following methodology:

- Conduct a review of the site plan of the proposed Facility and determine the access points to the site from the adjoining road network;
- Estimate newly generated traffic projections at full build-out of the proposed Facility; and
- Project full build-out traffic generated by the Facility during AM and PM peak hours at the key intersections in the study area.

Location

The proposed access to the Processing Facility Site Area is east of and adjacent to Highway PR 302 and approximately 1.7 km south of PTH 15 in the rural municipality of Springfield, Manitoba. The proposed location coordinates for the processing facility are 49° 52' 18" N and 96° 28' 09" W.

Site Generated Traffic

Based on information provided by CanWhite, the processed sand product will be transported from the Facility by rail to markets in Canada, the United States and Internationally. Therefore, the sand product will not be transported by haul truck. Also, the extracted bulk sand product will be transported to the processing facility by slurry line, not by



sand haul truck. The only truck traffic will be the occasional service vehicle, (e.g. septic tank pump out, supply shipments), which would attend the Facility during the day.

CanWhite estimates a target site workforce of 20 to 25 persons per shift once construction is complete and the Facility is operational. For the purposes of this analysis we have used an employee single vehicle volume estimate of 25 vehicles accessing and egressing the site during the morning and evening shifts for the full build out condition. There is expected to be two 12-hour shifts per day from 7 am to 7 pm seven days per week.

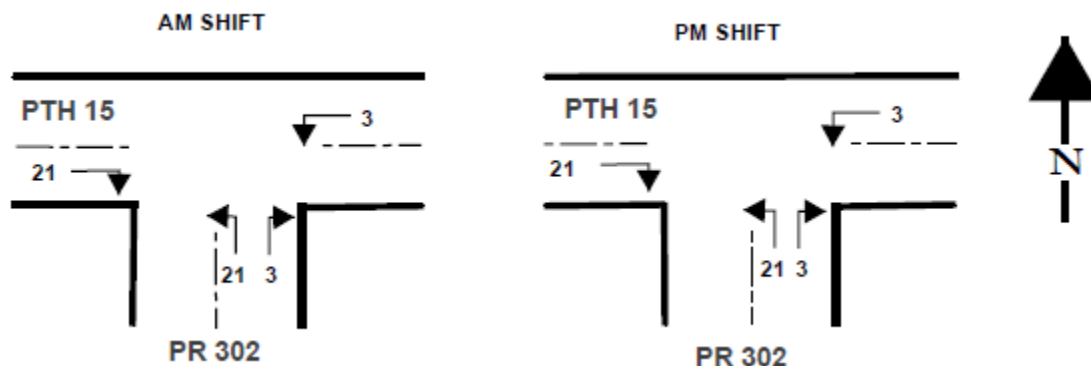
Trip Distribution

Employee workforce origins/destinations were provided by CanWhite which identified that the employee workforce is expected to include 25% from Winnipeg, 25% from the Steinbach area with the remainder from the immediate area including Anola, Vivian, Beausejour, St. Anne and Richer.

For this analysis it is assumed that 80% of the workforce will be arriving/departing at the PR 302 and PTH 15 intersection from/to the west. It is further assumed that the employees from Richer would comprise approximately 10% of the vehicle traffic and would arrive/depart to the south along PR 302. For employees from Vivian it is assumed that they will comprise approximately 10% of the vehicle traffic and arrive/depart at the PR 302 and PTH 15 intersection from the east.

The morning and evening shift trip distribution assignments are shown in Figure 1:

Figure 1 – Trip Distribution Schematic at PR 302/PTH 15 Intersection



The AM and PM Trip distribution calculations are shown in Table 1:

Table 1 – Trip Distribution Calculations at PR302/PTH 15 Intersection

Employee Vehicles per Shift	Workforce Split	Workforce Location	Intersection of PR 302 and PTH 15							
			AM Shift				PM Shift			
			EBR	WBL	NBR	NBL	EBR	WBL	NBR	NBL
25	25%	Winnipeg	6			6	6			6
	25%	Steinbach	6			6	6			6
	10%	Anola	3			3	3			3
	10%	Vivian		3	3			3	3	
	10%	Beausejour	3			3	3			3
	10%	St. Anne	3			3	3			3
	10%	Richer (Assumed that vehicles will arrive/depart from proposed access road to the south on PR 302)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a