Table 1: Responses to Technical Advisory Committee (TAC) Review Comments

TAC DEPARTMENT	ISSUE / QUESTION #	ISSUE / QUESTION RAISED*	RESPONSE	PROPOSED MITIGATION SUMMARY
Forestry and Peatlands Branch, Manitoba Conservation and Climate (MBCC) - July 22, 2020	1	*If there is any clearing of trees on crownlands (road allowances etc.) please contact the regional forester as a Timber Damage Appraisal may be required.*	CanWhite Sands Corp. (CanWhite) is aware of, and will be compliant with, this requirement.	N/A
Interlake Eastern Regional Health Authority - July 28, 2020	2	*Please provide data on the levels of respirable silica (less than 10 micrometer diameter) in the raw material and in the reject piles.*	Two samples of raw sand slurry material were analysed by a third-party laboratory. Results showed 0.67% and 0.45% of particulates less than 11 micometers in size which would represent particles that include clay, silica or a combination of both. It is expected that that only a fraction of these fine particulates (if any) will be silica, and all fines, including and silica, will be removed from the sand within a closed environment in the Processing Facility during the wet process. These fines will be bound within the Filter Cake that is produced during the dewatering process, as described in detail below. When the sand slurry arrives at the facility, the sand will go through a dewatering process (EAP, Section 2.1.1.1. Processing Description). In the first step of the dewatering process, the sand will pass through cyclones to remove water and fines. Dewatering screens will then filter out particles smaller than 105 microns. Particles smaller than 105 microns (fines) will remain in the water from the cyclone and screening process. This water will then be treated using a flocculation process to separate out the fines. Fines removed from this water treatment process will be pumped to a belt press that 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. As a result, fines are not expected to be found in outdoor sand stockpiles (shown as wet sand stockpile 'A' and 'B' in Figure 2-2 in the EAP). There are two sand reject piles (in Figure 2-2 in the EAP). The first is the wet plant reject pile that will consist of particles larger than 400 microns removed during the screening process described above. As described in Section 2.3.2 (Solid Waste and By-product) of the EAP, this sand reject pile is kept damp at all times during non-winter months to mitigate the potential for dust generation. The second is a sand reject pile from the dry plant. This reject sand is generated from the final quality control screening process and may contain particles smaller than 105 microns. In addition to keeping this sand reject pile damp, CanWhite will also be enclosing this sand reject pile in a building to further enhance CanWhite's dust control mitigation measures.	**Additional Proposed Mitigation:** CanWhite will enclose the sand reject pile containing fines (dry plant sand reject pile) and will cover the discharge points onto the hopper and conveyors to further mitigate the potential for dust generation.
	3	*Please ensure that fine particulate sand is contained in a secure manner, other than unsecured outdoor piles. For example, Is it possible to store the fine silica reject sand in an enclosed storage area?*	To further enhance CanWhite's dust control mitigation measures (EAP, Section 6.3.1, Air Quality), CanWhite will enclose the fine sand reject pile associated with the dry plant and will also cover the discharge points onto the hopper and conveyors. Also see the response above for #2.	**Additional Proposed Mitigation:** CanWhite will enclose the sand reject pile containing fines (dry plant sand reject pile) and will cover the discharge points onto the hopper and conveyors to further mitigate the potential for dust generation.

TAC DEPARTMENT	ISSUE / QUESTION #	ISSUE / QUESTION RAISED*	RESPONSE	PROPOSED MITIGATION SUMMARY
	4	*Please provide information on the proposed air quality monitoring program.*	CanWhite has committed to developing a Dust Management Plan, including dust/particulate matter monitoring, that will be in place during all phases of the Project to confirm that mitigation measures that have been put in place are effective and to allow for the implementation of additional engineering and/or operational controls to further control dust if required. As indicated in Section 6.3.1.2 (Dust Management and Monitoring) of the EAP, CanWhite will consult with MBCC prior to initiation of construction to determine an acceptable monitoring frequency for both the general (total) dust and silica dust monitoring programs. These details will be included in the monitoring plan.	EAP, Section 6.3.1.2, Dust Management and Monitoring; EAP, Section 8, Follow-up Plans
	5	*Please provide modelling data for predicted impact to air quality on closest adjacent private properties (not just to the current residences, which are further away than the closest adjacent private property).*	Please refer to **Attachment A** for responses to air quality related questions/comments.	N/A
Manitoba Infrastructure, Roadside Development - Aug. 14, 2020	6	*A permit is required for the location and intensification of use of the proposed access onto PR 203. For permit information, please contact Sheena Del Rosario at 204-945-3457 or by email at Sheena.DelRosario@gov.mb.ca. Permit information and permit application forms can also be found at https://www.gov.mb.ca/mit/hpd/permits.html*	CanWhite is aware of, and will be compliant with, this requirement.	N/A
	7	*The applicant will have to provide our Regional Technical Services Engineer (TSE), Rob Crang, 204-945-8955 or Robert.Crang@gov.mb.ca with the sufficient information to ensure drainage from this development would not adversely affect the provincial highway system. If necessary, the Regional TSE may request the applicant to submit a detailed drainage plan prepared by qualified experts. Please note that the cost of this study and any revisions to the highway drainage system directly associated with this proposed development will be the responsibility of the developer.*	CanWhite is committed to ensuring drainage from the Project Site will not adversely affect the highway system. When the final Project design is completed, a detailed drainage plan will be provided if requested. Discharge of water to the surface from the Facility Project activities will not occur. Therefore, only water from snowmelt and rainfall will need to be managed. As indicated in Section 4.3.1 'Surface Water and Drainage' in the EAP, surface water drainage flows east for approximately 1 km along roadside ditches before entering a low drainage area flowing northwest. Therefore, surface water at the Project Site, and adjacent area within 1 km of the Project Site, is expected to drain away from PR 302 and PTH 15. Mitigation measures to manage surface water drainage will include but may not be limited to: construction of ditching within the Project Site, as required, to assist in directing runoff flow and maintaining natural drainage pathways through low areas; and installation of culverts, where needed to maintain natural drainage pathways, along the permanent access road connecting with PR 302. Additionally, the Project design will also include a french drain system that will be installed to manage runoff from the sand stockpiles.	EAP, Section 6.4.1, Surface Water Quality **<u>Additional Proposed Mitigation:</u>** CanWhite will include a french drain system that will be installed to manage runoff from the sand stockpiles.
	8	*Traffic generated by this development may have an impact on the traffic operations of PR 302 and PTH 15. Therefore, we require the developer to provide some preliminary traffic projections. Please contact Karen Toews (204) 945-0324 or Karen.Toews@gov.mb.ca. Based on this information, our department will determine if a more detailed Traffic Impact Study is required. If required, this study is to be prepared by a qualified engineer and will determine what impact the traffic generated by this development will have on the traffic operations at this location and what, if any, on highway improvements will be required.*	As requested, preliminary traffic projections are provided in **Attachment B**. CanWhite will provide a more detailed Traffic Impact Study if required.	N/A

TAC DEPARTMENT	ISSUE / QUESTION #	ISSUE / QUESTION RAISED*	RESPONSE	PROPOSED MITIGATION SUMMARY
Lands Branch, Manitoba Agriculture and Resource Development - Aug. 26, 2020	9	*Although temporary access is proposed, Lands Branch recommends development and use of the Government Road Allowance between the south ½ of 32-10-8E1 and the north ½ of 29-10-8E1 to accommodate both temporary and permanent access to the site. If however, the proposed temporary access on Crown land is required, the proponent should contact Mines Branch prior to making an application for General Permit under the Crown Lands Act as there is an existing subsurface allocation. In addition there are two existing surface allocations where the temporary access is being proposed.*	CanWhite submitted an application to Lands Branch in June 2020 for access approval along the proposed temporary access road route. As a part of this application process, Mines Branch was made aware of the intention to use the existing access route temporarily.	N/A
MBCC, Environmental Compliance and Enforcement Branch - Aug. 26, 2020	10	*ECE requests the proponent provide more detailed information regarding the dust collection system and bag house.*	CanWhite will be using the same dust collection system and bag house technology that is used in the United States for dust collection systems in silica sand processing facilities to comply with the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) rule regarding silica dust exposure. The dust collection system, including bag house will be designed by a qualified industrial ventilation designer and tested for effectiveness as an engineering control towards compliance with Manitoba's workplace safety and health legislation and *Canada Occupational Health and Safety Regulations* .	N/A
	11	*ECE requests the proponent provide more detailed information regarding management of the reject sand pile, such as protocol for monitoring and maintaining moisture levels.*	There will be two reject sand piles as shown in the EAP Figure 2-2 and as described in Section 2.3.2 'Solid Waste and By-product'. One sand reject pile is associated with the Wet Plant and will consist of larger oversized sized granules that are too large to be easily dispersed by wind. This pile will be kept damp at all times using a water mister positioned at the end of the radial stacker as a precautionary measure to mitigate the potential for wind dispersal of the waste granules. The second reject sand pile, which is associated with the Dry Plant, will be for fines. These sand fines will be stored damp in an enclosed building and will be kept damp with water misting from the top of the radial stacker prior to removal of the fine reject sand from the Project Site for sale to other markets.	**Additional Proposed Mitigation:** CanWhite will enclose the sand reject pile containing fines (dry plant sand reject pile) and will cover the discharge points onto the hopper and conveyors to further mitigate the potential for dust generation.
	12	*ECE recommends the proponent develop and maintain a complaint management plan to track and respond to public complaints regarding the operation of the Development.*	CanWhite will develop a complaint management plan for the Project 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.	**Additional Proposed Mitigation:** CanWhite will have a Complaint Management Plan in place prior to initiating Project operations.
	13	*Hazardous Waste Registration for the Development may be required if the Development anticipates generating and storing waste as per the Hazardous Waste Regulation M.R. 195/2015.*	CanWhite is aware of, and will be compliant with, this requirement.	N/A
	14	*Above-ground petroleum storage facilities with a total storage capacity of 5000 L or more require a permit under the Storage and Handling of Petroleum Products and Allied Products Regulation M.R. 188/2001.* *Please note that above-ground petroleum storage facilities with a total storage capacity of less than 5000 L do not require a permit under the Storage and Handling of Petroleum Products and Allied Products Regulation M.R. 188/2001, but are still subject to partial application of the regulation*	CanWhite is aware of, and will be compliant with, this requirement.	N/A

TAC DEPARTMENT	ISSUE / QUESTION #	ISSUE / QUESTION RAISED*	RESPONSE	PROPOSED MITIGATION SUMMARY
	15	*In accordance with the Onsite Wastewater Management Systems Regulation M.R. 83/2003, all new or modified onsite wastewater management systems must be registered with Manitoba Conservation and Climate prior to installation.*	CanWhite is aware of, and will be compliant with, this requirement.	N/A
	16	*In the event of a fire, release, spill, leak or discharge of a pollutant or contaminant to the environment, immediately report the incident to Manitoba Conservation and Climate by calling the 24-hour Emergency Response Line at (204) 944-4888 or 1-855-944-4888. Provide a report following the incident with details of the occurrence, clean-up actions and future mitigation of a similar event.*	CanWhite is aware of, and will be compliant with, this requirement.	N/A
MBCC, Parks and Regional Services, Eastern Region - Aug. 31, 2020	17	*The proposed temporary access also requires use of crown land. We recommend that the proponent construct the temporary and permanent road on the same route; i.e. on the municipal road allowance shown in the application as the proposed permanent road location.*	The purpose of the temporary access is to allow for clearing and site preparation to occur while the permanent access is constructed. The temporary access already exists and no additional vegetation/tree clearing would need to occur.	N/A
	18	*Our records indicate that the identified location of the processing facility overlaps with multiple known breeding observations of the golden-winged warbler (listed as Threatened under the federal Species at Risk Act and provincial Endangered Species and Ecosystems Act). The proponent should be required to consult with the Wildlife and Fisheries Branch to develop a clearing strategy that maintains golden-winged warbler nesting habitat in the project area.*	CanWhite will develop and comply with any other mitigation and monitoring plans, or clearing strategies, that are included as requirements within an Environment Act Licence for the Project. As indicated in Section 6.5.2 (Wildlife), Vegetation clearing will take place outside of the spring and summer months to the maximum extent feasible to avoid disturbance to breeding birds. Vegetation clearing will not take place during the peak breeding bird season for this 'Zone B4' area: April 25 – August 15 (when 90% of bird species in the area are known to nest); pre-clearing nest searches will be conducted no more than 5 days prior to clearing during the 'shoulder' nesting season outside of this 'peak' nesting timeframe (i.e., April 14 – 24 and August 16 – 24), as needed. As indicated in Section 6.5.1 (Vegetation), areas disturbed during Project construction and not required for Project operations will be allowed to revegetate naturally and will be augmented using an approved native seed mixture and native plantings if required. This mitigation is anticipated to return the vegetative cover to the pre-cleared condition over time. Although the characteristics defining 'Critical Habitat' for this species are complex and only partly understood, this species generally prefers to nest in early successional habitats (or habitats exhibiting early successional characteristics), usually with dense herbaceous growth mixed with extensive patches of dense shrubby growth along with scattered taller trees adjacent to a forested edge (Environment and Climate Change Canada, 2016). Given the relatively small amount of naturally vegetated area that will be cleared to accommodate the Project footprint (17 ha) it is expected that alternative nesting habitat for the golden-winged warbler is available in Regional Project Area as the above-described preferred nesting habitat is not limited only to the Project Site. Please note that although the naturally vegetated area to be cleared was indicated as 17 ha in Section 6.5.1 'Vegetation' of the EAP, that area will actually be less (approximately 13.9 ha) as clarified in **Attachment C** regarding the rail loop design.	EAP, Section 6.5.2, Wildlife; EAP Section 6.5.1 Vegetation
	19	*Clearing of vegetation on crown lands and municipal road allowances will require timber damage appraisal and any associated fees/conditions related to removal of timber.*	CanWhite is aware of, and will be compliant with, this requirement.	N/A

TAC DEPARTMENT	ISSUE / QUESTION #	ISSUE / QUESTION RAISED*	RESPONSE	PROPOSED MITIGATION SUMMARY
MBCC, Wildlife and Fisheries Branch - Sept. 1, 2020	20	*The Wildlife and Fisheries Branch is concerned about potential conflicts with golden-winged warbler. The project is located within an area identified as critical habitat for golden-winged warbler, which is listed as Threatened under the federal Species at Risk Act and provincial Endangered Species and Ecosystems Act. The specific location of the processing facility overlaps with multiple known breeding observations of this species, suggesting that important habitat structure occurs at or near the site. The potential loss of nesting habitat is a concern, and should be avoided or offset during project construction activities. The proponent should be required to consult with the Wildlife and Fisheries Branch to develop a clearing strategy that maintains golden-winged warbler nesting habitat in the project area.*	Refer to the above response for #19.	Refer to the above mitigation for #19.
MBCC, Environmental Assessment Branch, Air Quality Section - Sept. 1, 2020	21	*Provided modeling results show exceedances of the Manitoba Ambient Air Quality Criteria (MAAQC) for PM2.5, PM10, and TSP concentrations in the surrounding area of the project. As a result, there is a potential that the proposed project activities will contribute to the deterioration of ambient air quality in the area. Therefore, it is suggested that additional mitigation measures may need to consider for controlling the particulate matter emissions.*	Please refer to **Attachment A** for responses to air quality related questions/comments.	**Additional Proposed Mitigation:** CanWhite will enclose the sand reject pile containing fines (dry plant sand reject pile) and will cover the discharge points onto the hopper and conveyors to further mitigate the potential for dust generation.
	22	*In the modeling study, the same amount of background concentrations (14 µg/m3) for PM10 and TSP has been applied, which may not be appropriate. Study1 has shown that the average mass ratio of PM10 to TSP is 0.56 (±0.24) in Canada, and this ratio is relatively higher in the prairies compare to other parts of Canada. It is likely that the TSP concentration in the modeling study has been underestimated due to the use of lower background concentrations. This underestimation indicates a higher potential for the deterioration of ambient air quality in the surrounding area.*	Please refer to **Attachment A** for responses to air quality related questions/comments.	**Additional Proposed Mitigation:** CanWhite will enclose the sand reject pile containing fines (dry plant sand reject pile) and will cover the discharge points onto the hopper and conveyors to further mitigate the potential for dust generation.
	23	The proponent did not provide any information regarding building located within the facility. Was the building-downwash effect taken into account in the modeling?	Please refer to **Attachment A** for responses to air quality related questions/comments.	N/A
	24	Table 5 in the assessment report shows “Summary of Ozone Concentration Data Obtained from Ellen St. station”. What is the period of the data listed in Table 5? Does the Table 5 summarize the hourly average of one-year data or several years of data? If so, then which year/years?	Please refer to **Attachment A** for responses to air quality related questions/comments.	N/A
	25	Air Quality Section suggests that the proponent submit a more detailed particulate matter emission mitigation plan and an ambient air quality monitoring plan.	CanWhite has committed to developing a Dust Management Plan, including dust/particulate matter monitoring, that will be in place during all phases of the Project to confirm that mitigation measures that have been put in place are effective and to allow for the implementation of additional engineering and/or operational controls to further control dust if required. As indicated in Section 6.3.1.2 (Dust Management and Monitoring) of the EAP, CanWhite will consult with MBCC prior to initiation of construction to determine an acceptable monitoring frequency for both the general (total) dust and silica dust monitoring programs. These details will be included in the monitoring plan.	EAP, Section 6.3.1.2, Dust Management and Monitoring; EAP, Section 8, Follow-up Plans

Notes:
* Text in italics indicate direct quotes from submitted comments; otherwise issues / questions raised have been summarized for brevity or clarification.
N/A = Not applicable.

TAC DEPARTMENT	ISSUE / QUESTION #	ISSUE / QUESTION RAISED*	RESPONSE	PROPOSED MITIGATION SUMMARY

References:

Environment and Climate Change Canada. 2016. Recovery Strategy for the Golden-winged Warbler (*Vermivora chrysoptera*) in Canada. Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada, Ottawa. vii + 59 pp.

Attachments:

Attachment A - Memorandum: Response to the Technical Advisory Committee Questions and Comments related to Air Quality
Attachment B - Preliminary Traffic Projections Memorandum
Attachment C - Clarification Letter Regarding Rail Loop Design

AECOM Imagine it. Delivered.

Table 1, Attachment A

Memorandum: Response to the Technical Advisory Committee Questions and Comments related to Air Quality

AECOM Imagine it. Delivered.

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To: Marlene Gifford (AECOM)

Date: September 30, 2020

Project #: 60567492

From: Piotr Staniaszek & Pooya Shariaty

cc: Cliff Samoiloff (AECOM); Randy Rudolph (AECOM)

Memorandum

Subject: **AECOM's Response to the Technical Advisory Committee (TAC) Questions and Comments related to Air Quality: CanWhite Vivian Sand Processing Facility Project (File 6057.00)**

The following are responses to air quality related issues/questions #5 and #22 to #25 in 'Table 1: Responses to Technical Advisory Committee (TAC) Review Comments'. The Issue/Question numbering is as per the above-referenced Table 1 to which this memorandum is an attachment.

Issues/Question #5

Please provide modelling data for predicted impact to air quality on closest adjacent private properties (not just to the current residences, which are further away than the closest adjacent private property.

AECOM Answer:

The closest adjacent private properties are just beyond the Processing Facility boundary (i.e. fenceline) The Maximum Point of Impingement (MPOI) is the location of the maximum concentration at or outside the Processing Facility boundary (identified in the isopleth figures in Attachment B of Appendix B in the EAP as the 'Maximum Modeled Concentration'). For this reason, predictions at the MPOI are worst-case predictions for the adjacent private properties. The predicted concentrations at the closest adjacent residences are much lower than the MPOI.

The maximum prediction is obtained for the worst meteorological conditions during the five-year period. In the case of particulate predictions, the highest predictions are obtained from the end of November to February, when there will be winter meteorological conditions (frozen material, and/or ground, some sources covered by snow, and a lower natural background for dust).

For predictions at locations other than the MPOI, the isopleth (contour) plots in the report should be consulted. As previously indicated, these plots represent the worst-case predictions at these locations; in all other days, predictions will be less than those shown.

Issue/Question #21

Provided modeling results show exceedances of the Manitoba Ambient Air Quality Criteria (MAAQC) for $PM_{2.5}$, PM_{10}, and TSP concentrations in the surrounding area of the project. As a result, there is a potential that the proposed project activities will contribute to the deterioration of ambient air quality in the area. Therefore, it is suggested that additional mitigation measures may need to consider for controlling the particulate matter emissions.

AECOM Answer:

To further mitigate particulate matter emissions and improve modeling results, CanWhite will add the following two additional mitigation measures:

1) The sand reject pile associated with the Dry Plant will be covered
2) The discharge points onto the hopper and conveyors will be fully covered.

Error! Reference source not found. below summarizes model results for the following:

- Results without the above two additional mitigation measures;
- Scenario 1: Results with only covering the sand reject pile associate with the dry plant; and
- Scenario 2: Results with covering the sand reject pile associate with the dry plant and covering the discharge points onto the hopper and conveyors.

. Regarding the mitigation measures, the results (refer to Table 1 below) show that:

- Covering of the sand reject pile associated with the Dry Plant has a very small effect on improving air quality outside of the Facility Boundary.
- Covering the discharge points on hopper and conveyor has a significant, positive impact on air quality outside of the Facility Boundary.
- Maximum particulate values, for the unmitigated case and Scenario 1 mitigation, were predicted close to the Facility west boundary.
- For the unmitigated case and Scenario 1, the MPOI for all particulate size fractions was close to the Facility west boundary; whereas for Scenario 2, the MPOI was south of the access road – near the southwest corner of the Facility boundary.

Regarding exceedances of the MAAQC and the conditions under which exceedances occur:

- There are nine days of predicted exceedances of the TSP MAAQC at the MPOI in five years in the unmitigated case and in Scenario 1 (covered sand reject pile associated with the Dry Plant). These exceedances were obtained for results including background (in the case of TSP, background was increased as it is explained in Issue/Question #22).
- In the case of Scenario 2 (covered sand reject pile for Dry Plant and covered discharge points onto the hopper and conveyors) there were only two days of potential exceedances in five years for Scenario 2 (>99.9% of the time predictions are below MAAQC).
- For $PM_{2.5}$ potential exceedances, for all cases, were predicted to occur in December and January. For PM_{10} potential exceedances, for all cases, were predicted to occur in January and the end of November. For TSP exceedances, for unmitigated case and Scenario 1, were predicted to occur in January and February while for Scenario 2, they were predicted to occur in end of November and January.

Predictions in late November to February are overestimated because natural particulate matter background in these months is lower than an annual average. Some modelled emissions would be expected to be lower in winter and late fall due to frozen material (and ground) and snow cover. Modelling did not account for natural mitigation of some particulate matter sources due to precipitation (125 days a year in Winnipeg https://www.currentresults.com/Weather/Canada/Cities/precipitation-annual-average.php).

In modelling of the access road, it was assumed that 11 heavy trucks will travel the access road every day and there will be no dust mitigation for these specific vehicles. In the reality, there will be fewer trucks travelling daily, there may be days without heavy truck travel, and/or some trucks could travel when the road is watered or when there will be natural dust mitigation due to precipitation or frozen road surface. As indicated in Section 6.3.1 'Air Quality' in the EAP, water will be applied to the permanent Processing Facility access road to minimize dust generation as needed (e.g. during hot, dry weather).

Furthermore, a Dust Management Plan, which will include provisions for dust monitoring (EAP, Section 8 'Follow-up Plans'), will be developed and in place during all phases of the Project to confirm that mitigation measures that have been put in place are effective and to allow for the implementation of additional engineering and/or operational controls to further control dust if required. The Dust Management Plan acts as a living document to evaluate the effectiveness of mitigation measures and implement additional corrective actions to avoid potential exceedances if needed.

Table 1: Maximum Predicted Concentrations for All Sources Including the Access Road

Compounds	Averaging Period	Background Concentration (µg/m^3)	Maximum Predicted Concentration Operations (µg/m^3)	Maximum Predicted Concentration + Background (µg/m^3)	MAAQC (µg/m^3)	Location of Maximum Point of Impingement	
						UTM (mE)	UTM (mN)
Results without Additional Mitigation Measures							
$PM_{2.5}$	24-hour	9	30	39	30	681,871	5,527,275
PM_{10}	24-hour	14	80	94	50	681,761	5,527,445
TSP	24-hour	25*	206	231	120	681,761	5,527,445
	Annual mean	6.7	17	24	70	681,961	5,527,444
Scenario 1: Results WITH Additional Mitigation Measure: Covered Sand Reject Pile associate with Dry Plant							
$PM_{2.5}$	24-hour	9	30	39	30	681,761	5,527,445
PM_{10}	24-hour	14	80	94	50	681,761	5,527,445
TSP	24-hour	25*	205	230	120	681,761	5,527,445
	Annual mean	6.7	15	22	70	681,851	5,527,274
Scenario 2: Results WITH Additional Mitigation Measures: Covered Discharge Points onto the Hopper and Conveyors and Covered Sand Reject Pile associate with Dry Plant)							
$PM_{2.5}$	24-hour	9	28	37	30	681,961	5,527,445
PM_{10}	24-hour	14	39	53	50	681,813	5,527,146
TSP	24-hour	25*	112	137	120	681,713	5,527,146
	Annual mean	6.7	13.4	20	70	681,851	5,527,274

* TSP 24-hour background concentration was increased which reduced the apparent impact of mitigation, as explained further in Issue/Question #22

Issue/Question #22

In the modeling study, the same amount of background concentrations (14 µg/m3) for PM_{10} and TSP has been applied, which may not be appropriate. Study[1] has shown that the average mass ratio of PM_{10} to TSP is 0.56 (±0.24) in Canada, and this ratio is relatively higher in the prairies compared to other parts of Canada. It is likely that the TSP concentration in the modeling study has been underestimated due to the use of lower background concentrations. This underestimation indicates a higher potential for the deterioration of ambient air quality in the surrounding area.

AECOM Answer:

The new TSP background was estimated as 25 µg/m^3 using an average mass ratio of PM_{10} to TSP of 0.56 and based on PM_{10} measurements at the Ellen Street (Winnipeg) station of 14 µg/m^3. The new background was applied to model results in Table 1 above.

The increase of TSP background did affect the frequency of exceedances at the MPOI. It is important to note that with 14 µg/m^3 there are four predicted exceedances within five years, whereas with background 25 µg/m^3 there are nine predicted exceedances within five years, for unmitigated and Scenario 1 cases.

Issue/Question #23

The proponent did not provide any information regarding building located within the facility. Was the building-downwash effect taken into account in the modeling?

AECOM Answer:

Building downwash was considered in the modelling. However, only silos and the dry processing building were included to the model due to their proximity to the point sources. Figure 5 in the Air Quality Assessment Report (Appendix B in the EAP) presented the location of the building and the silos with respect to emission source. Figure 1 below also provides a three-dimensional image of the buildings and stack sources included in the Building Profile Input Program – Prime Version (BPIP-PRIME).

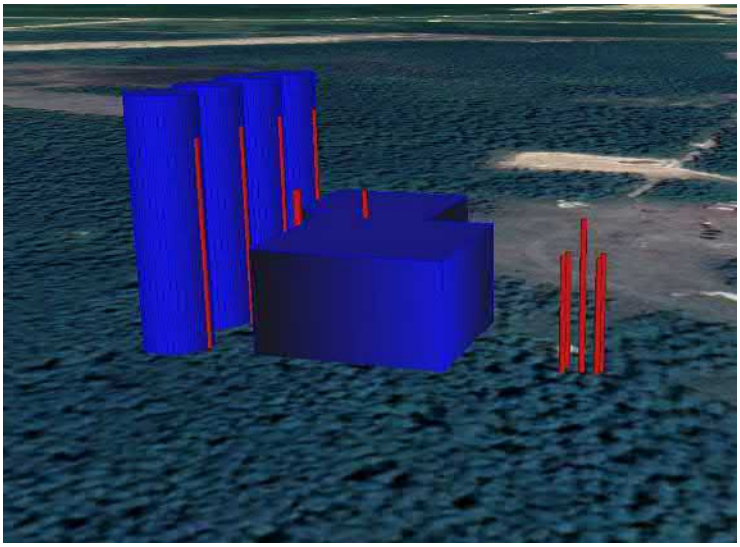

Figure 1: Three-Dimensional representation of buildings and point emission sources (The red-coloured bars protruding from the sides of the silos represent horizontal stacks, at a height corresponding to the top of the red bars. Other red bars represent actual stack sources.)

Issue/Question #24

Table 5 in the assessment report shows "Summary of Ozone Concentration Data Obtained from Ellen St. station". What is the period of the data listed in Table 5? Does the Table 5 summarize the hourly average of one-year data or several years of data? If so, then which year/years?

AECOM Answer:

Ozone data were measured at the Ellen Street station for the most recent year (2019). The hourly data were averaged over each month.

References

Coal Valley Resources (CVR) Ltd. 2013, *Supplementary Information Responses (SIR #24, #45, & #46,)* to EIA for Robb Trend Coal Mine Expansion Project. Prepared by Millennium EMS Solutions Ltd.

Cowherd Jr., Chatten and J.S. Kinsey. 1986. *Identification, Assessment, and Control of Fugitive Particulate Emissions*.

Cowherd, C. Grelinger, M.A. and Gebhart, D.L. 2006: *Development of an emission reduction tern for near-source depletion.* 15th International Emission Inventory Conference, New Orleans.

Grande Cache Coal (GCCoal). 2004. *EPEA Application for Amendment of Approvals No. 12 Mine South B2 Extension Pit.*

Luscar Ltd. 1999. Air Quality Evaluation of the Proposed Mine Permit Extension. Luscar Ltd. – Coal Valley Mine. Prepared by Cirrus Consultants.

Manitoba Sustainable Development 2015. *Ambient Air Quality Criteria Table.* Retrieved March, 2018 from: https://www.gov.mb.ca/sd/envprograms/airquality/pdf/criteria_table_update_july_2005.pdf

Midwest Research Institute (MRI). 1985. *Fugitive Emission Measurement of Coal Yard Traffic at a Power Plant – Confidential Client*.

South Coast AQMD. 1996. *Improvement of Specific Emission Factors (BACM Project 1),* Contract No. 95040.

U.S. EPA. 1983a. *Iron and Steel Plant Open Source Fugitive Emission Control Evaluation,* EPA Contract No. 68-02-3177, Assignment 4, Research Triangle Park, North Carolina.

U.S. EPA. 1983b. *Extended Evaluation of Unpaved Road Dust Suppressants in the Iron and Steel Industry,* EPA Contract No. 68-02-3177, Assignment 14, Research Triangle Park, North Carolina.

U.S. EPA. 1998. Emission Factor Documentation for Section 13.2.2 (Unpaved Roads), Fifth Edition (AP-42). EPA Purchase Order 7D-1554-NALX; MRI Project No. 4864, Prepared by MRI for U.S. EPA Office of Air Quality Planning and Standards Emission Factor and Inventory Group Research Triangle Park.

U.S. EPA. 2006. AP 42 Emission Factors, Section 13.2.2 (Unpaved Roads), Fifth Edition (AP-42). U.S. EPA Office of Air Quality Planning and Standards Emission Factor and Inventory Group Research Triangle Park.

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Table 1, Attachment B

Preliminary Traffic Projections Memorandum

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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 McCutchon, 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 49^0 52’ 18” N and 96^0 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.

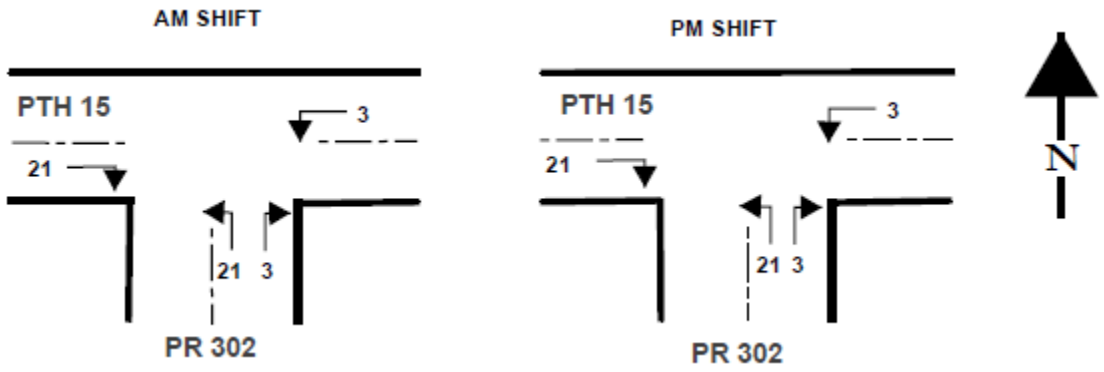
Trip Distribution

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 calclations are shown in Table 1:

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

			Intersection of PR 302 and PTH 15							
Employee Vehicles per Shift	Workforce Split	Workforce Location	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

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Table 1, Attachment C

Clarification Letter Regarding Rail Loop Design

AECOM Imagine it. Delivered.

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September 10, 2020

Our Reference
Project No. 60625356

Jennifer Winsor P. Eng.
Environmental Engineer
Manitoba Conservation and Climate
Environmental Approvals
1007 Century Street
Winnipeg MB R3H 0W4

RE: Vivian Sand Facility Project – Environment Act Proposal (EAP) Application File: 6057.00: Updated Rail Loop Design Information

Dear Ms. Winsor,

On behalf of CanWhite Sands Corp. (‘CanWhite’), this letter provides updated information on the rail loop component design.

During the design and environmental assessment of the Processing Facility a number of different designs for the rail loop were evaluated. This included refinements in placement, shape, width and length of the rail loop to identify a design that would best fit the physical, environmental and operational constraints of the Project Site. One of the original rail loop designs that was considered was shown in Figure 1-2 (attached) in the Vivian Sand Facility Project EAP. During the course of the environmental assessment and development of the EAP this loop design was slightly revised immediately prior to the submission of the EAP to Manitoba Conservation and Climate, Environmental Approvals Branch (MBCC, EAB) in July 2020. This revised version of the rail loop was considered to address potential noise issues with the original rail loop design as shown in the EAP. This revised version, which is smaller (narrower) and located further away from the nearest residences east of the Project Site, was the design that was included and assessed in the Noise Impact Assessment which was included as Appendix C of the EAP. However, in the EAP submission the original larger rail loop design (which would represent the “worst-case” noise scenario) was the version that was presented in the main EAP document. The smaller loop that is presented in the Noise Impact Assessment is the loop that was intended to be included in the main body of the EAP submission and remains to be the targeted design. AECOM apologizes for this oversight.

The revised, smaller rail loop from the Noise Impact Assessment (Figure 1-1 of Appendix C of the EAP) is attached. Although the incorrect figure was included in the main body of the EAP, the information provided in Section 6.3.3 (Noise) in the EAP remains unchanged as the smaller rail loop design from Appendix C of the EAP was used to complete the noise modelling and environmental assessment for this Project.

Since submission of the EAP, more detailed drawings for CN Rail’s review and approval for the rail loop have been completed. The more detailed rail loop design figures identified as ‘Rail Concept Option 4’ are attached as Figure 1 and Figure 2 for your reference and is the rail loop represented in the Noise Impact Assessment in the EAP. ‘Rail Concept Option 4’ also includes two short inner tracks that serve as service/maintenance track for CN Rail use only. This is a requirement by CN Rail. There are no railcar loading facilities situated over this section of track.

The ‘Rail Concept Option 4’ is the design used in our findings of our Noise Impact Assessment (Appendix C of the EAP) and therefore our noise assessment in the main body of the EAP does not change.

Based on the more detailed rail loop drawings (attached ‘Rail Concept Option 4’; Figures 1 and 2), the calculated footprint area for the rail loop will be approximately 3 ha smaller than the footprint of the rail loop as presented in Table 6.4 of the EAP. The estimated footprint of all infrastructure components

(including the rail loop) in the original proposed design and the revised design, as would be presented in Table 6-4 of the EAP, are summarized below:

Table 6-4: Estimated Area of the Project Footprint (Original)

Project Components	
Permanent Components	**Area (ha)**
Processing Facility including the Wet Plant, Dry Plant and associated components as listed in **Section 1.1**	6.9
Permanent access road (7 m wide x 1 km long)	0.7
Rail loop (approximate 30 m width footprint to accommodate curvature of loop line of sight X 3.5 km rail track length)	10.5
Total Project Footprint Area	18.1
Total Previously Cleared / Disturbed Area with Project Footprint Area	1.1
Total Naturally Vegetated Area Requiring Clearing to accommodate the Project Footprint	**17.0**

Note: Total land area within the Project Site within which project components will be located is 114 ha.

Table 6-4: Estimated Area of the Project Footprint (REVISED, with 'Rail Concept Option 4' Rail Loop Design)

Project Components	
Permanent Components	**Area (ha)**
Processing Facility including the Wet Plant, Dry Plant and associated components as listed in **Section 1.1.**	6.9
Permanent access road (7 m wide x 1 km long)	0.7
Rail loop (approximate 28.5m width footprint to accommodate curvature of loop line of sight 2.6 km rail track length)	7.4
Total Project Footprint Area	15.0
Total Previously Cleared / Disturbed Area within Project Footprint Area	1.1
Total Naturally Vegetated Area Requiring Clearing to accommodate the Project Footprint	**13.9**

Note: Total land area within the Project Site within which project components will be located is 114 ha.

As noted in the EAP the naturally vegetated area within the inside of the rail loop will be retained to the maximum extent feasible. Vegetation will only be cleared to accommodate the rail infrastructure and the required line of sight for the railcars. Culverts will be placed, as required, to ensure no change in natural water drainage and flow.

As shown in the attached 'Rail Concept Option 4' Figure 1, the total area including the footprint of the rail loop and all land area within the rail loop including the rail spur[1] connecting the rail loop to the existing CN Rail mainline is 47.1 ha. This area is 2.9 ha smaller than the minimum required total area of a 'railway yard' to be considered for federal review (total area of 50 ha or more), as described in the *Physical Activities Regulations* of the federal *Impact Assessment Act.* Based on the total area of the rail loop, which including the rail spur is less than 50 ha, in addition to our opinion that the proposed rail facilities for the Project do not constitute a 'railway yard', it is our opinion that this Project does not meet the criteria to trigger a federal review by the Impact Assessment Agency of Canada.

If you have any questions regarding the revised rail loop design, please contact me at your earliest convenience.

[1] The rail spur will be developed by CN Rail and is not part of the proposed Vivian Sand Facility Project.

Yours sincerely,

Marlene Gifford
Biologist, Environmental Assessor
AECOM Canada Ltd.
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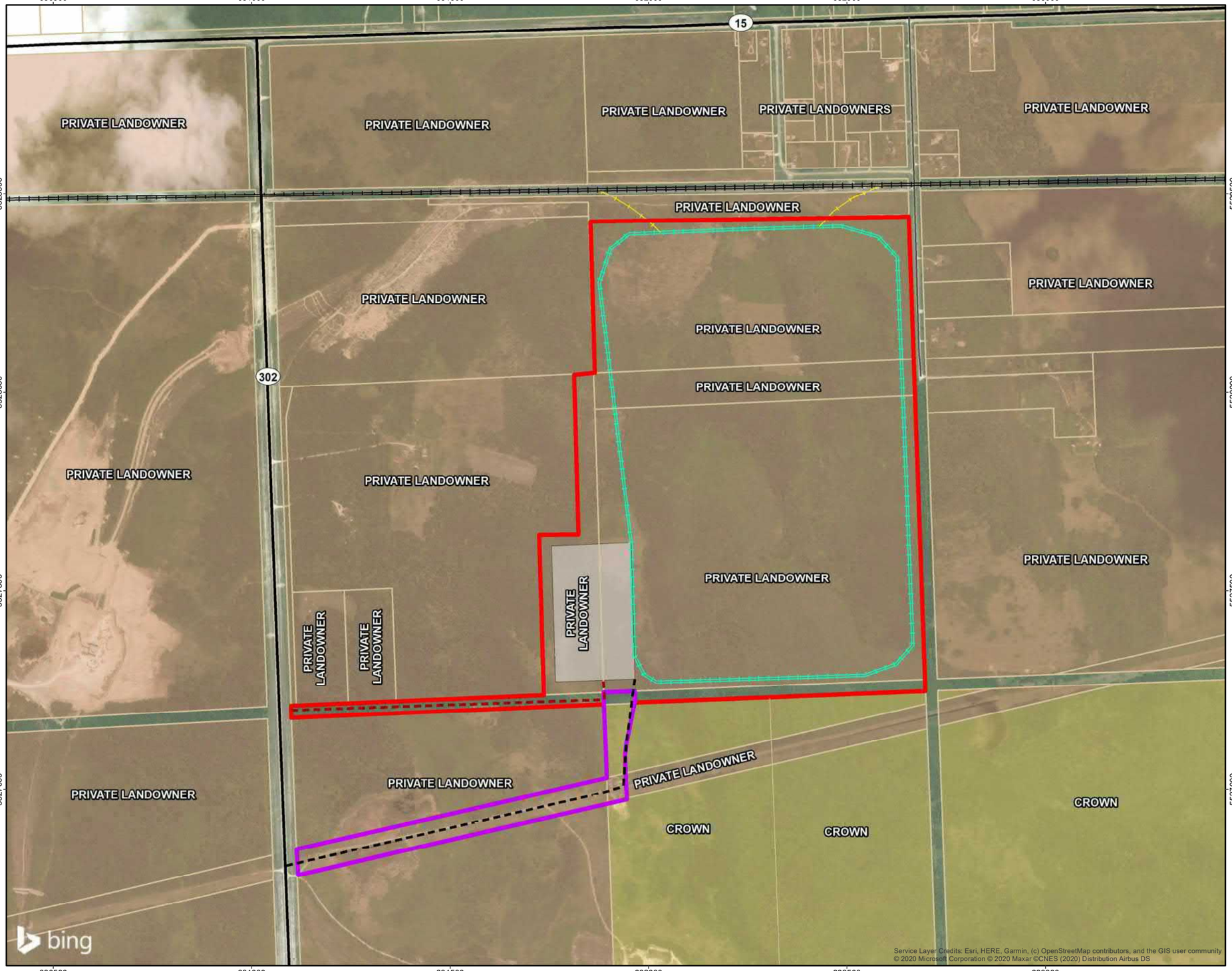
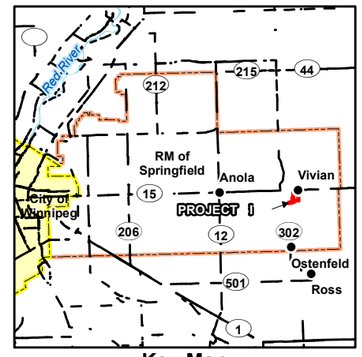
cc:
Siobhan Burland Ross (Manitoba Conservation and Climate, Environmental Approvals)
Feisal Somji (CanWhite)

Attachments:

- Figure 1-2 from the Vivian Sand Facility Project EAP
- Figure 1-1 from Appendix C (Noise Impact Assessment) from the Vivian Sand Facility Project EAP
- Rail Concept Option 4 - drawing: Figure 1
- Rail Concept Option 4 - drawing: Figure 2





Key Map

Legend

- Project Site
- Project Site – Temporary Use

Project Components

- Wet Plant and Dry Plant Location
- Rail Loop
- Train Spurs
- Permanent Access Road
- Temporary Access Road

Land Ownership

- Crown Land
- Private Land

General Features

- Highway
- Road
- Canadian National Railway
- Land Parcels

N
W E
S

1:10,000
NAD 1983 UTM Zone 14N

100 50 0 100 200
m

Basemap: Canvec; CanWhite Sands Corp., 2019

AECOM

Figure: 1-2

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

ANSI B 279.4mm x 431.8mm
Approved:
Checked:
Designer:
Project Management Initials:
Last Plotted: Tue Jun 30, 2020
Last saved by: PAIGE.CROSSMAN (2020-06-30)
Filename: L:\ENVIRONMENT\GIS\STEPHANIE CLARKE\WINNIPEG\VIVIAN_60625656\02_MXDS\VIVIAN SAND FACILITY PROJECT\H001-2_60625356_FACILITY_SITELOCATIONLANDOWNERSHIP.MXD

Legend

- Access Road
- Rail Loop
- Facility

UTM Zone 14N, NAD 83

N
W E
S

CanWhite Silica Sand Extraction Project
Vivian, Manitoba

0 55 110 220 330 440
m

1:10,000

Project Location and Area Map
June 2020
Project 60625336

Figure 1-1

AECOM

682000
684000
5528000
Vivian
682000
684000
5528000

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community

LEGEND

AREA BOUND BY OUTER LOOP =7.4ha

AREA BOUND BY INNER LOOP =39.5ha

AREA BOUND BY CN R/W =0.2ha

TOTAL = 47.1ha

Figure 1

*DISPLAYED SCALES ARE ONLY ACCURATE WHEN PLOTTED AS ANSI D SIZE (22"X34"), SCALES SHALL BE DOUBLED WHEN PLOTTED ON ANSI B SIZE (11"X17")

NOTES:
1. COORDINATES SHOWN ARE FOR REFERENCE AND HAVE NOT BEEN SURVEYED.

REV.	REVISION DESCRIPTION	BY	DATE	CHD	APPD
A	ISSUED FOR APPROVAL	SM	2020-09-04		

ENGINEER'S STAMP

PERMIT NO.:

TRI INNOVATIONS CONSULTING LTD ENGINEERING · DESIGN

PROJECT NO.: XXX.01.01

	DRAWN	CHECKED	DESIGN	APPROVED
BY	SM			
DATE	2020-09-04			

TRANSENERGY

RAIL CONCEPT OPTION 4
RAIL LAYOUT
OVERALL SITE PLAN
AREA SKETCH

SCALE	DRAWING NUMBER	REV.
1/2500	XXX0101-RL-SPN-00002	A

TRACK LENGTHS

A/D TRACK 1 = 2,611m

A/D TRACK 2 = 1,882m

SERVICE TRACK 1 = 411m

SERVICE TRACK 2 = 561m

CONNECTION TRACK = 304m

ENTIRE LOOP TRACK LENGTH = 2,611m

Figure 2

*DISPLAYED SCALES ARE ONLY ACCURATE WHEN PLOTTED AS ANSI D SIZE (22"X34"), SCALES SHALL BE DOUBLED WHEN PLOTTED ON ANSI B SIZE (11"X17")

NOTES:
1. COORDINATES SHOWN ARE FOR REFERENCE AND HAVE NOT BEEN SURVEYED.

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PROJECT NO.: XXX.01.01

	DRAWN	CHECKED	DESIGN	APPROVED
BY	SM			
DATE	2020-09-04			

TRANSENERGY

RAIL CONCEPT OPTION 4
RAIL LAYOUT
OVERALL SITE PLAN
SKETCH

SCALE	DRAWING NUMBER	REV.
1/2500	XXX0101-RL-SPN-00001	A

LAST SAVED DATE: 2020-09-09 3:39:24 PM BY: JSCOT PLOTTED DATE: 2020-09-09 3:40:22 PM BY: JSCOT

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