

Appendix G

Heritage Resources Impact Assessment Report



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HRIA REPORT

Heritage Resources Impact Assessment of the CanWhite Sands Corp. Vivian Sand Extraction Project in Part 20-10-8 EPM; SE-29-10-8 EPM and Plan 15154 R.M. Springfield, Manitoba

HRB File #AAS-20-16736 HRIA Permit #A11-21

Prepared By: Lisa C. Bobbie, M.A. Western Heritage

Prepared For: AECOM

June 04, 2021

WH Project 21-008-01





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Kristiina Cusitar B.A., C.E.T., EP(SAR)Environmental Planner, Impact Assessment and Permitting AECOM 99 Commerce Drive Winnipeg, Manitoba, Canada R3P 0Y7

June 4, 2021

Attention: Ms. Cusitar

Reference: Heritage Resources Impact Assessment of the Proposed **CanWhite Sands Corp. Vivian Sand Extraction Project**

Dear Kristiina.

Please find enclosed the requested copy of the final report regarding the above referenced project.

Five areas of concern located within the Project area were required by the Manitoba Historic Resources Branch to undergo archaeological assessment. These areas contain defined ridgelines and topographic anomalies which could have been the focus for ancient land use. The results of the HRIA did not discover evidence of heritage or cultural resources. Overall, project impacts are limited given the previously disturbed nature of the property including quarrying, an existing transmission corridor, agricultural activity, and road and drainage works. Therefore, Western Heritage has recommended that archaeological clearance be granted for the project.

The Historic Resources Branch has the authority to issue heritage clearance or make recommendations based on the findings in this report.

Sincerely,

Jim Finnigan, M.A. Project Archaeologist

Distribution List:

Manitoba Historic Resources Branch; 1 hard copy; 1 .pdf copy AECOM; 1 .pdf copy CanWhite Sands Corp; 1 .pdf copy North Roots Research; 1 .pdf copy

EXECUTIVE SUMMARY

CanWhite Sands Corp. (hereafter referred to as 'CanWhite') is proposing to extract silica sand from the deep aquifer within the sandstone geological formation southwest of the hamlet of Vivian and approximately 26 km east of the City of Winnipeg. This proposed extraction of silica sand, i.e., the Vivian Sand Extraction Project (hereafter referred to as the 'Project') is being developed for the purpose of supplying high-quality silica sand for use a in variety of markets. The Project is located in part of 20-10-8 EPM, SE-29-10-8 EPM and Plan 15154 and on NTS 1:50,000 topographic map sheet 62 H/16, in the Municipality of Springfield, Manitoba within the Steinbach (726) Ecodistrict.

AECOM submitted the proposed development to the Manitoba Historic Resources Branch (HRB) for heritage screening. The HRB examined the location in conjunction with their records for areas of potential concern (HRB File Number AAS-20-16736). LiDAR coverage shows that the development footprint is located on several elevated landforms that include well-defined ridges, points, and topographic anomalies. These factors suggest that any future planned development within these areas have the potential to impact heritage resources. The HRB identified five areas of concern (AOC) and required that a Heritage Resource Impact Assessment (HRIA) be completed following Section 12(2) of *The Heritage Resources Act*. These findings were outlined in a memo dated 2021-03-11 (Appendix A).

In accordance with the HRB requirements, Ms. Kristiina Cusitar of AECOM, on behalf of CanWhite, requested that Western Heritage Services Inc. (Western Heritage) undertake the required HRIA for the Project. The fieldwork was completed on May 7 and 8, 2021, under Heritage Permit A11-21. The HRIA consisted of pedestrian survey and judgemental shovel testing within the five AOCs within the proposed development area.

The overall nature of the AOCs are elevated sand and gravel ridges covered with dense forest, with a few open pockets of meadow. It was noted that certain areas contained substantial previous disturbances of the landscape including quarrying, clearing and leveling for a transmission corridor, agricultural activity, and road and drainage works. No archaeological artifacts or features were identified during the HRIA. Therefore, Western Heritage has no further heritage concerns regarding the proposed development and recommends that the Project be granted heritage clearance.

Despite a thorough investigation, incidental discovery of unknown heritage resources may occur during the construction phase of the proposed development. In these cases, the discovery of heritage resources should be reported immediately to the HRB and Western Heritage to determine on-site assessment. In the event that human remains or suspected human remains are encountered, both the local RCMP detachment and Manitoba HRB (204-945-2118) must be contacted.

This report has been reviewed and approved by the senior archaeologist whose signature is below:



Jim Finnigan May 24, 2021

CREDITS

Project ManagerJim Finnigan, M.A.Permit HoldersLisa Bobbie, M.A.Field InspectionLisa Bobbie
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TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
CREDITS	iii
LIST OF FIGURES	v
LIST OF TABLES	vi
1.0 PROJECT DESCRIPTION	
1.1 Introduction	1
1.2 Screening Criteria	3
2.0 ENVIRONMENTAL OVERVIEW	
2.1 General Environment	4
2.2 Steinbach (726) Ecodistrict	4
3.0 HISTORICAL OVERVIEW	6
3.1 Culture History of Manitoba	6
3.2 First Nations and Métis	8
3.3 History of the Project Area	8
4.0 METHODS	
4.1 Introduction	
4.2 Field Methods	
5.0 RESULTS	
5.1 Project Location	12
5.2 Fieldwork Summary	12
6.0 CONCLUSIONS AND RECOMMENDATIONS	
7.0 REFERENCES	21
APPENDIX A: REGULATOR DOCUMENTS	
APPENDIX B: SHOVEL TEST DATA	

LIST OF FIGURES

Figure 1. Project location and Proposed Extraction Locations	2
Figure 2. Project location within the Steinbach (726) Ecodistrict, Interlake Plain (155) Ecoregion, Boreal Plains Ecozone (modified from Smith et al, 1998)	5
Figure 3. Culture History of southern Manitoba (adapted from Manitoba Archaeological Society 1998)	7
Figure 4. Dominion Land Survey Township Map 1874 (Archives of Manitoba); Section 29 and 20 is highlighted in red	9
Figure 5. Open area on elevated ridge in AOC 1 – NE aspect1	13
Figure 6. Thick understory in AOC 4 – south aspect1	13
Figure 7. Marshland w piles of pushed up rocks and trees in AOC 2 – south aspect1	4
Figure 8. Quarry pits along transmission line – west aspect1	4
Figure 9. Drainage channels– NW aspect1	5
Figure 10. Built-up road works running between AOC 3 and 4 – south aspect1	5
Figure 11. Shovel testing in treed area along elevated ridge in AOC 3 – NE aspect1	6
Figure 12. An example of a shovel test in AOC 1, note gravel and cobble subsoils1	7
Figure 13. Shovel testing part of AOC 5 – east aspect1	17
Figure 14. Marshland w piles of pushed up rocks and trees in AOC 2 – south aspect1	8
Figure 15. Dugout and dirt pile1	8
Figure 14. Map showing Project Study Area - AOCs, shovel tests and pedestrian survey tracks1	19
Figure A-1. Heritage Screening Memo, HRB File# AAS-20-167362	23
Figure A-2. Heritage Permit No. A25-202	?5

LIST OF TABLES

Fable B-1. Shovel Test Summary



1.0 PROJECT DESCRIPTION

1.1 Introduction

CanWhite Sands Corp. (hereafter referred to as 'CanWhite') is proposing to extract silica sand from the deep aquifer within the sandstone geological formation southwest of the hamlet of Vivian and approximately 26 km east of the City of Winnipeg. This proposed extraction of silica sand, i.e., the Vivian Sand Extraction Project (hereafter referred to as the 'Project') is being developed for the purpose of supplying high-quality silica sand for use in a variety of markets.

The Project will not be using an open pit quarry method due to the depth of the target sand deposit. Instead, water well drilling rigs will be used to bore 40-30 cm (16-12 inch) diameter extraction wells and install piping to the target sand deposit. The sand will be brought to the surface with groundwater as a slurry for transportation via a small-diameter slurry pipe to the sand processing facility which is a separate project currently under regulatory review. This extraction method will be done sequentially in different locations each extraction year for the extraction years up to and including 2026 as permitted by a pending Environment Act Licence.

Progressive annual closure and rehabilitation of each extraction year area will be done once sand extraction is completed at each group of well pad areas each year which will minimize the above-ground Project footprint.

The Project is located in part of 20-10-8 EPM, SE-29-10-8 EPM and Plan 15154 and on NTS 1:50,000 topographic map sheet 62 H/16, in the Municipality of Springfield, Manitoba within the Steinbach (726) Ecodistrict (Figure 1).

AECOM, on behalf of CanWhite, requested that Western Heritage Services Inc. (Western Heritage) undertake the required Heritage Resource Impact Assessment (HRIA) for the Project. The fieldwork was completed by Lisa Bobbie (permit holder) and Derek Bobbie (field technician) on May 7 and 8, 2021, under Heritage Permit A11-21 (Appendix A). The HRIA consisted of pedestrian surveys and judgemental shovel testing within the areas of concerns (AOCs) within the proposed development area.

The following final report describes the results of the HRIA completed by Western Heritage for the proposed development.



Figure 1. Project location and Proposed Extraction Locations

Western Heritage

1.2 Screening Criteria

AECOM submitted the proposed development to the Manitoba Historic Resources Branch (HRB) for heritage screening. The HRB examined the location in conjunction with their records for areas of potential concern (HRB File Number AAS-20-16736). Based on LiDAR coverage the development footprint contains several elevated landforms that include well-defined ridges, points, and topographic anomalies. These elevated areas could have served as ancient travel corridors and resource extraction areas. The HRB identified five specific AOCs that any future planned development within these areas have the potential to impact heritage resources and required that a Heritage Resource Impact Assessment (HRIA) be completed following Section 12(2) of *The Heritage Resources Act*. These findings were outlined in a memo dated 2021-03-11 (Appendix A).

2.0 ENVIRONMENTAL OVERVIEW

2.1 General Environment

The proposed development is located within the Steinbach (726) Ecodistrict of the Interlake Plain (155) Ecoregion of the Boreal Plains Ecozone (Figure 2). The Boreal Plains Ecozone extends as a wide band from the Peace River area of British Columbia to the southeastern corner of Manitoba. Smith et al. (1998:139) notes that "unlike the neighbouring Boreal Shield, this ecozone is not strongly bedrock controlled, has few bedrock outcrops and considerably fewer lakes". The Interlake Plain Ecoregion is described by Smith et al. (1998:190) as "a broad arc from the USA-Canada border at the southern edge of the Manitoba Plain, northwest across the southern Interlake/Westlake region to the Saskatchewan border at Red Deer Lake. It is a mosaic of farmland and forest marking the southern limit of closed, mixed boreal forest and northern and eastern extend of commercial agriculture".

2.2 Steinbach (726) Ecodistrict

The Steinbach Ecodistrict is a north-south elongated area extending from the USA border to east of Winnipeg (Smith et al. 1998:202). The physiography of the Steinbach (726) Ecodistrict is described by Smith et al. (1998:202) as having "landforms ranging from smooth, level glaciolacustrine plain to a gently undulating, water-worked glacial till and glaciofluvial, terraced plain. Extensive areas consist of sandy glaciolacustrine veneers overlying extremely calcareous, cobbly and gravelly loamy till. The mean elevation of the district is about 297 masl." Some change in relief, approximately 1.0 to 3.0 m, occurs along the leading edge of a series of sandy and gravelly ridged terraces throughout the area. Peatlands are common, especially along its eastern border, and consist mostly of fens and transitional bogs (Smith et al. 1998:202).

The soils in the Steinbach Ecodistrict are listed by Smith et al. (1998:203) as "well to imperfectly drained Dark grey Chernozems that have developed on thin, variably calcareous, discontinuous, sandy to loamy glaciolacustrine veneers overlying extremely calcareous, loamy to clayey textured, water-worked glacial till. In the eastern sector, imperfectly and well drained Luvisols are found on sandy deposits and till ridges respectively". There are several communities in the ecodistrict, of which the towns of Steinbach and Ste. Anne are the major service centres. Vegetation is dominated by trembling aspen with some balsam poplar. The understory is normally willow and red-osier dogwood with a ground cover of grasses and herbs. Poorly drained areas are predominantly willow and sedge vegetation, while well drained sandy areas in the eastern sector have a jack pine cover. The peatlands have generally fen vegetation dominated by sedges and reed grasses, and also varying willow shrub. Transitional bogs have generally clumped tamarack and black spruce, increasing moss ground cover interspersed with fen vegetation components (Smith et al. 1998:203).



Figure 2. Project location within the Steinbach (726) Ecodistrict, Interlake Plain (155) Ecoregion, Boreal Plains Ecozone (modified from Smith et al, 1998).

3.0 HISTORICAL OVERVIEW

3.1 Culture History of Manitoba

The culture history for Manitoba is complex and covers a period of approximately 12,000 years, from the receding of the glaciers to present day. The complexity of the human occupation is mirrored by the geography of the province, which simultaneously invites and prohibits the flow of culture knowledge across the landscape. Manitoba can be divided into four geographical regions (prairies, boreal forest, subarctic, and arctic). Although these regions share many of the same cultural characteristics, regional differences necessitate the need for distinct cultural histories (Hlady 1970). The following is a brief summary of cultural history in southern Manitoba. This includes a description of the heritage sites with a known cultural affiliation found in the vicinity of the proposed development. A timeline illustrating the cultural sequence in Manitoba is presented in Figure 3.

The earliest period, known as the Palaeo (or Early) Period, begins around ca. 12,000 years ago and ranges to ca. 8,000 years ago. Before this time, glaciers covered Manitoba and prevented the spread of people into the province. This is a time when the Wisconsin Ice Sheet had begun its retreat north, opening up an environment capable of supporting plants and megafauna. This time period has been subdivided into three successive traditions based on projectile point typologies: Clovis, Folsom, and Plano. These large lanceolate projectile points were hafted at the ends of thrusting or throwing spears. People subsisted by hunting now-extinct giant mammals, such as mammoth. Palaeo peoples, Clovis and Folsom traditions especially, are only represented archaeologically in the southwest portion of the province.

The Archaic (or Middle) Period (8,000 to 2000 B.P.) represents a time of technological shift reflected by atlatl darts and side-notched projectile points, and a shift of subsistence strategies from megafauna to small-scale hunting. As the glaciers receded people were exposed to changing environmental conditions and adapted their subsistence strategies to better take advantage of local resources. The first direct evidence of mortuary practices and burials appear during this time.

The Archaic Period was followed in the south portion of the province by the Woodland (or Late) Period (2,000 to 300 B.P.), which is characterized by pottery manufacture, maize cultivation, elaborate burial mound construction, and the use of the bow and arrow. Rock art, in the form of petroforms, pictographs, and petroglyphs, also become prominent throughout the landscape.



Figure 3. Culture History of southern Manitoba (adapted from Manitoba Archaeological Society 1998)

3.2 First Nations and Métis

There are seven treaties with First Nations in the province of Manitoba, though five Manitoba First Nations are not signatory to any treaty with Canada (Birdtail Sioux, Sioux Valley, Canupawakpa, Dakota Tipi, and Dakota Plains). The Project is within Treaty 1 (1871) lands, whose signatories included the Brokenhead Ojibway Nation, Sagkeeng First Nation, Long Plain First Nation, Peguis First Nation, Roseau River Anishinabe First Nation, Sandy Bay Ojibway First Nation, and Swan Lake First Nation. The area is within the traditional territory of the Plains cultural area that was historically occupied by Plains Ojibway groups. The region is also homeland to the Metis Nation. The closest First Nation reserve lands to the Project is the Brokenhead Ojibway Nation's Na-Sha-Ke-Penais Indian Reserve (3 ha) surrounded by East St. Paul and located 40 km northwest of the Project.

3.3 History of the Project Area

The history of the Vivian area can be traced back to 1907 when the railroad was being built eastward, establishing pre-arranged stations every number of miles apart. One such station, just eight miles east of Anola was named Vivian. The town contained a general store, a Sunday School Mission and post office. The area around Vivian was well-forested and a pulpwood industry sprang up with lumber camps loading wood on flat cars at the station to be shipped to pulp and papers mills (Dugald Women's Institute 1974:425-426). The station house, watertank and platform were removed from Vivian and now the community is purely residential.

The original Dominion Land Survey township plan for the area was obtained from the Manitoba Archives (AM 1874) (Figure 4). The registered owner of the NE quarter of Section 20 was a Henry Malpas in 1890. The registered owner of the SW quarter was a Mark Westmacotte in 1891. The remainder of the area was owned by the Government of Manitoba under order-in-council. The notations on the township plan indicate a high ridge with poplar running in a northwest to southeast direction from the southern half of Section 29 into the northeast part of Section 20.

There is a single registered archaeological site, DlLc-05 located within 1 km of the proposed development. The poorly recorded nature of the site only indicated that it was an isolated find. No further details are noted.

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Figure 4. Dominion Land Survey Township Map 1874 (Archives of Manitoba); Sections 29 and 20 are highlighted in red.

4.0 METHODS

4.1 Introduction

HRIAs are an important component of archaeological research in Manitoba. HRIAs serve four functions:

- 1) to locate and document the presence of heritage resources within the Project area;
- 2) to determine the content, structure, and integrity of the heritage resource;
- 3) to establish significance of the heritage resource and;
- 4) to facilitate heritage resource avoidance when necessary.

Developments are assessed using one of three methods: pre-construction testing, on-site monitoring, and post-impact assessments. Sometimes it is necessary to combine one or more methods, particularly in areas deemed highly sensitive for heritage sites. The HRIA also serves as a means to find suitable measures to avoid sites, including the relocation of the proposed development. If it is not possible to avoid impacting a site then mitigation, including archaeological salvage excavation, would be implemented.

4.2 Field Methods

The HRIA for the proposed development was accomplished using standard archaeological methods consisting of a combination of a pedestrian survey and judgmental shovel testing. The field inspection was conducted under Heritage Permit A11-21 issued by the HRB. The pedestrian survey covered broad sweeps across the AOCs to examine these elevated ridges and landform anomalies for surface exposures, evidence of cultural modification or features (Appendix A). The survey focused on high visibility areas, such as well-defined landforms and along exposed road and trails. However, dense forest with thick understory of chokecherry, beaked hazelnut and hawthorn were also traversed. Tracklogs and waypoints were recorded using a handheld GPS (Global Positioning System) unit. The inspected areas were photographed and the GPS locations recorded and mapped.

Judgmental shovel testing serves to identify the presence of sub-surface artifact scatters, as well to assess the soil stratigraphy. Shovel tests measured 45 cm x 45 cm and were excavated to subsoil, typically 40 cm depth below surface (DBS) and are then properly backfilled. Testing was conducted in locations of high archaeological potential such as open vistas, edge of embankments and along elevated ridges, to examine stratigraphy and the potential for intact deposits below the surface. Locational, stratigraphic, and descriptive information for each shovel test was recorded.

If archaeological resources are encountered, information regarding the site area is recorded including dimensions, landscape, site description, and details. Site areas are also photographed and GPS data recorded. Subsurface sites are then systematically tested in order to determine

the extent and concentration of artifact distribution. This typically includes expanding the radius of testing around the original positive shovel test. This type of testing is modified depending on the ongoing testing results and adapted for the site terrain.

5.0 RESULTS

5.1 Project Location

The proposed Vivian Sand Extraction Project falls within three sections and will connect with the Vivian Sand Processing Facility located to the north. The Project is bisected by Manitoba Hydro's M602F 500 kV transmission line which runs along the road allowance between Sections 29-10-8 EPM and 20-10-8 EPM, RM of Springfield, Manitoba. An existing gravel and sand quarry is also located within the Project area. Three of the five AOCs (AOC 1, 3, and 4) are located near the Hydro transmission line and were accessed through the quarry area. The terrain in these locations contain elevated glacial till ridges, interspersed with low-lying marshland. A few ATV trails cross through the area. The remaining two AOCs (AOC 2 and 5) are located over a kilometre to the south in open agricultural lands.

5.2 Fieldwork Summary

The HRIA was completed on May 7 and 8, 2021 by Lisa Bobbie (permit holder) and Derek Bobbie (field technician) under Manitoba Heritage Permit No. A11-21 (Appendix A). The HRIA included a combination of a pedestrian survey and judgemental shovel testing within the five AOCs. Landowner permission had not been granted at the time of the survey for the SW-20-10-8 EPM, and therefore a portion of AOC 5 could not be assessed.

A broad pedestrian survey was conducted across the AOCs to identify surface artifacts and features. The surface visibility was fair along the various cut roadways and trails and pockets of open meadow (Figure 5). However, the majority of the area was forested with trembling aspen, oak, jack pine and white spruce and less commonly fir and tamarack in the lower lying areas. The thick understory consisted of chokecherry, beaked hazelnut and hawthorn (Figure 6) with a ground cover of grasses, reindeer lichen, sage, wild rose, poison ivy, and bearberry. The vegetation of AOC 2 and 5 consisted of open, water saturated, marshy hayland with large pockets of dwarf willow (Figure 7).

During the pedestrian survey, large pit depressions were encountered along the transmission line which were related to excavation of borrow material for construction of the transmission line (Figure 8). Other notable surface features were large cut-out drainage channels containing two built-up roadway/railway beds running between AOC 3 and AOC 4 (Figure 9 & 10). It is believed that these could have been used to transport borrow materials. Exposed soils from rodent burrows were examined and, in some areas, the thin organic veneer was absent exposing gravel/sand subsoils. Recent land use was noted with a few ATV trails crossing through the area.



Figure 5. Open area on elevated ridge in AOC 1 – NE aspect



Figure 6. Thick understory in AOC 4 – south aspect.

Western Heritage



Figure 7. Marshland w piles of pushed up rocks and trees in AOC 2 – south aspect.



Figure 8. Quarry pits along transmission line – west aspect.

Western Heritage



Figure 9. Drainage channels- NW aspect.



Figure 10. Built-up road works running between AOC 3 and 4 – south aspect.

Subsurface testing was conducted across each of the AOCs. In total, 20 shovel tests were excavated during the HRIA field investigation. Six shovel tests were placed within each of AOC 1, 3 and 4 (Figure 11). A further two tests were excavated in the northeast part of AOC 5. The nature of AOC 2, consisting of marshy hayland, precluded testing. The observed soil stratigraphy is described in Appendix B – Shovel Test Data. Typical stratigraphy included a black-grey silty topsoil to approximately 20 cm DBS, followed by brown or orange-brown sand and gravel subsoil which transitioned to light beige sand with gravel. Limestone and granite cobbles were also found in numerous test pits (Figure 12).

The two AOCs located in the southern part of the Project area were identified based on the presence of landform anomalies noted from the LiDAR imagery. AOC 5 was initially flagged for having an elevated ridge, however the portion that was accessible during the HRIA did not prove to be elevated, rather it was land that was surrounded by lower lying marsh. Shovel tests were placed in the slightly drier areas of the hay land (Figure 13). The area in the southwest portion of AOC 5 may contain more evidenced elevation; however it was not accessed due to lack of landowner permission. The circular anomalies in AOC 2 were discovered to be piles of pushed up trees, soil and rocks (Figure 14). These are likely a result of agricultural processes of tree clearing and rock removal from the surrounding hay lands. A nearby dug-out with associated dirt pile were also noted.



Figure 11. Shovel testing in treed area along elevated ridge in AOC 3 – NE aspect.